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**A MULTIDIMENSIONAL ANALYSIS OF POVERTY IN RURAL  
REGIONS OF URMIA, IRAN**

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**A thesis submitted to the University of Huddersfield in partial fulfilment of the  
requirements for the degree of Doctor of Philosophy**

**The University of Huddersfield**

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## ABSTRACT

The definition of poverty has developed into a multidimensional concept focusing more on socio-economic dimensions than being a mere measure of monetary deprivation. In 2017, this study applied Amartya Sen's capability approach to analysis of multidimensional poverty in rural districts of Urmia, West Azerbaijan in Iran. The study conducted discussion of poverty theories related to the unidimensional and multidimensional poverty approaches in general and the Alkire-Foster method in particular as this was utilised in the study's quantitative data analysis. This study adopted a mixed method sequential explanatory approach. First, the survey questionnaire was designed to collect the required data for the present study. Quantitative data were collected from 378 households selected using a multi-stage sampling process from five rural regions in Urmia, West Azerbaijan province in Iran and then analysed using descriptive and inferential statistics. Second, semi-structured interviews were undertaken with 21 participants. The qualitative data were analysed, and the findings then compared with those from quantitative analysis. The poverty was measured and analysed in six identified dimensions, including education, access to basic infrastructure services, housing quality, ownership of assets, health and food security. These six dimensions were constructed from the 13 indicators used to identify deprivation in the households in the study area. The findings show that approximately 83% of the households are deprived in 48.4% of the total dimensions. Also, health is the highest contributor to the breadth of poverty (30.90%), followed by food security (22.65%). The poverty level was positively related to the size of the household. Results indicated that Somay region recorded the highest estimates in terms of the adjusted multidimensional measures ( $M0=0.461$ ,  $M1=0.324$ ,  $M2=0.261$ ) and Anzal the lowest ( $M0=0.398$ ,  $M1=0.263$ ,  $M2=0.218$ ).

Key words: multidimensional poverty, Urmia in West Azerbaijan, Iran, Alkire and Foster methodology

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## Definitions and Abbreviations

BN	Basic needs
FGT	Foster-Greer-Thorbecke
GNP	Gross National Product
HDI	Human development index
HFIAP	Household Food Insecurity Access Prevalence
HPI	Human Poverty Index
ILO	International Labour Organisation
QoL	Quality of life
MDGs	Millennium Development Goals
MPI	Multidimensional Poverty Index
MSIO	Medical Service Insurance Organization
OPHDI	Oxford Poverty and Human Development Initiative
RRUWA	Rural Region of Urmia in West Azerbaijan province
SDGs	Sustainable Development Goals
SNC	Statistics Centre of Iran
SSO	Social Security Organization
UN	United Nations
UNDP	United Nations Development Program





# **Chapter 1: Introduction**

## **1.1 Introduction**

Poverty reduction has always occupied the core position in development strategies. International agencies, policymakers and governments have emphasised the social, economic, and political importance of poverty reduction. These have formed subjects of debate in the recent literature and among international agencies concerning the main indicators required to reduce poverty since development strategies first emerged.

It is necessary to mention that the meaning and measurement of poverty has changed over time. Charles Booth, one of the pioneers in the research of poverty, invented the concept of the 'line of poverty' in the late 1880s. He produced a map of poverty in London, using different colours to indicate the level of the poverty. In general, he divided people into two categories: those who were 'in comfort' and those who were 'in poverty', defining the poor as people struggling to obtain the basics to live (Gillie, 1996; Spicker, 1990). Booth's work was followed by that of Seebohm Rowntree, who used 'subsistence needs' to measure the poverty. He introduced a list of subsistence needs as minimum necessities, including food, clothes, and shelter to maintain physical efficiency. First, he estimated the average nutritional needs for adults and children and converted them into the cash equivalents of these foods. Then he added the minimum costs of fuel, clothing, and household sundries according to the household size, finally defining the poverty lines of these points. He considered a family as being poor if its income fell below that poverty line.

Later, in 1950, he claimed that his work was “the first attempt to fix a poverty line on scientific lines”, which estimated the income required by households to meet their subsistence needs in York city in 1899 (Gillie, 1996). These early studies on the measurement of poverty were related to the physical status of people and refer to “absolute poverty” (Ravallion, 2011). Rowntree’s works made a huge contribution to both the theoretical and methodological aspects of poverty studies and guided the empirical literature till the 1960s, using economic indicators such as the level of income and Gross National Product (GNP) to analyse and measure the poverty level (Sumner, 2007; Vollmer, 2010).

During the 1960s many questions were raised regarding the relation of poverty to social and political problems. These problems, which were connected with inequalities among individuals, groups and regions, related the interpretation of poverty to human welfare and led to the emergence of new approaches to development strategies in the 1970s (Vollmer, 2010).

From the 1970s, poverty became prominent. Three main events occurred during this decade. First, a report titled ‘Redistribution with growth’ was published by the World Bank. Second, poverty was seen as a relative concept rather than an absolute issue. Third, attention was drawn away from the concept of income poverty towards a set of “basic needs”. During the 1970s, socio-economic indicators such as health, nutrition, and people’s housing conditions, identified as basic needs, were also included among the main indicators to evaluate the poverty. During the 1980s further socio-economic indicators were added to economic growth and income, reinstated as main indicators in development analysis and hence poverty reduction. During the 1990s, the broader aspects of human development and freedom were considered to be important in gaining a more comprehensive study of development strategy. It is claimed that development is linked to people’s quality of life and that poverty is deprivation of the

capabilities to have a good life, while development is the expansion of this capabilities (Sumner, 2007). Since the early 2000s, international agencies have viewed poverty as deprivation in multiple dimensions of human well-being. In 2000, the United Nations (UN) revealed their Millennium Development Goals (MDGs), with 189 world leaders agreeing on eight specific goals to be achieved by 2015. Eliminating extreme poverty and hunger and improving health and education were listed amongst these goals (UNDP, 2015).

Based on the importance of poverty and deprivation issues in the MDGs, this study concentrated on a multidimensional poverty research located in the North-west of Iran. Literature thinking regarding poverty theories, concepts, and measurement has gradually shifted from a unidimensional poverty (lack of income or expenditure) to a multidimensional poverty, which views poverty as a multifaceted phenomenon rather than merely a lack of monetary resources (Alkire & Foster, 2011a). The studies by Sen (1976, 1992, and 1994) have hugely contributed to the discussions on this subject area. His studies consider poverty as a multidimensional rather than a unidimensional concept. Income-based or unidimensional poverty measurements are the traditional approach to analyse poverty, comparing the monetary resources of the households based on predetermined poverty lines. This method has been broadly adopted by the relevant literature to analyse poverty in developing countries, including Iran (Esfahani & Pesaran, 2009; Salehi-Isfahani, 2017). Although it is true that higher level income or consumption increases the welfare of the people, it fails, however, to guarantee improvement in both monetary and non-monetary attributes, such as health, education, social security, employment and empowerment (Bourguignon & Chakravarty, 2003). Having monetary resources such as high income may not necessarily improve the well-being of households. For example, markets sometimes do not exist for public goods and essential needs

such as education or access to basic infrastructure services like electricity and clean water. Sen (1976) has criticised the monetary approach as having only a narrow ability to identify, describe, and analyse poverty, since it disregards variations in people's behaviour and preferences. Likewise, converting monetary resources to the aspects of well-being (being nourished, healthy, educated, etc.) does not happen identically amongst households. Low-educated households or disabled people do not have the same basket of needs as highly educated or non-disabled people with the same level of income. Members of a household which is identified as 'non-poor' in the monetary approach might suffer from a lack of food and other basic needs if the head of the household were to spend the income to satisfy his or her desire for items like alcohol or tobacco instead of the family members' essential needs (Alkire & Santos, 2013).

Regarding to Alkire & Santos (2013), using the multidimensional approach to measure poverty provides the basic requirements to design and implement poverty reduction strategies. The multidimensional poverty approach identifies the different deprivations experienced by groups of people. Poverty reduction policies can be implemented to target those deprivations and resources can be allocated to the appropriate dimensions and groups.

Many approaches have been introduced to measure and analyse the multidimensional nature of poverty. The Alkire-Foster method has been broadly employed by governments and international agencies. It is used by the United Nations Development Programme (UNDP) to compute the global Multidimensional Poverty Index (MPI). Following the MPI, many nations such as Bhutan, Colombia, and Mexico have adopted the Alkire-Foster method to measure the national multidimensional poverty index. This method allows selection of various dimensions based on the socio-economic characteristics of different regions. Selecting the related

dimensions and weighting them based on their importance is vital to obtain a real picture of the poverty level and will be useful for implementing the appropriate development policies. This method determines the level of the deprivation in each dimension amongst the households. The method indicates which dimensions and indicators form the largest contribution to deprivation in households, thereby providing information to support the policymakers in implementing the relevant development plans and poverty reduction policies.

The Alkire-Foster method evaluates the poverty level through three dimensions: health, education, and living standard, allocating ten related indicators to these dimensions. However, the present study has employed an additional dimension of food security and has divided the standard of living dimension into three dimensions of housing quality, access to basic infrastructure services and ownership of assets.

The Alkire-Foster method provides a two-step conceptual and methodological framework for poverty analysis consisting of identifying the poor and aggregation of the poverty information (Alkire & Foster, 2011a). This method counts the number of deprivations and uses a dual cut-off approach to identify the poor, then extends the unidimensional index of poverty measurement to aggregate the poverty into indices.

Among several apparent advantages of using the Alkire-Foster method is the flexibility of the methodology, which enables it to be used with different dimensions and indicators, with assignment to them of equal or different weights according to their importance. It can also be used with ordinal as well as cardinal data. Moreover, different cut-off levels can be applied to distinguish the poorest of the poor. This information can provide comparisons of deprivations across certain regions or groups (Alkire & Santos, 2010).

There have not been many attempts at poverty evaluation and measurement in Iran and the existing studies have mostly measured the poverty through the unidimensional approach (Assadzadeh & Paul, 2004; Atamanov et al., 2016; Esfahani & Pesaran, 2009; Salehi-Isfahani, 2017). A few studies have evaluated the nature of poverty in Iran from a multidimensional viewpoint; however, due to a lack of primary data some of the most important dimensions, such as health, are missing in these studies.

Therefore, this study estimates the poverty levels using the multidimensional approach, Alkire-Foster method to measure the poverty amongst households in the Rural Region of Urmia in West Azerbaijan province (RRUWA) in Iran using primary data. For this purpose, a household survey of 378 households was conducted in five regions (Central, Anzal, Silvaneh, Nazloo, and Somay). A multi-stage sampling was used to select households from these regions. Also, this study interviewed 21 respondents to achieve qualitative data.

## **1.2 Research Problem**

Iran's economy has experienced substantial changes and shocks since the revolution in 1979, including the war with Iraq and USA and international trade sanctions. The eight years of war with Iraq pushed the country into economic crisis. Moreover, the country has since 1995 been faced with a series of sanctions imposed by the USA, mainly due to Iran's nuclear plan, which have caused a high rate of inflation and unemployment. The government has subsidised some products, such as basic foods, utilities, oil, and gas, since the war with Iraq. However, in 2010 the subsidy-reform plan replaced the direct cash payment to the families.

Post-revolution governments have implemented different policies to reduce the poverty and tried to set strategies with the aim of improving the quality of life of the poor and enabling the poor to access basic services such as education and health. Among these, the government

adopted a programme of five-year plans to enhance economic development. Poverty reduction was emphasised in these plans.

Although Iran's development plans have considered the well-being of the people as a multidimensional phenomenon and repeatedly noted the importance of eliminating illiteracy, availability of medical facilities for everyone and rural households' access to the basic services like electricity, clean drinking water and sanitation. No official statistics of the poverty level have been published since the revolution. Despite the fact that the poverty rate has fluctuated over the years, it still remains one of the most challenging issues in Iran (Salehi-Isfahani, 2009).

### **1.3 Aims and objectives**

The studies on poverty measurement in Iran have confirmed that the poverty level was reduced significantly after the revolution. However, it has risen recently due to financial difficulties, mainly as a result of USA and international sanctions on Iran (Salehi-Isfahani & Majbouri, 2013). Nevertheless, as mentioned earlier the majority of research works evaluated poverty using a monetary-based approach. These evaluations are not able to provide a real picture of the poverty level as they ignore socio-economic elements such as being healthy, educated, and well-nourished.

This study therefore aims to use the Alkire-Foster method, as described in section 1.1, to compute and estimate the multidimensional poverty level in the RRUWA of Iran. This will enable us to identify the poverty level in the dimensions of health, education, and standard of living in the study area.

This study then aims to analyse the multidimensional poverty and obtain a real picture of its level, for which purpose a broad range of data on socio-economic characteristics is required.

However, this information is not provided within the existing household-income survey data in Iran; for instance, there is a lack of information in the health dimension, which is one of the main elements of poverty evaluation. Therefore, this study uses primary data in addition to secondary data. To achieve this objective, the main research questions, which guided this research, are as follows:

#### **1.4 Research questions**

Building on the preceding discussions, the following research questions direct this empirical study towards achieving the research objectives:

What is the level of various deprivations suffered by the population in rural regions of Urmia?

What is the extent of deprivation in rural regions of Urmia, using different cut-off levels of identification?

What is the intensity of the poverty through a breakdown of its contribution to the overall poverty?

What is the degree of the deprivations, considering poverty decomposition using sub-groups within the area, in this case village and districts, household size and ethnic groups?

#### **1.5 Significance of the research**

This study is important because of the need for improvement of the quality of life (QoL) not only in the North-western district of Iran but also nationally. This research might encourage the Iranian government and also researchers and planners to focus on the multi-dimensional poverty method and to adopt it as an effective strategy in poverty reduction strategies that can benefit the entire country.

## 1.6 Research methodology

Oxford Poverty and Human Development Initiative (OPHDI) developed an approach to estimate poverty by counting variety of deprivation. All these variety of deprivation can happen the same time for the same person, such as poverty in education, health and housing. For instance, a person in a time can be illiterate, unhealthy and have no accommodation or having crowded or low-quality accommodation. It has three common steps which are identifying who is poor, constructing poverty measures and analysing and discussions.

This study intends to collect and analyse primary and secondary data through questionnaire, interview and study statistical sources. To identify poor people, researcher determined 6 dimensions including education, health, asset ownership, housing, food security and access to basic infrastructure services. In the next step 13 indicators allocated for these 6 dimensions and related data and information have been collected. Households identified as multidimensionally poor if the weighted sum of their deprivations is greater than or equal to a poverty cut off.

In an easy explanation measuring poverty is to find percentage of the poor people in the rural area of Urmia, known as the headcount ratio (H). Then poverty measurements were computed based on Alkire-Foster method which are:

Adjusted headcount ratio (M0);  $M0 = H \times A$ .

Adjusted Poverty Gap (M1);  $M1 = H \times A \times G$ .

Adjusted Squared Poverty Gap (M2);  $M2 = H \times A \times S$ .

A is representing “Intensity”, G for “Gap” and S taken from “Square gap”. By using M0 then researcher could distinguish between group of people who suffering from poverty in different dimensions.

Finally, there are two main approach to use findings. First decomposition approach and second breakdown by dimension or indicator. Accordingly, the results have been discussed in broken geography area and ethnically. Also, different indicators have been discussed in compare with the similar condition in the country. Most of these steps involved normative judgements and choices based on the many conceptual frameworks and approaches such as basic needs and capability approaches used to analyse multidimensional poverty.

Also, most of the poverty studies in the past were quantitative. However, in the last decade, researchers like Alkire (2006) and Bamberger et al., (2010) suggested that a mixed methods research approach is the most suitable research method for multidimensional poverty studies. Hence, this research aimed to implement Creswell’s mixed methodology (2013). In the qualitative step, 21 respondents were interviewed to achieve proper qualitative data. At the interpretation stage, the two forms of data were integrated.

## **1.7 Overview of Iran’s economy**

According to the International Monetary Fund (IMF), Iran’s proven gas and oil reserves rank second and fourth in the world and also as having the second largest population in the region (Gressani et al., 2007).

Iran’s economy has experienced substantial events and shocks since the revolution in 1979, including the war with Iraq, USA and international trade sanctions, and subsidy reforms. These

events are briefly discussed in the following section, followed by discussion on the status of a number of economic indicators after the revolution.

### **1.7.1 Iran/Iraq war**

The eight years of war between Iran and Iraq that started in 1980 pushed the country into deep crisis. In addition to huge losses in oil output and revenue, the country experienced substantial damage to residential property, infrastructure, and industrial sites. As a result, two million people were relocated to other parts of the country, which caused economic difficulties. However, governments attempted to cope with these difficulties through policy decisions, such as to reduce oil revenue dependency and subsidise some basic goods (Alnasrawi, 1986).

### **1.7.2 Sanctions**

Following the revolution, the USA imposed sanctions on Iran. The sanctions started in 1995 and were tightened in 2005, reaching their peak in 2011, on account of Iran's nuclear plan. In 2007 the UN and the EU agreed to impose international sanctions on Iran. These sanctions have had huge effects on Iran's economy. They cost billions due to lost oil revenue. Furthermore, Iran's assets were held in restricted accounts outside the country. With the value of money decreasing, inflation and unemployment experienced a sharp rise (Torbat, 2005). Obviously, these effects were the main reasons for Iran agreeing to restart nuclear negotiations in 2013, which led to the deal between Iran and world super-power countries (5+1) in July 2015. According to this deal, Iran consented to restrict its nuclear programme and inspections in the plan, in return for lifting of most of the sanctions. However, in 2017, President Trump announced that he would not certify the deal. Later, in 2018, he terminated the agreement and reintroduced sanctions.

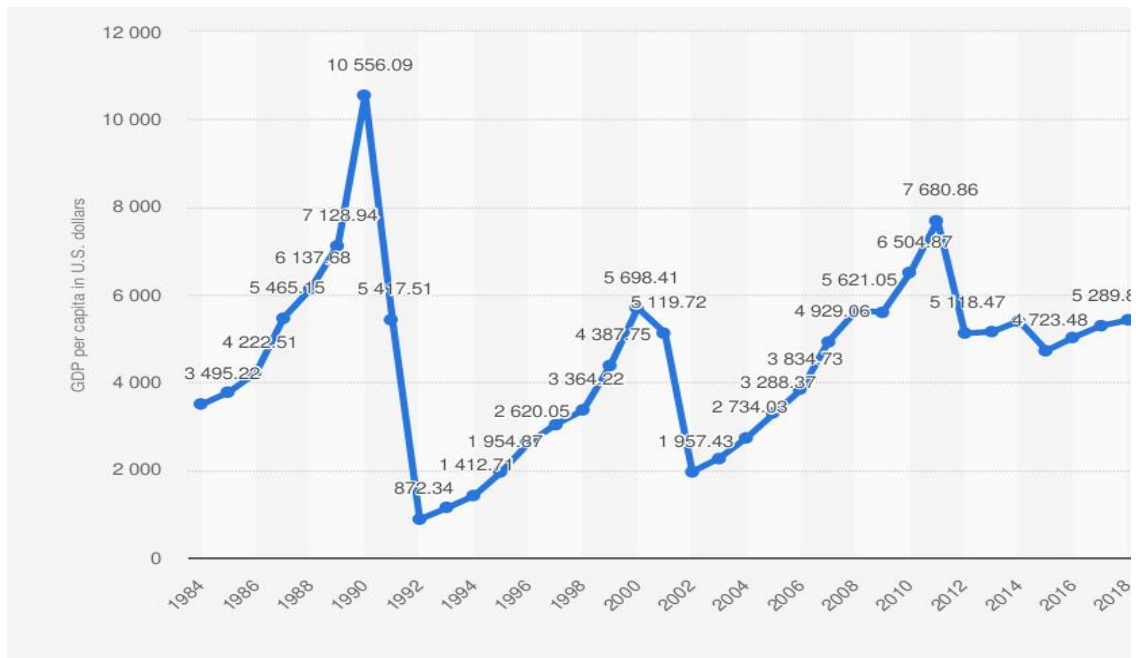
### **1.7.3 Subsidy reforms**

Some products in Iran have been subsidised since the war with Iraq, such as basic foods, utilities, oil, and gas. Different governments have tried to cut back those subsidies as they were so costly. In 2010 Ahmadinejad's government created the subsidy-reforms plan and replaced the subsidies with direct cash payments to families. As a result, and due to increased prices of oil and other products, inflation rose sharply and since then governments have been struggling with the budget shortfall in funding for the cash payments(Guillaume et al., 2011).

The following subsection discusses the trend of a number of economic indicators after the revolution.

### **1.7.4 Economic Growth**

According to the World Bank, in 1980 (the year after revolution) Iran's economic growth slumped by almost 15%. It recovered between 1981 and 1985 and fell again in 1986–8 during the war with Iraq (Esfahani & Pesaran, 2009).



**Figure 1.1: GDP per capita, Iran**

Source: IMF

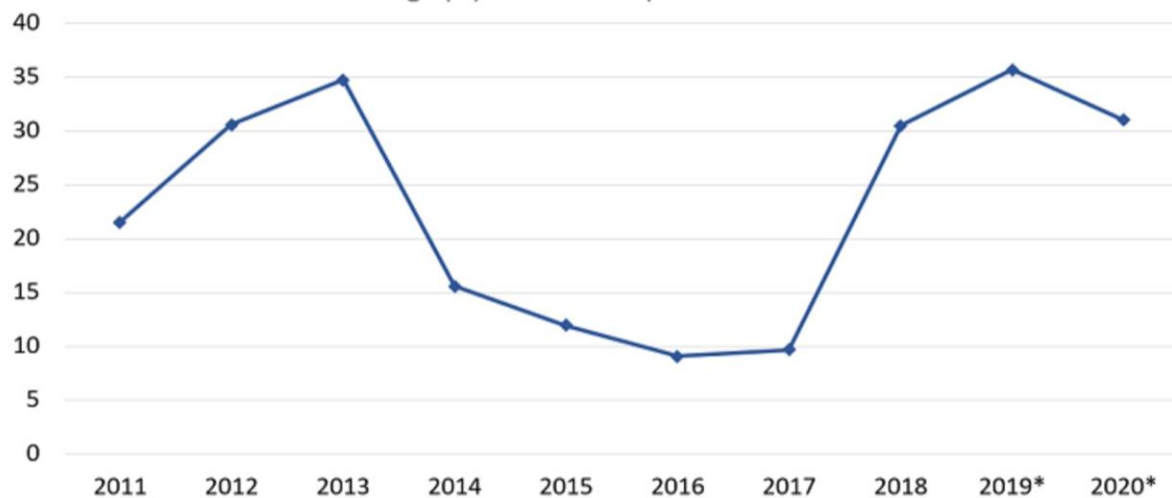
Apart from a small drop in economic growth in 1992–3 (1.6% and 1.7%), the country’s economy improved between 1989 and 2011 and then slumped in 2012 and 2013 (-6.6% and -1.9%), followed by growth of 3.2% and -1.6% in 2014 and 2015. This was followed by growth of 12.5% and 3.7% in 2016 and 2017, but there were falls of -4.8% and -9.5% in 2018 and 2019. Figure 1.1 shows the GDP per capita in Iran in 1984-2019.

### 1.7.5 Unemployment and inflation

High level of unemployment and rapid inflation have been cited as the main challenges to Iran’s economy since the revolution (Amuzegar, 2009; Ilias, 2008).

The inflation level was constantly in double digits following the revolution due to multiple shocks and events affecting the economy, such as the war, oil prices, booms and crises, sanctions, and the subsidies-reform plan. With an average rise of 19.6%, prices have doubled

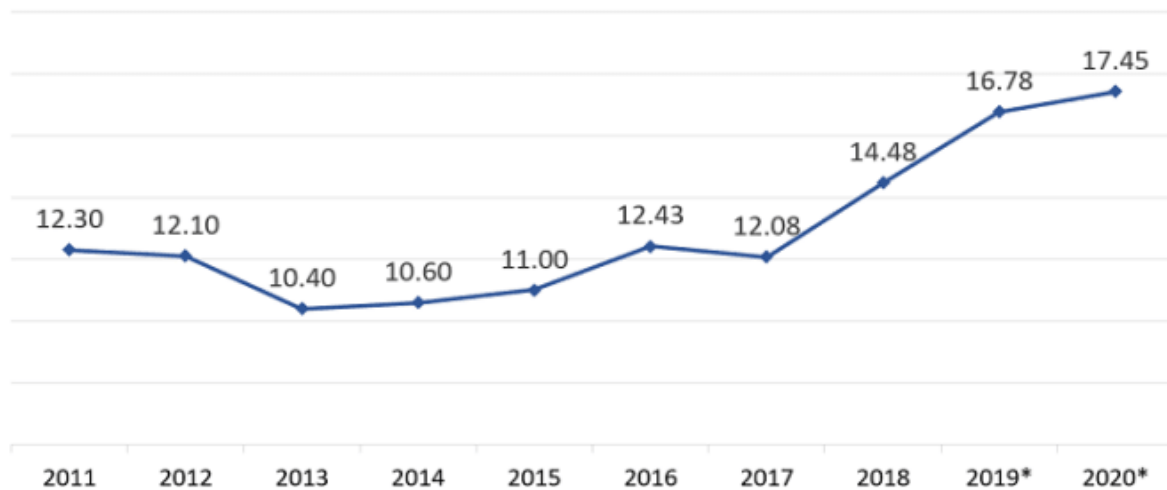
every three and a half years since the revolution (Esfahani & Pesaran, 2009). Figure 1.2 shows the inflation rate in Iran in 2011-2020.



**Figure 1.2: Inflation rate in Iran, 2011–2020.**

Source: IMF

Meanwhile, Iran has experienced a high level of unemployment, as the unemployment percentages have remained in two digits for almost the entire period after the revolution. A rapidly growing labour force and limited productive capacity to create jobs, erratic economic growth, and increased business uncertainty are the main reasons for the nation's high unemployment rate (Esfahani & Pesaran, 2009). Figure 1.3 shows the unemployment rate in Iran in 2011-2020.



**Figure 1.3: Unemployment rate in Iran, 2011–2020**

Source: IMF

### 1.8 Iran’s development plans and poverty reduction policies

Both pre-and post-revolution, economic systems in Iran mainly relied on revenue from oil exports. Pre-revolution development plans focused on rapid development of large and modern industries with the use of the latest technologies from Western countries. The government concentrated on expansion of heavy industries, public utilities, and development of oil and gas production. Rapid economic growth in the public and private sectors accrued as a result of the rise in oil revenues in the 1970s. The oil price continued to rise from 1973–8 and as a result most of the capital was concentrated in housing, manufacturing, oil and gas projects, and transportation. Mohammad Reza Shah continued to push industrialisation and the establishment of a modern military force during the 1970s; consequently, inflation and corruption increased. It seems that it was this rapid modernisation and its consequences which led to the revolution (Esfahani & Pesaran, 2009).

After the revolution in 1979, the regime stopped its modernisation programme and formed strategies to achieve a self-sufficient economy and economic independence. Post-revolution

governments have followed a series of five-year social, cultural, and economic development plans. The following section briefly outlines some of the key points of these plans.

### **1.8.1 First five-year development plan (1989–94)**

The first development plan for Iran (1989–94) set out its goals of establishing the nation's economic independence through self-sufficiency in food and agricultural products and reducing its dependence on oil exports. The war with Iraq and oil revenue shortfalls affected funding for the first development plan. Most of the funds in the plan were spent on reconstructing the war-damaged areas and on infrastructure. Inflation was significantly high in this period. Despite a number of difficulties, including increases in inflation, the first plan was successful in achieving many of its objectives. There was a 7.3% annual increase in GDP, only slightly less than the targeted rate of 8.1%. Also, a huge part of the public industrial sector was transferred to the private sector (Amuzegar, 1997).

### **1.8.2 Second five-year development plan (1995–2000)**

The second development plan was established on the background of the result of the first plan. The priority of the plan was completion of the infrastructure, communication, and transportation-development projects. Creating new jobs—up to two million—during the period of the plan, transferring parts of the government sector to the private sector, increasing oil exports by 5%, and removal of subsidies were among the targets of the second development plan.

The average annual growth of GDP during this plan was 3.1%, which was lower than the targeted rate of 5.5%. Also, the inflation rate and unemployment rate increased. The second plan also failed to achieve the promised elimination of subsidies, and Iran's foreign debt increased (Amuzegar, 1997, 2004).

### **1.8.3 Third five-year development plan (2000–4)**

The main objectives of the plan were structural and budget reforms, privatisation of government industries, promotion and development of private banks and insurance companies and decreasing the unemployment rate. Due to increased global oil prices, government revenues increased from 27% in 1999 to 52% in 2000. As a result, the government secured huge achievements regarding the planned targets (Esfahani & Pesaran, 2009). However, unemployment and inflation remained high. Also, due to uncertainty in the financial environment the targets related to foreign investments and banking operation were not accomplished (Valadkhani, 2001).

### **1.8.4 Fourth five-year development plan (2005 – 2010)**

The fourth development plan was the most comprehensive development plan, including qualitative targets to reach a large number of specific goals such as rapid economic growth, reduction of unemployment, control of inflation, reducing income gaps, self-sufficiency in basic agricultural products, decreasing the government's share in the economy, and increasing non-oil exports. Implementation of the plan coincided with President Ahmadinejad's administration, which refused to endorse the plan. As a result, the plan missed the golden opportunity, offered by higher oil revenues, to fulfil its goals. In fact, none of the main targets of the plan were reached (Ghasimi, 2012).

### **1.8.5 Fifth five-year development plan (2010–15)**

The fifth plan (2010–15) was classified into five sections: cultural, science and technology, social, political and economic. The economic section was concentrated mainly on suitable economic growth and spreading social justice in the country. This plan focused on 14 sub sectors in Iran's economy, including improving business environment, efficiency,

employment, currency, banking system, capital market, trade, foreign investment, oil and gas, electricity, renewable energy, water sources, agriculture and industries, and mines. The fifth plan contained the obligation to completely stop the reliance on oil revenue. The plan was set up with the main objectives of increasing taxes and increasing non-oil revenue but, in general, government could not attain these objectives(Ghasimi, 2012).

#### **1.8.6 Sixth five-year development plan (2016–21)**

The sixth five-year economic plan concentrated on cultural and social development and set out the socio-economic development direction for the country for 2016-2021. The sixth development plan was founded on the three main pillars of resistive economics, pioneering science and technology, and cultural excellence and resilience. The programme seeks to transcend international sanctions by using Islamic thinking to create a paradigm model that is set apart from the prevailing capitalist development patterns(Razavi & Vakil, 2019).

Updated research confirms that almost none of the sixth plan's projected goals had been achieved as of November 2019. The Iranian economy has been facing a currency crisis since 2017 and has seen a steep rise in prices in various markets. The result of this upheaval has been negative national economic growth. The challenges have been so strong that even the state-run economy has failed to correct the statistics(Haidar, 2017).

#### **1.9 The economy of West Azerbaijan, Urmia**

The rural regions of Urmia city in West Azerbaijan province were selected as sample site. Urmia is the 10th most populated city in Iran, also the capital and largest city of West Azerbaijan province, one of the 31 provinces of Iran. It is located in the north-west of Iran which shares borders with Iraq and Turkey and Azerbaijan's Nakhchivan Autonomous Republic, as well as the provinces of East Azerbaijan, Zanjan and Kurdistan. West Azerbaijan

is an area of 37,059 square km or 43,660 km<sup>2</sup> including Lake Urmia and is the thirteenth largest province in Iran. Based on a census conducted in 2006, the population of this province accounted for around 4 percent of the country's total population, 2,873,459 people across almost 200,000 households. The province has an annual growth rate of 2.0% and an average of 3.27 people per household. This area has a variety of topography and a unique ecosystem. Part of the province is mountainous and Lake Urmia, one of the world's largest salt lakes, lies to the east of Urmia city. The province has unique natural ecosystems comprising different vegetation at different topographical levels, with forests and pastures the most significant.

The area is largely influenced by cold air from Russia to the north and by the Mediterranean Sea from Turkey in the west, which results in Mediterranean weather for most of the year and cold winters. In February the temperature reaches 5-10 degrees at night but in the daytime, it increases to 10-12 degrees. In July the temperature fluctuates from 15 degrees in the night to 35 degrees in the daytime.

The majority of West Azerbaijan's population are Azerbaijanis who speak Turkish Azeri, representing 76.2 percent of the population, while 21.7% percent are Kurds who speak Kurdish. There are also Persian, Assyrian, and Armenian minorities. Most of the population can speak the official language of Iran, Persian, in addition to their own native tongue. However, according to the Federal Research Division of the Library of Congress, ethnic Azeris form around 40% of the population of Urmia region. The location of the sample site is shown in the picture.

The selected area has a multi-cultural, multi religious population that includes Shia Muslims, Sunni Muslims, Christians (Catholics, Protestants and Nestorians), Assyrians, Armenian

Orthodox, Jews, Bahá'ís and Sufis. The Christian history of Urmia is well preserved and is especially evident in the city's many churches and cathedrals.

West Azerbaijan state is strategically located on the border with Iraq, Turkey and the Azerbaijani nation and therefore has excellent potential for trade and tourism. The only Iran-Turkey gas pipeline passes through the region for export and transit of oil and gas to Europe. Urmia, as the capital of the state, is in the centre of an agricultural region and derives its agricultural water from the high mountains of the west of the region. Wheat, barley, apples, grapes and apricots are major crops in the area. Also, livestock is an important source of income for rural people in the area (Mohammadi et al., 2012).

In the industrial sector, this region, with a production capacity of approximately 5 million tons, is the main centre of cement production in Iran. With more than 50% of the total gold reserves identified in West Azerbaijan, the province is the country's leading source of gold. This province also has the country's third ranking mineral reserves in terms of diversity, after Khorasan and Semnan provinces. Mining activity in the province includes "granite, mica, talc, travertine, gold, refractory soil and minerals, salt, rock salt, gypsum and lime, dolomite, rhodium, silica, pozzolan, titan and phosphate" (Ghorbani, 2013).

The province is also one of the most important tourist centres in the country because of the mild climate and green plains, and has the world's largest salt-lake, as well as cultural and historical monuments. Lake Urmia, along with its approximately 102 islands, is protected as a national park by the Iranian Department of the Environment (Arzanlou et al., 2016).

Records of budget allocation over the past years show that West Azerbaijan province has never received more than 1.2 percent of the state budget, while 4 percent of Iran's population live in

this region. Studies show that the income of the people is close to 40 percent of the national average income(IRNA, 2018).

Despite having rich mineral and natural resources and a strategic geopolitical location, the West Azerbaijan region has always been plagued by high unemployment rates in recent years. Accordingly, the unemployment rate for the year 2016 was 13.3 percent, increasing to 13.9 percent in 2017(IRNA, 2018).

## **1. 10 Summary**

Poverty reduction always has been a macroeconomic target and one of the main targets of economists in different countries. It has been the main slogan of politicians and highlighted in many national, international and universal declarations. Using the multidimensional approach to measure poverty provides the basic requirements to design and implement poverty reduction strategies. The multidimensional poverty approach identifies the different deprivations experienced by different groups of people. Poverty-reduction policies can be implemented to target those deprivations and resources can be allocated to the appropriate dimensions and groups. Therefore, this study estimates the poverty levels using a multidimensional approach to measure the poverty amongst the households in the rural regions of Urmia in West Azerbaijan province in Iran based on primary data. For this purpose, a household survey of 378 households was conducted in five regions. A multi-stage sampling was used to select the households from the regions. Also, this study interviewed 21 respondents to achieve qualitative data. The Alkire-Foster method was adopted to measure the poverty. The method evaluates the poverty level through the three dimensions of health, education, and living standard, allocating ten related indicators to these. However, the present study has employed an additional

dimension of food security and has divided the standard of living dimension into three dimensions comprising housing quality, access to welfare services, and ownership of assets.

Iran's unique experience of facing revolution, war and universal sanctions since 1978 makes it a distinguished case study for any researcher. Various economic policies and even innovations have been applied by Iranian economists and governments to overcome all these barriers. In the past 40 years the post-revolution governments implemented different policies to reduce the poverty and tried to set strategies with the aim of improving the quality of life of the poor and enabling the poor to access basic services such as education and health. Despite the fact that the poverty rate has fluctuated over the years, it still remains one of the most challenging issues in Iran. Accordingly, this research aims to compute the multidimensional poverty level and estimate the multidimensional poverty level in the rural district of Urmia in the West Azerbaijan province of Iran.

In line with the research aims, the study tries to explore different deprivations experienced by the households in the rural district of Urmia, to calculate the percentage contribution of each dimension in multidimensional poverty, to investigate the extent of deprivation, using different cut-off levels to identify the poorest of the poor and to measure the degree of the deprivations in sub-groups within the area through the subgroups' decomposability.

This chapter has also briefly discussed Iran's economic situation from the time of the revolution to the present day. The researcher outlined the national economic growth trends, subsidy reforms, and economic conditions at the time of Iran and Iraq war. Inflation level was constantly in double digits following the revolution, due to multiple shocks and events affecting the economy, such as the war, oil prices, booms and crises, sanctions, and the subsidies-reform plan. Meanwhile, Iran has experienced a high level of unemployment, as the unemployment

percentages have remained in two digits for almost the entire period since the revolution of 1979. The unemployment rate for the year 2019 reached nearly 16.78 percent. In the area of the study, West Azerbaijan, the situation seems worse than in other areas in the country. Despite having rich mineral and natural resources and a strategic geopolitical location, the West Azerbaijan region has always been plagued by high unemployment rates in recent years.

After the revolution the regime stopped the modernisation programme and set out strategies to achieve a self-sufficient economy and economic independence. Post-revolution governments have followed a series of five-year social, cultural, and economic development plans.

Currently, the Iranian economy is facing a currency crisis and inflation in prices in various markets. This upheaval has been the cause of negative economic growth in Iran in recent years. The challenges have been so strong that even the government has been unable to help the economy.

## **Chapter 2: Theoretical Framework**

### **2.1 Introduction**

This chapter provides a review of literature in line with the research objectives and is structured as follows. First, the history of poverty research is reviewed, and theoretical concepts of poverty are clarified. Contributions to multidimension poverty literature that are discussed as well as various possible approaches to poverty measurement. Additionally, this chapter considers Fuzzy Set theory, the distance function approach and axiomatic approaches to poverty measurement. The aim of this chapter is to enable the development of a theoretical framework for linking related literature to multidimensional poverty.

### **2.2 The history of poverty research**

Until the 1960s economic growth was regarded as the main yardstick for development measurement in developing countries and GNP was the single indicator of development (Hicks & Streeten, 1979; Streeten & Burki, 1978). According to Hicks and Streeten (1979) described the accepted thinking as follows: On the one hand, economic growth would naturally ‘trickle down’ to the people at the bottom; on the other, where this failed to happen, government would step in to address the situation. However, at the same time, there was some pessimism expressed in the literature. Hicks & Streeten (1978) argued that although some social indicators such as literacy and infant mortality improved as a result of economic growth, it did not always work in favour of the poor. Moreover, governments took no significant action to correct the inequalities. They provided some evidence indicating that economic growth had different impacts on economies in the 1960s. They noted that whereas the economic growth benefitted the poor in countries with small populations, such as Taiwan and Singapore, in the countries with large populations, such as Brazil, the real income per head of the poorer groups was

increased by only 1%, while the richer groups enjoyed 30% higher incomes. Also, they noted that the standard of living declined in countries which were experiencing lower levels of growth, like India and Pakistan. This unevenness in the benefits received from growth, between the poor and the rich, resulted in inequality of the distribution of income and wealth in societies (Streeten & Burki, 1978).

From the early years of the 1960s, the deficiencies of economic growth as a single indicator of development have been taken into account. Many studies attempted to make adjustments and improvements to this indicator. Among others, Kravis et al. (1976, 1978) adjusted the measuring of GNP at the common price level for all countries using purchasing-power parities. Nevertheless, Hicks & Streeten (1979) argued that different countries' GNP cannot be compared even with support of this adjustment because the expenditure patterns and shares differ between countries. For instance, people in some countries spend more than those in others on their clothes and shelter due to the climate conditions.

Nordhaus and Tobin (1972) attempted to adjust the GNP to a measure of 'economic welfare' by subtracting some expenditures such as defence, congestion, crime, etc. and adding the value of some expenditures on non-market activities such as leisure. Denilson (1971), among others, criticised this approach and argued that GNP itself could not possibly measure people's welfare. Ahluwalia and Chenery (1974) remarked that GNP is an imperfect yardstick for evaluating development, because it is mostly weighted towards the greater income share of the rich. As Hicks & Streeten noted, "A growth of 10% in incomes of the upper 20% will have more impact on the aggregate growth rate than 10% growth in incomes of the lower 20%" (Hicks & Streeten, 1979, p. 569). Meanwhile, Ahluwalia et al. (1979) suggested applying the income distribution approach by allocating more weight to the income growth for the lower

40% or using the absolute income level of the lower 40% of the poorest as a solution(Ahluwalia et al., 1979). However, despite involving the level of living of the poor in development strategies based on the GNP, the approach faced many shortcomings, including its complete reliance on people's income or consumption level and its neglect of the distribution of food and other requirements within the household. Poverty lines do not determine how far poor households are falling below the poverty line. The approach also ignores the distribution of food between different households below the line. To overcome this problem, Sen (1973) combined the poverty line with the income-distribution approach and suggested the weighting of households based on exactly how far they fell below the poverty lines. However, many limitations still accompanied his approach. Predetermination of the food basket and counting of the consumed calories were not sufficiently accurate, as households could have different nutritional needs based on the members' age, sex, body weight, and other factors. Furthermore, even households identified as above the poverty line may be unable to purchase basic goods and services like education and health that are controlled and insufficiently supplied by the public sector (Hicks & Streeten, 1979).

Hicks & Streeten (1979) concluded that measuring the basic needs through the income-based measures was inadequate and insufficient. They classified 'social indicators' as alternatives, complements, or supplements to the GNP which attempt "to measure the development of health, nutrition, housing, income distribution, as well as other aspects of cultural and social development"(Hicks & Streeten, 1979, p. 570).

Therefore, the focus of development strategies was transferred from growth to basic needs (BN) strategies and BN was named as the main approach towards development. As Streeten

(1979) stated: “The purpose of development is to provide opportunities for the full physical, mental, and social development of the individual” (Hicks & Streeten, 1979, p. 136).

In the 1970s, the International Labour Organisation (ILO) and UN made BN part of the global agenda. The idea of the BN as a development strategy was born at the 1976 conference of the ILO, where employment and human needs were identified as the core elements of development strategies. BN was defined as a minimum set of standard of living requirements. According to the ILO, these requirements included private consumption (food, clothing, and shelter) and basic living services (health care, education, public transport, safe water, and sanitation), as well as employment and participation in decision-making (Emmerij, 2010). This development strategy “effectively combined economic growth, productive employment creation, and basic needs. At the core of the strategy was a shift to a pattern of economic growth that is more employment-intensive, more equitable, and more effective in the battle against poverty”(Emmerij, 2010, p. 2). It emphasised the redistribution of growth, including the redistribution of assets, investments, and stock to support the poor to meet basic needs by improving their skills and productivity and raising their demand for goods and service. Burki and Haq (1981) explained the definition, discussing that productivity was the only way to eliminate absolute poverty permanently and noting that increasing productivity should be accompanied by other elements. First, public services like education and health care are required, in addition to land, machines, and credits to achieve a higher level of productivity. Second, whereas many people fail to own physical assets or land, education and health care can develop the human resources which are essential for productivity. Third, the expansion of public goods is essential to human beings’ development, as monetary markets sometimes do not exist for some of these goods. Finally, some support for the poorest group is necessary from

governments in the short term, as it takes a long time to increase the productivity of the poor (Burki & Haq, 1981).

In the early 1970s the World Bank published a report titled *Redistribution with Growth*. The report aroused concerns regarding the inadequacy of economic growth to reduce the poverty. They proposed the idea of replacing the ‘welfare-based measures’ related to the GDP to evaluate developmental success. In this regard, they wanted the policymakers and governments to measure the development through social attitudes, employment, and income distribution by using ‘distributional weights’ to assign more weight to the income of the poor. The report mentioned that investment in the poor groups, such as by providing education, public facilities, and land reforms, can lead to higher productivity. The report further stated that there might be a short-term reduction in income growth among the non-poor groups as a result of redirecting investment toward the poor in the short term. However, in the long run, the income for all groups would rise as the members of the poor groups became more productive (Ahluwalia et al., 1979).

Streeten and Burki (1978) mentioned that the ILO and the World Bank strategies initiated and emphasised employment and redistribution with growth, commenting that this meant “major conceptual advances on development analysis and policy but they have not gone far enough in attacking absolute poverty directly” (Streeten & Burki, 1978, p. 411).

From the early 1980s the attention shifted back from basic needs to economic growth and income, reinstated as a main indicator of the development measure (Laderchi et al., 2003). In that decade, despite the dominance of the monetary element in poverty debates, several non-monetary studies were published. Chambers (1983) proposed the concept of the ‘deprivation

trap' and declared that powerlessness, poverty, physical weakness, isolation, and vulnerability could trap people in a situation of disadvantage, which he termed as 'clusters of disadvantages'. He named these clusters as dimensions of poverty. Also, the World Bank development report of 1980 categorised nutrition, education, and health as factors of well-being (Robert, 1983).

In the 1990s, the works of Amartya Sen and the annual human development report of the UNDP led the debates and shifted attention to both the economic and non-economic sides of poverty, termed 'income poverty' and 'human poverty'(Cobbinah et al., 2013).

### **2.2.1 From growth to basic needs**

The first human development report was published by the UN in 1990 and written by a team of experts led by Mahbub ul Haq who contributed his ideas on development strategies. He discussed that political actions rather than theoretical debates were needed to achieve a difference in people's lives. The report placed the people at the core of the development strategies, the first sentence of the report stating: "People are the wealth of nations." The report determined that the ultimate goal of development is the "process of enlarging people's choices" and in order to live long, healthy, and creative lives, people require an environment that permits them to do this. "While this may seem to be a truism, it is a fact that is frequently overlooked due to the current obsession with amassing material goods and monetary riches"(World Bank 1990, p. 19). The report introduced the human development approach and human development index (HDI) which consisted of three basic elements: being healthy, being educated, and access to the resources to have a decent life(McGillivray & White, 1993). The approach assumed economic growth to be a means to development rather than an end. According to the report, the approach is about improving the quality of human life itself, rather than merely enriching the economy in which people exist. For instance, health and education are weighted the same

as income to evaluate the development strategies. Also, the approach focused on people and their choices and freedom. The most critical choices were identified as being educated, having political freedom, human rights, and self-respect. This report informed and supported governments and policymakers in understanding poverty and directed their attention to the fact that poverty is multidimensional in nature rather than depending on income level only (*World Bank* 1990).

Also, during the 1990s, human development and literature concerning people's well-being were hugely influenced by Amartya Sen's studies. Sen has played a remarkable role in redirecting the attention of development studies away from growth and toward human well-being and freedom. He diverted attention to poverty away from 'means'—such as having income to buy food—to 'ends', such as being healthy or being well-nourished (Clark, 2005; Sumner, 2007).

Sen criticised the dominant income-based and utility-based approaches from the perspective of valuing human beings and their freedom in the evaluation of poverty. He argued that peoples' well-being consists of a wide range of conditions, such as being healthy, being well-nourished, being educated, and so on. He noted that development is linked to people's quality of life, whereas poverty is the deprivation of the capability to have a good life, and development is the expansion of that capability (Sen, 1988). Sen's capability approach will be discussed in section 2.3 of this chapter.

From the mid-1990s and early 2000s, international agencies started to recognise the multidimensional nature of poverty. World Bank development reports of the 2000s viewed poverty as deprivation in multiple dimensions of human well-being. In 1997, the Human

Poverty Index (HPI) was introduced by the UN as complementary to the HDI and it revealed a better view of the quality of life in the developing and developed countries(UNDP, 2010).

The main event of the early 2000s was the announcement of the MDGs by the UN, eight goals with the aim of improving human development across the world by 2015. The MDGs focused on the economic side of poverty, with the first goal being to “eradicate extreme poverty and hunger” in absolute terms. Also, it included other sociocultural indicators of poverty, such as education, health, and participation. However, new development goals, named Sustainable Development Goals (SDGs) and released by the UN in September 2015, considered poverty as a multidimensional concept and here the first goal was to “end poverty in all forms of it”(UNDP, 2015).

In 2010, the MPI, consisting of three dimensions and ten indicators, was introduced by the UNDP in cooperation with the OPHI as a replacement for the HDI (Alkire & Santos, 2010). Since 2010, the MPI has been employed by governments in such as Brazil and Colombia to measure the national multidimensional poverty. Table 2.1 presents an overview of poverty research from 1960–2000.

**Table 2.1: The evolution of poverty meaning and measurement, 1960s–2000s**

Period	Focus	Indicator for poverty measurement
1960s	Economic growth	Growth per capita income (GDP)
1970s	Basic needs and economic growth	GDP per capita growth + basic goods and services such as health, education, and shelter
1980s	Economic growth	Growth per capita income (GDP)
1990s	Human development (inc. economic)	UNDP Human Development Indices
2000s	Multidimensional ‘freedom’	Millennium Development Goals

## **2.3 Concepts of poverty**

The core challenges in poverty analysis relate to how to define poverty and how to identify the poor people. An excessive range of definitions has been offered by researchers and experts. Despite the fact that they have different views on poverty, there is a consensus of opinion regarding the linkage of poverty with inability to achieve a decent living condition (Alcock & Campling, 1997). The World Bank (2001) stated that poverty is the lack of or the inability to achieve a socially acceptable standard of living. Meanwhile, academics (Alkire & Foster, 2011a, 2011b; Ravallion, 2011) and also international agencies such as the UNDP (*World Bank* 1990) and the World Bank (*World Bank*, 2000) have agreed that poverty is a multidimensional phenomenon. However, debate still remains as to how to measure poverty and which dimensions should be included in the definition and measurement (Alkire et al., 2017). There is no conventional agreement on the dimensions that should be included in multidimensional poverty analysis. It has discussed that some dimensions, like education, health, housing, safety, income, literacy, sanitation, and clean water, have more effect on reducing poverty when compared with others (Qizilbash, 2003). The following section will discuss the definition and measurement of both unidimensional and multidimensional concepts of poverty.

### **2.3.1 Unidimensional poverty**

Poverty lines can be determined either in absolute or relative terms. Both concepts have the same aims although they are describing those aims by different means. An absolute approach takes into account the physical needs for survival, while the relative poverty line considers the distribution of the income and compares the income with the specified proportion of median incomes of the population. It is important to note that the determination of the poverty line depends on the social, cultural, and economic patterns among the regions and

countries(Spicker, 1990). An absolute poverty line is mostly employed by developing countries to measure poverty at the national level. Also, it is used by the World Bank to measure the level of global poverty, while the relative poverty line has been adopted by the European Union and applied to examine relative poverty in European countries(Atkinson, 1998).

Income-based monetary poverty measurements are criticised in literature. In 1995, the National Research Council of the US reported that income was not providing an accurate view of poverty over time or among subgroups of the population. They suggested using the consumption level rather than income level to measure absolute poverty(*National Research Council, 1995*). Meyer and Sullivan mentioned some of the advantages of using consumption to measure absolute poverty. First, some households would retain their income on savings and would limit their consumption expenditure. Second, people prefer to report their expenditure rather than their income. Third, people tend to under-report their income level, especially if they are self-employed. At the same time, they have no incentives to under-report consumption. Fourth, surveys do not record the money transferred from family or friends to poor people. Fifth, income-based measurement does not consider illegal income, such as the selling of illegal drugs. Authors who compared income and consumption poverty among single-mother-headed families during 1991 to 1998 in the USA found that the poorest groups among these families spent and consumed about two times more than their income. Their findings confirmed the under-reporting of income and other errors of measurements in income-based calculations of poverty(Meyer & Sullivan, 2003).

Despite the advantages of the consumption-based monetary concept, many disadvantages in using the unidimensional approach have been noted. Sen argued that monetary resources are insufficient or inaccurate for measuring people's prosperity, despite the fact that it is an

important tool to evaluate the well-being of people. According to Sen (1992), some of the drawbacks in the unidimensional approach are, first, that people's consumption patterns differ, so that a poverty line based on the income or consumption is unable to show the satisfactory level for different people in terms of their basic needs. Second, ageing affects the ability of people to have income. Third, the presence of people of different age, sex, and individual preferences in the household increases the complexity of the income approach, as it is unable to transfer the income into their different capabilities. Fourth, unequal distribution of income in favour of some people in the household cannot reflect the income deprivation of the forgotten members (Sen, 1992). In addition, the monetary approach is criticised for its ignoring of indicators other than income, such as public goods and basic social services like health and education, in the poverty analysis. For example, whereas a person living above the poverty line is considered to be non-poor, he/she may still be deprived in terms of education, health, etc (Anand & Sen, 1997). Therefore, the main limitation of unidimensional poverty measurements derives from assigning the whole weight to the income or expenditure dimension and ignoring the other potential dimensions (Maasoumi & Lugo, 2008).

Alkire and Foster (2011) stated that unidimensional poverty measurement does not provide a sufficient policy guideline for poverty reduction as it ignores the other dimensions of poverty. Also, it is argued that markets sometimes do not exist for wares such as public goods. Further, households and the individuals within will have different capacity to transfer the income into other capabilities. For example, the earnings of the head of a household may be above the poverty line but he/she might spend most of the money on alcohol rather than on the basic needs of the family. This household will be considered as non-poor in the monetary poverty measurements but obviously some members in the household will be deprived of their basic

needs(Alkire et al., 2017). For the aforementioned reasons, dimensions other than income or expenditure also have to be taken into account in poverty measurements.

Unidimensional measurements of poverty are linked to the monetary or unidimensional approach. In this approach, poverty is described as a lack of the financial resources to have an acceptable standard living. People are considered as poor if their income level or consumption level do not meet the threshold level or poverty-line requirements such as basic nutrition, housing, and clothing. As stated previously, there are three different poverty lines, namely the absolute, relative, and subjective (Ravallion, 1994). The absolute poverty line refers to the cost of the minimum and basic needs in a basket that satisfies individual or household basic needs. The relative poverty line refers to the mean or median of the aggregate income of the population (Bourguignon, 2004). The subjective poverty line is set on the basis of people's perspective concerning their situation in society and refers to the subjective judgement of people about their life in terms of their access to a reasonable basic standard of living (Ravallion, 1994).

There is a rather wide range of monetary measurements of poverty. This study will indicate two of the commonly used methods, namely the Foster-Greer-Thorbecke (FGT) family of measures and the Sen Index. These two methods are related to the Alkire-Foster method (2017) which will be applied in this study.

### **2.3.2 Theoretical concepts of multidimensional poverty**

Sen (1976) categorised poverty analysis into two stages: 1. The identification of the poor, and 2. Aggregation of the poverty into an index. The first stage is related to the frameworks and conceptual theories of poverty analysis and the second stage is related to the methodologies used to measure it.

Poverty has always been the core focus of the literature regarding welfare and development economies. For a long time two different ideas through two distinct approaches were employed in the theoretical and methodological analyses of the poverty. On the one hand, the ‘Social Welfare Function’ approach, introduced by Atkinson (1970) in his pioneering article, became the leading framework for evaluating well-being and poverty from both a theoretical and methodological point of view. Since then, the approach has been expanded in economic welfare studies to measure social welfare which is related to the inequality. The multidimensional poverty literature in the welfare approach began with the works of Kolm (1977), which analysed the social welfare function properties and ranked the individuals by a set of social aspects in a given society. Atkinson and Bourguignon (1982) assessed and compared the inequality in two dimensions of income and life expectancy and constructed a ranking of multivariate distributions. Later, Atkinson and Bourguignon (1987) introduced the ‘sequential dominance approach’. This approach-imposed assumptions on social preferences and may be considered weaker in comparison with the standard approach, which adjusts the income by equivalence scales. The sequential dominance approach specifies by how much one family is needier than another, while the dominance approach requires only the ranking of families in terms of needs(Atkinson, 1987).

Deaton (1997) adopted the approach to measure the inequality and income/consumption distribution in developing countries. He defined the function as “a statistical ‘aggregator’ that turns a distribution into a single number that provides an overall judgment on that distribution and that forces us to think coherently about welfare and its distribution”(Deaton, 1997, p. 135).

The second approach is the ‘counting approach’, which represents the poverty level by the number of dimensions in which people are poor. Deaton (1997) argued that a social welfare

function can be adopted to measure the welfare of the poor as a “negative measure of poverty”. However, in practice the social welfare functions are designed to guide economic policies—not to count and diagnose the extent of the poverty. Atkinson noted that empirical studies in the multidimensional deprivation analysis mostly adopted the counting approach rather than the social welfare function approach (Atkinson, 2003). For these reasons, this study will focus on the counting approach. In the following subsection, the counting approach will be introduced and then the most-known frameworks which conceptualised this approach will be discussed.

### **2.3.3 Counting approach**

Counting approach is an approach used to identify the poor (Alkire et al., 2015). Atkinson (2003) referred to it as the counting of the number of dimensions in which the poor suffer. As Alkire et al. argued (2011), a counting approach to identify the poor can be broken down into the following steps:

Defining the set of relevant indicators

Defining a deprivation threshold or cut-off for each indicator

Assigning the deprivation score (1 if individual/household is deprived and 0 if individual/household is not deprived) to each individual and household in each indicator

Allocating weight to each indicator

Determining the poverty score by counting the number of deprivations or weighting according to the sum of weighted deprivations, setting a threshold score which determines whether the person or household is multidimensionally poor or not.

Most of these steps are involved with normative judgements and choices which are concerned with many conceptual frameworks and approaches to analyse the multidimensional poverty. The basic needs and capability approaches are, among others, commonly discussed and used approaches. These approaches are discussed in the next section.

### **2.3.3.1 Basic needs**

The idea of meeting basic human needs was widely accepted as a replacement to the income approach and became the main development strategy in the 1970s in the development plans of international communities. During the 1950s and 1960s, there was a universal agreement that growth is the main influence enhancing development. It was assumed that market forces would be sufficient to spread the benefits of economic growth, or that government would take corrective action to spread the growth throughout society, but in practice the economic growth did not work in favour of the poor, and neither did governments take any action to correct the situation, except in a few cases (Streeten, 1981). From the late 1960s, attention turned away from the growth. The ILO attempted to create more job opportunities by introducing employment missions in some countries. However, some criticised such focus on employment and promoting jobs, claiming that employment and unemployment do not make sense regarding alleviating poverty in the poorest developing countries, where livelihood takes priority over wages. Streeten et al. (1981) used the term “labour utilisation”, claiming that the main issue was the inclusion in the workforce of “poor workers”, earning little money for working long hours in arduous and unproductive types of employment, or women who sometimes worked for nothing. They described three main categories of labour utilisation: consumption or level of living, attitudes, and institutions, for enhancing human resources in

developing countries, with level of living subsequently becoming a main aspect of the “basic needs approach”(Streeten, 1981, p. 13)

In 1974, the World Bank published *Redistribution with Growth*, which mainly focused on the relations between growth and distribution. The report clearly revealed that in the poorest developing countries growth is necessary to reduce poverty, but at the same time the inequality is reinforced as a result of distribution of income, assets, and power. In the countries in which growth was accompanied by unequal distribution of assets and power, income redistribution and poverty eradication became more difficult. An important question is raised in this condition regarding which objective is more important: improving the inequality or reducing the poverty? Streeten (1981) argued that in low-level-living societies, poverty reduction and meeting the basic needs are more important, as equality is not a noticeable objective for many people.

Streeten (1981) named four different interpretations of basic needs:

Basic needs may be defined as a specified number of necessities, such as food, shelter, clothes, water, and sanitation, which are necessary to experience physical well-being,

They could be interpreted subjectively as ‘the satisfaction of consumers wants as perceived by the consumers themselves’ rather than by some experts. (This interpretation requires the condition that people should be provided opportunities to earn income and buy the basic requirements they need.)

Basic needs may have an interventionist interpretation. (According to this interpretation, the authorities design the public goods and services, such as education, water, and sanitation.)

Basic needs can be interpreted in terms of non-economic aspects and taking into account the individual or group of participants.

Based on these interpretations, the basic needs approach can be defined as “effort to enable people throughout society to achieve their full potential, physically, mentally, and socially. This approach aims to meet the needs of the poor (e.g. nutritional needs) in as short a time as possible”(Streeten, 1981, pp. 33-34). In general, the approach proposed providing access to resources to enable people to have a decent life rather than gain material resources. It is important to note that resources in the basic needs approach refer to life opportunities rather than merely monetary sources. In 1971, Rawls introduced a list of basic needs and rights, called ‘primary goods’. He argued that equality in distribution of income and having political freedom are prerequisites to access those primary goods (Rawls, 2009). Since then, literature on the basic needs approach has adopted a long list of necessities and rights, relating to survival (food, health, and water), empowerment (education and participation in the decision-making), and security (housing and employment) (Rippin, 2009).

Although the basic needs provided a rather more effective picture of the poverty concept, the approach has its imperfections. The main drawback of the approach is that the predetermined basic necessities are decided by experts or policymakers and the individual’s preferences and priorities are ignored(Sen, 1976). To overcome this drawback, Sen introduced his conceptual framework that was named the ‘capability approach’.

### **2.3.3.2 Capability approach**

The capability approach was pioneered by Amartya Sen (1985, 1992, 1999) and later developed by Martha Nussbaum (1988, 1995, 2002) and other scholars. It is a conceptual framework to

evaluate a range of normative exercises that include different aspects of individual well-being including poverty, inequality, and so forth. It is important to note that the capability approach is not only a theory to describe poverty or well-being, but also in fact provides a framework to assess and conceptualise these aspects, which is why it is called the “capability approach” instead of the “capability theory”(Robeyns, 2016). The approach has since its emergence been employed in empirical studies and eventually became the conceptual framework of the UN’s Human Development Reports (UNDP, 2010).

The capability approach drew the attention away from the material means (income and wealth) or subjective means of well-being (happiness) toward people’s ‘doings and beings’ (human functioning) and their opportunities to achieve these behaviours (capabilities). The capability approach also shifted the focus from ‘the means of living’, such as income or consumption, to the ends or “actual opportunities a person has”, namely their functioning and capabilities (Hick, 2012, p. 2). Functioning denotes various doings and beings as different states of human being, such as being healthy, being educated, being safe, having a good job, being respected, being part of the community, or activities people can undertake to make their life valuable, like travelling or voting in an election. Capabilities refer to the real and valuable opportunities or freedoms to achieve functioning. As Sen argued, functioning refers to achievement, while capability is the ability to achieve. Functioning is, somehow, more closely linked with living conditions, since it comprises the various elements of living conditions. Capabilities, on the other hand, are positive ideas relating to freedom: people’s true freedom in terms of their life chances(Sen, 1987).

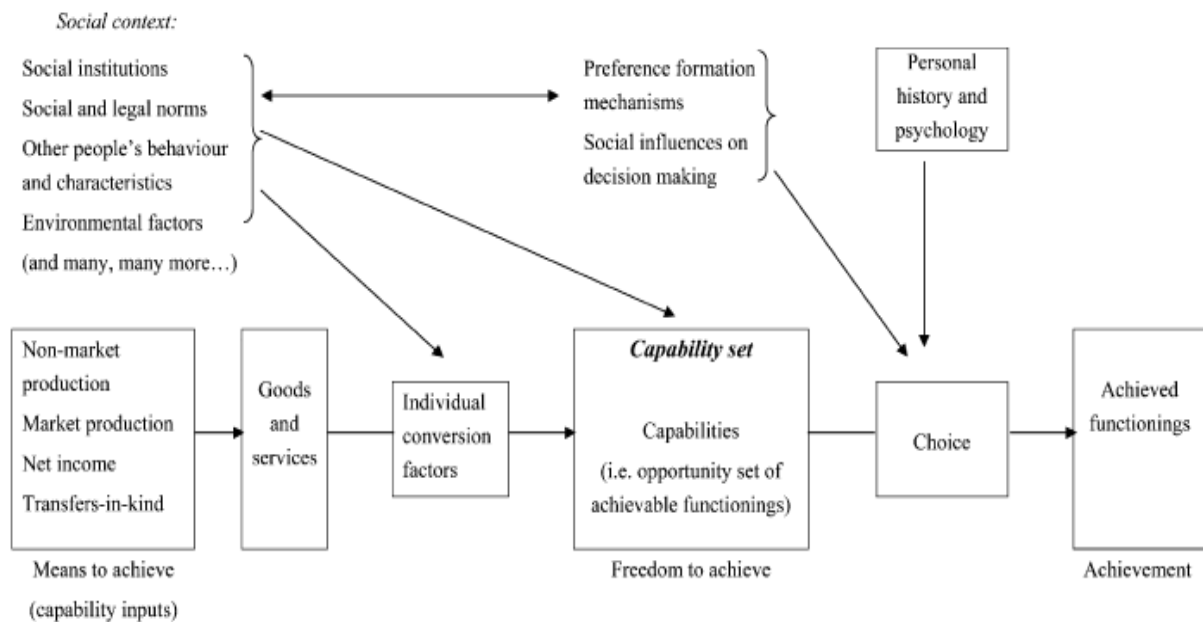
The capability approach has made a clear analytical distinction between the means and the ends, mainly focusing on the ends of being and doing rather than the means. The ultimate ends

in the capability approach are people's capabilities. However, making the ends a priority does not mean that the capability approach fails to value means like financial or monetary resources. The work of Drèze and Sen regarding development in India stressed that the means of achieving the desired end of well-being, such as food or monetary resources, remain important to the capability approach (Drèze & Sen, 2013).

Also, the approach claims that people have different abilities to convert the means into the capabilities as opportunities, with functioning as the outcome. These differences in individuals' abilities are reflected by the 'conversion factors' in the capability approach. There are three main conversion factors which influence how an individual can convert the goods and services characteristics into the being, doing, or achievement of functioning—"personal conversion factors" such as sex and physical conditions; "social conversion factors" like gender rules, social norms, discriminations, etc.; and "environmental conversion factors" such as climate or weather conditions (Sen, 1992). The capability approach provides an analytical distinction in terms of the conversion of the characteristics of monetary and non-monetary goods and services into functioning and capabilities. As Sen (1992) argues, people are interested not in the shape or colour of the bicycle but the fact that it can take a person to somewhere faster than by walking. In this case, bicycles are seen as goods that enable the functioning of mobility, to move faster than walking. A disability, not having learned how to ride a bicycle, government policies, or social norms limiting whether women may ride a bicycle, or lack of paved roads on which to ride a bicycle all limit the ability to convert the characteristics of the bicycle into the functioning of mobility. So, possession of a bicycle or car does not guarantee that functioning of mobility is being achieved by the owner. Therefore, more information on the conversion factors and a person's living condition is needed.

The other key element of the capability approach is that it takes account of human diversity, which in many ways incorporates the wide range of dimensions related to the functioning and capabilities. These dimensions vary from the quality and quantity of social relations to gender equalities. They relate to each individual’s personal and socio-environmental conversion factors, including disabilities, gender, race, or class (Robeyns, 2016).

There is a key point to note, namely, selection of functioning should always be independent from the personal references. Sen reported that poor people have limited expectations because they tend to tolerate the life they are used to living. Also, it is important to note that the capability approach consists of two types of functioning: potentially achievable and achieved functioning. Therefore, a person’s capability set is an opportunity set of potential functioning. The figure shows the relations between functioning, capabilities, and achievements (Sen, 1992).



**Figure 2.1: Personal capability in relation to social and personal context**

Source: (Robeyns, 2016)

Moreover, achievements in functioning are related not only to monetary and non-monetary possessions, but also to the possibility of having freedom to access and use these resources. As Sen explained, two people with the same achievements regarding other functioning may nonetheless not experience the same degree of well-being if one has otherwise limited choices in terms of functioning compared to the other person. The freedom to make choices to live as we wish may be a better way of defining functional achievement (Sen, 1988). From Sen's standpoint, having freedom is not only being capable of choosing to lead a decent life, but also involves the freedom of choosing or not choosing a particular life. Sen clarified this in more detail by giving an example of two individuals who were both suffering from lack of food; however, the freedom to avoid starving was massively different between these two individuals. The first person was fasting voluntarily and the second one was starving due to an undesired lack of food. The first person had freedom to choose not to starve but the second person was forced to starve through not having the freedom to choose not to starve (Sen, 1988). These examples indicate the importance of having the freedom to choose how to live and what kind of life to lead. If they have this freedom, people can live the life they would like to live and be the person they wish to be (Hick, 2012).

Also, in real life, in many cases, people with the same capability sets achieve different functioning as they have contrasting ideas of a good life, which are affected by differences in religion, family, culture, and community background.

Martha Nussbaum developed Sen's capability approach and distinguished her version in several ways. She endorsed a list of ten concerted capabilities and revised them several times to produce the following list: life, physical health, bodily integrity, sense, imagination and thoughts, emotions, practical reason, affiliation, other species, and play and control (Nussbaum,

2000). One of her main contributions is the suggestion of three different capabilities: ‘basic capabilities’, referring to having real opportunities to do some basic things which are vital for survival and to avoid poverty; ‘internal capabilities’, referring to the state of the person which enables him/her to utilise a capability if the external constraints allow it; and ‘combined capabilities’, consisting of internal capability and external provisions which enable a person to perform a capability.

### **2.3.4 Multidimensional poverty measurements**

Although there is agreement on the definition of poverty as a multidimensional concept, there is less agreement on many of its constituent aspects, such as the number of dimensions in which a person needs to be deprived to be considered as ‘poor’. Also, the aggregation of poverty into one index still remains more challengeable (Maasoumi & Lugo, 2008). Sen argued that poverty measurements should follow two steps, namely identifying the poor and aggregation of the poverty information (Sen, 1976).

Many methodologies have been employed to measure the multidimensional poverty. This section will briefly discuss some of the common methods, including the Fuzzy Set method, the distance function method, and the axiomatic method.

#### **2.3.4.1 Fuzzy Set theory**

The ‘fuzzy set’ theory was first introduced by Zadeh (1956). Based on this theory, some classes of objects can be categorised in a given set for certain, while some others cannot be categorised certainly in a given set. In other words, there is not a clear cut-off point to categorise the objects. In this case, the uncertain objects will belong to the ‘fuzzy’ subset. The fuzzy set concept

provides the possibility to deal with a situation in which there are no clear criteria upon which to assign or not assign an object in a certain set (Miceli, 1998).

In 1990, Cerioli and Zani attempted to employ the fuzzy set concept in multidimensional poverty measurement. This approach was applied to identify the poor as different criteria can represent different views on poverty. A person could be considered as poor according to one criterion of a multidimensional view of poverty, while based on other criteria the same person could be categorised as not poor. Moreover, it may be easy to consider a person as poor if the level of deprivation, based on a given indicator, is enough to categorise him or her into the poor group, while some people cannot be categorised as poor or not poor in such a certain way. Determining the poverty line during poverty evaluation needs arbitrary intervention, as the basic requirements for standard of life vary between the poor and rich (Mack & Lansley, 1985). Sen suggested the use of fuzzy set in poverty and well-being evaluation, as he believed that the poverty and well-being concepts could be indistinct and unclear (Sen, 1990).

The fuzzy set approach would assign various degrees of membership which would determine whether a person belonged or did not belong to the poverty set.

Let  $X$  be a set and  $x$  be the element of the  $X$  set ( $x \in X$ ),

Let  $A$  be a fuzzy subset of  $X$  ( $A \in X$ ) which is the set of the couples of:

$$A = \{x, \gamma_A(x)\}$$

The fuzzy subset  $A$  of  $X$  is determined by the membership function of  $\gamma_A(x)$  valued in the interval of  $[0,1]$ .

The value of  $\gamma_A(x)$  indicates the membership degree of  $x$  to  $A$ .

Applied to multidimensional poverty,  $X$  is the set of the individuals  $i. i = (1,2 \dots n)$  and  $A$  is the set of poor people.

Where  $\gamma_A(x) = 1$  indicates that  $x$  completely belongs to  $A$ . In the case of poverty, the person is definitely poor.

Where  $\gamma_A(x) = 0$ , it is indicated that  $x$  does not belong to  $A$ . In the case of poverty, the person is definitely not poor.

$$\gamma_A(x) = \begin{cases} 1 & (x \in X) \\ 0, & (x \notin A) \end{cases}$$

Where  $0 < \gamma_A(x) < 1$ , then  $x$  partly belongs to  $A$ . In the case of poverty, the person partially belongs to the poor set. Membership function determines the appropriate set of conditions (including two extreme condition of 0 and 1), allocates an associated degree of hardship to them, and assigns a score to them to identify their respective importance.

The fuzzy set concept has some drawbacks; first, personal judgement and opinions of researchers or experts are involved in defining the membership function and membership degree; second, the method does not have any solution for aggregating the poverty into indices (Kakwani & Silber, 2008).

#### **2.3.4.2 The distance function approach**

The distance function approach borrows analytical methods from production economics—used to measure efficiency—to assess the individual’s well-being. The common feature in efficiency analysis and the well-being approach is the summarising of a series of information into one dimension. In production economics, one might analyse how to provide a set of outputs from

a certain amount of inputs. In contrast, well-being analyses attempt to aggregate the information of the poor into an overall index (Kakwani & Silber, 2008).

The distance function can be applied to either the inputs or the outputs.  $P(x)$  indicates the combination of the output vector of  $y_s (y \in R_{++}^M)$  that is produced by the input vector of  $x_s (x \in R_{++}^N)$ . Output distance function,  $D_{out}(x, y)$  measures the extent to which the output vector can be extended or increased by using a fixed amount of inputs ( $x$ ). The production possibility frontier (PPF) indicates the maximum state of this combination of output which can be produced by a certain amount of input. The output distance function measures the distances between each combination of the output vector and the PPF.

The distances between PPF and  $D_{out}(x, y) \leq 1$ , if  $y$  belongs to  $P(x)$ .

The distances between PPF and  $D_{out}(x, y) = 1$ , if  $y$  lies on the PPF.

Similarly,  $P(y)$  indicates the set of input vectors ( $x \in R_{++}^N$ ) which produce the output vector  $y (y \in R_{++}^M)$ . Input distance function,  $D_{in}(x, y)$  measures the extent to which the input vector can be proportionally contracted, given a fixed output vector. The isoquant  $IQ(y)$  renders the minimum amongst the input combination which can produce a certain output vector  $y$ . The distance function for a specific input combination measures the distance between this combination and  $IQ(y)$ .

The distances between PPF and  $D_{in}(x, y) \geq 1$ , if  $x$  belongs to  $P(y)$ .

The distances between PPF and  $D_{in}(x, y) = 1$ , if  $y$  lies on  $IQ(y)$ .

The method tends to measure the aggregation of the poverty before identifying the poor; in other words, it attempts to evaluate multidimensional poverty from a simple and income-based view(Kakwani & Silber, 2008).

#### **2.3.4.3 Axiomatic approaches to poverty measurement**

An axiomatic approach lines up some “socially desirable, ethically defensible axioms”, using these as the basis for judgements on poverty indices (Xu & Osberg, 2001). Many researchers have applied and developed this approach by focusing on the number of axioms to measure poverty (Alkire & Foster, 2011a; Bourguignon & Chakravarty, 2003; Tsui, 2002). This study will focus on the Alkire-Foster method of multidimensional poverty measurement.

#### **2.4 Alkire-Foster method**

Alkire and Foster constructed their methodology based on Foster-Greer-Thorbecke (FGT), Poverty measure and Sen’s capability approach. Sen had used the capability approach to demonstrate that poverty is deprivation of the basic capabilities, which deprives people of the freedom to choose some valuable functioning (doing and being), all of which are necessary for the human life(Alkire, 2005).

Two steps of identifying the poor and aggregating the poverty information are applied in the conceptual and methodological framework of poverty analysis in the Alkire-Foster method(Alkire & Foster, 2011a). At the first step, this model considers a set of deprivations, counts the number of deprivations and uses the dual cut-offs approach to define households as multidimensionally poor if their deprivation score falls below the predetermined threshold in each dimension(Bourguignon & Chakravarty, 2003). Moreover, the method extends the unidimensional FGT classes of poverty measurement to measure an overall deprivation score

in each dimension for each household, to aggregate the poverty into indices. The following section discusses these two stages in detail.

### 2.4.1 Identification of the poor

In unidimensional poverty measurement, the poor are identified by comparing the income or consumption of people with specific levels of the income, through what are called poverty lines. A person is considered to be poor if his or her income falls below the poverty line. However, identifying the poor is not straightforward in the multidimensional method.

This stage uses the dual cut off to distinguish the poor from the non-poor through the first cut off and then measures the intensity of deprivation through the second cut off.

In the multidimensional method, the information on the individuals and their related indicators is shown in the  $n \times d$  achievement matrix ( $X^{nd}$ ).

$$\begin{array}{c}
 \text{Indicators in one dimension} \\
 X = \begin{bmatrix} x_{11} & \cdot & x_{1j} & x_{1d} \\ \cdot & \cdot & \cdot & \cdot \\ x_{i1} & \cdot & x_{ij} & x_{id} \\ x_{n1} & \cdot & x_{nj} & x_{nd} \end{bmatrix} \text{Individuals}
 \end{array}$$

There are  $n$  individual and  $d$  indicators in total, where  $x_{ij}$  is the achievement of the individual  $i$  in the indicator  $j$ . The counting approach is applied to identify the poor people. It is important to note that indicators can be assigned by equal or different weights considering their importance and priorities. As mentioned before, Alkire and Foster assumed the same weights for all indicators in the dimensions (Alkire & Foster, 2011a).

Let  $z$  ( $Z_1 \dots \dots Z_d$ ) be the raw vector of the deprivation cut-offs in different indicators. This is the first cut-off (deprivation cut-off) in the AFM, called the deprivation cut-off. This cut-off

determines whether a household or person is deprived in a given dimension (Alkire & Foster, 2011b). For example,  $Z_j$  shows the deprivation predetermined threshold or cut-off in the indicator  $j$ . The deprivation matrix ( $Y$ ) for any particular dimension can be extracted from the achievement matrix based on the information in the  $Z$  vector and achievement matrix.

The possible outcomes for any  $Y_{ij}$  are:  $Y_{ij} = 0$  if  $Y_{ij} \leq Z_j$ ; in this case, if the individual  $i$  is considered to be deprived in the indicator  $j$ , while  $Y_{ij} = 1$ , if  $Y_{ij} > Z_j$ , then individual  $i$  is not deprived in the indicator  $j$ . When the deprivation matrix is constructed, a column vector of  $C$  can be extracted from it, showing the number of deprivations for each individual. For example,  $C_i$  indicates the number of the indicators for which individual  $i$  is deprived in a particular dimension. This outcome represents the deprivation score for individuals.

$$C = \begin{bmatrix} C_1 \\ C_2 \\ \vdots \\ C_d \end{bmatrix}$$

The second cut-off, known as  $K$  (poverty cut-off), is used to identify the poor through the identification function of  $\rho = (Y_i, Z)$ . When  $C_i \geq K$ , then  $\rho = (Y_i, Z) = 1$ , individual  $i$  is considered to be poor. Also, when  $C_i < K$ , then  $\rho = (Y_i, Z) = 0$ , individual  $i$  is considered to be non-poor.

The challenging part of the identification stage is determining the minimum number of  $K$ s or defining the number of deprivations a person should experience to be considered as poor. Duclos and others have introduced two methods to identify whether a person is multidimensionally poor. The first method is called the ‘union approach’. A person is

multidimensionally poor if he/she is deprived in only one dimension ( $K = 1$ ). The second method was named the 'intersection method'. A person is considered to be poor if he/she is deprived in all dimensions ( $K = d$ )(Duclos et al., 2006).

The union approach considers the importance of every dimension, but it does not allow any trade-off between dimensions. Deprivation in one dimension cannot be compensated by overachievements in any other dimensions. As a result, the approach will lead to exaggerated poverty rates. This method is used by the UNDP to examine poverty by extracting the human poverty index (HPI) from the three dimensions of health, education, and income(Basarir, 2008). Also, the intersection method leads to a lower estimate of the poverty rate, as the person needs to be deprived in all dimensions to be considered as poor (Rippin, 2010). A study by Alkire and Seth (2009) used these two approaches to measure the poverty among ten dimensions in India. Their result confirmed the imperfection of the union and intersection approaches. The union-approach results showed that 97 per cent of the people were poor and the intersection approach indicated that 0.07 per cent of people were poor(Alkire & Seth, 2009).

Alkire and Foster proposed the intermediate approach, which lies between these two extreme approaches. They suggested that the extent of the second cut-offs ( $K$ ) can lie anywhere between 1 and  $d$ . This number shows the minimum number of deprivations a person should experience to be categorised as multidimensionally poor in a particular dimension or all dimensions(Alkire & Foster, 2011a). Both HDI and OPHI adopted a poverty cut off of 1/3 or 33%. This means that households are regarded as multidimensionally poor if they are deprived in one third or 33% of the weighted indicators. Following Alkire-Foster method, this study selected as the poverty cut off 1/3 or 33%.

### 2.4.2 Poverty aggregation

The next step measures the multidimensional poverty indices. In this regard, first, the multidimensional poverty Headcount,  $H$ , and the Average Poverty Gap,  $A$ , are calculated and then the MPI is calculated as follows:  $MPI = H * A$ .

Based on Sen's capability approach, the second stage in poverty measurement is the aggregation of poverty information into overall indices. As Sen mentioned, the headcount ratio does not satisfy important axioms such as monotonicity and transfer axioms.

Let  $qk$  be the number of poor people who are identified in the first stage and  $n$  represent all individuals. The headcount ratio should be as follows:

$$H = \frac{qk}{n} \quad \text{Equation 1}$$

From above:

$$qk = \sum_{i=1}^n \rho = (Y_i, Z) = \sum_{i=1}^n \rho = (C_i \geq K) \quad \text{Equation 2}$$

If an individual experience a new deprivation, the headcount ratio will not change. This reveals that the monotonicity axiom is not satisfied. The Alkire-Foster method introduced a new index which shows not only the incidence of poverty but also includes information which determines the breadth of poverty.

$$\text{They introduced a function of: } \bar{C}_i(K) = \frac{1}{D} [C_i \rho_k = (Y_i, Z)]$$

Equation 3

It indicates the share of the deprivation experienced by each individual. Then the average deprivation shared across the poor is as follows:

$$A = \frac{1}{qkn} \sum_{i=1}^n C_i \rho_k = (Y_i, Z) \quad \text{Equation 4}$$

The adjusted headcount ratio ( $M_0$ ) shows the extent of the poverty (the same as the headcount ratio) and also the breadth of the poverty:

$$M_0 = HA = \frac{1}{nd} \sum_{i=1}^n C_i \rho_k = (Y_i, Z) \quad \text{Equation 5}$$

From Equation 7, if an individual suffers from an additional dimension, it will be reflected in the overall poverty or  $M_0$ . This means that the index satisfies the monotonicity axiom (Alkire & Foster, 2011). However,  $M_0$  does not indicate the *depth* of the poverty, i.e. if a poor individual experiences more deprivation in any given dimension, the index remains unchanged. To develop their method, Alkire and Foster extended the class of poverty measurements of FGT. The initial requirement to use this method is that all of the indicators should be expressed by cardinal data (Alkire & Foster, 2011a).

First, the matrix of  $\hat{y}^1$  is extracted from the deprivation matrix ( $Y$ ) by replacing all 1s to an extent that indicates the gap between each deprivation and the cut-off ( $g^1_{ij} = \frac{z_j - x_{ij}}{z_j}$ ) for all indicators and all individuals. By averaging all poverty gaps in all indicators for each person,  $G$  (the overall poverty gap) can be constructed.

$$G^1 = \frac{1}{\sum_{i=1}^n C_i \rho_k} \sum_{i=1}^d \sum_{i=1}^n g^1_{ij} \rho_k = (Y_i, Z) \quad \text{Equation 6}$$

Then the adjusted poverty gap ( $M_1$ ) can be calculated by the following equation, which reflects the incidence, intensity, and depth of poverty:

$$M_1 = HAG = \frac{1}{nd} \sum_{i=1}^d \sum_{i=1}^n g^1_{ij} \rho_k = (Y_i, Z) \quad \text{Equation 7}$$

The Alkire-Foster method stated that  $M_1$  will change if a poor individual becomes more or less deprived in particular dimension(s). However, the index still does not reflect the inequality among the poor as they become more or less deprived in dimension(s).

To overcome this limitation, the method replaced the total average of the poverty gap ( $G$ ) by the total average of the squared gap ( $S$ ), obtaining an index which shows the inequality of deprivation among the poor in addition to the incidence, intensity, and depth of poverty:

$$S = \frac{1}{\sum_{i=1}^n c_i \rho_k} \sum_{i=1}^d \sum_{i=1}^n g^2_{ij} \rho_k = (Y_i, Z) \quad \text{Equation 8}$$

Then,

$$M_2 = HAS = \frac{1}{nd} \sum_{i=1}^d \sum_{i=1}^n g^2_{ij} \rho_k = (Y_i, Z)$$

This family of multidimensional poverty measures ( $M_0$ ,  $M_1$  and  $M_2$ ) by Alkire and Foster, simplified into  $M_\alpha$ , which is the adjusted FGT family of poverty measures:

$$M_\alpha = \frac{1}{nd} \sum_{i=1}^d \sum_{i=1}^n g^\alpha_{ij} \rho_k = (Y_i, Z) \quad \text{Equation 9}$$

...where  $\alpha = 0$ , the index represents  $M_0$  or the adjusted headcount ratio. Where  $\alpha = 1$ , the index indicates  $M_1$  or the adjusted poverty gap, and where  $\alpha = 2$ , the index represents  $M_2$  or the adjusted squared poverty gap.

### 2.4.3 Poverty decomposition by subgroups

Alkire and Foster adopted the property of ‘population subgroup decomposability’ from the FGT family of measures and employed it in poverty analysis within subgroups of the population, such as region, ethnicity, etc(Alkire & Foster, 2011a). Therefore, the deprivation matrix is decomposed into subgroups and the relevant headcount ratio is calculated for each

subgroup. Let us suppose that  $\rho$  denotes a subgroup. Equation 12 refers to the population share ( $v^\rho$ ) of subgroup  $\rho$ :

$$v^\rho = \frac{n^\rho}{n} \quad \text{Equation 10}$$

The adjusted headcount ratio of the subgroup,  $M^0(X^\rho)$  can be compared with other subgroups and with an overall adjusted headcount ratio. In addition, the decomposition process allows us to determine the contribution of each subgroup to overall poverty, using the following equation:

$$D_\rho^0 = v^\rho \frac{M^0(X^\rho)}{M^0(X)} \quad \text{Equation 11}$$

As the equation indicates, the contribution of subgroups to overall poverty depends on the population share of subgroups and the poverty level of subgroups. The decomposition process allows us to determine the contribution of each subgroup to overall poverty.

The censored deprivation matrix is decomposed into subgroups and relevant  $M^0$  is calculated in the subgroup level. The  $M^0$  of the subgroup can be compared with other subgroups and the  $M^0$  of the overall poverty. The contribution of subgroups to overall poverty depends on the population share of a subgroup and the poverty level of the subgroup.

#### **2.4.4 Allocating weights to the dimensions**

One of the major challenges in the multidimensional poverty analysis is how to assign deprivation values or weights to the dimensions. Deprivation values represent the importance of the dimensions and being deprived of them. If all deprivations are predetermined to have equal importance, then they will be weighted equally. If a deprivation is perceived to be more important, then it will be weighted relatively highly (Alkire et al., 2017).

## 2.5 Summary

This literature review has explained theories and background related to poverty. The first human development report was published by the UN in 1990. The report placed the people at the core of development strategies and introduced the human development approach and human development index (HDI) for the first time. Poverty then became viewed as deprivation in multiple dimensions of human well-being in the World Bank development reports of the 2000s. In 1997, the Human Poverty Index (HPI) was introduced by the UN as complementary to the HDI and it revealed a better view of the quality of life in the developing and developed countries. In 2010, the Multidimensional Poverty Index (MPI), consisting of three dimensions and ten indicators, was introduced by the UNDP in cooperation with the Oxford Poverty and Human Development Initiative (OPHI), as a replacement for the HDI.

Sen argued that poverty measurements should follow two steps, namely identifying the poor and aggregation of the poverty information. This chapter has briefly discussed some of the common methods, such as the Fuzzy Set method, the distance function method, and the axiomatic method. The thesis has focused on “Alkire and Foster” methodology which is constructed on the basis of Sen’s capability approach. Using that approach, Sen demonstrated that poverty is deprivation of the basic capabilities, which in turn deprives people of the freedom to choose some valuable forms of functioning (doing and being), all of which are necessary for human life. The Alkire and Foster approach consists of four stages: first, identification of the poor; second, the censoring stage; third, aggregation of the poverty; fourth, allocating weights to the dimensions. Deprivation values will affect the identification of the poor stage, since the minimum combination of the deprivations is variable. The aggregation stage will also be affected as the shares of the deprivations in overall poverty are variable.

**3.1 Multidimensional Poverty in Developing Countries**

In 2017, Sabina Alkire finalised and published research on multidimensional poverty that drew on the global MPI. This research covers 2.5 billion people from 34 countries and 338 sub-national regions(Alkire et al., 2017). Alkire and her team followed a direct method by assessing the extent to which people satisfy minimum international standards in social rights or valuable ends. Urban and rural areas were formulated separately. They allocated \$1.90 per day for each person based on global monetary measures. Alkire and Santos (2014) applied complementary indirect methods that use income or consumption levels to identify a minimum living standard. This research confirms that economic planning in the last decades has increased QoL in the majority of countries and regions and multidimensional poverty, based on the Global MPI, has been reduced on average.

Correa. (2017) found that in selected South American countries multidimensional poverty differed among different age categories. Accordingly, the elderly formed the largest multidimensionally deprived population subgroup in these countries and children received the most attention(Correa, 2017).

Another study, by Saleem et al. (2019), concentrated on multidimensional poverty in Pakistan(Saleem et al., 2019). It reported that multidimensional poverty is much higher in rural areas than in urban areas of Pakistan. The authors of this research reiterated that government has no choice but to identify sustainable and millennium development necessities of life to meet the global standards of well-being for Pakistan's people.

Meanwhile, Samuel et al. (2014) argue that poverty means much more than simply lack of income. Even a multidimensional poverty framework that includes low quality of education, housing, employment and other dimensions cannot cover all aspects of poverty. They believe that social isolation is also an important aspect of poverty and should be considered in multidimension discussions(Samuel et al., 2018).

The Alkire-Foster method has been widely employed in academic reports since 2010. A list of some such studies is provided in Table 3.1. The table represents the selected dimensions, the number of indicators related to them, assigned weights, the cut-off levels, the highlights of the study, and their findings.

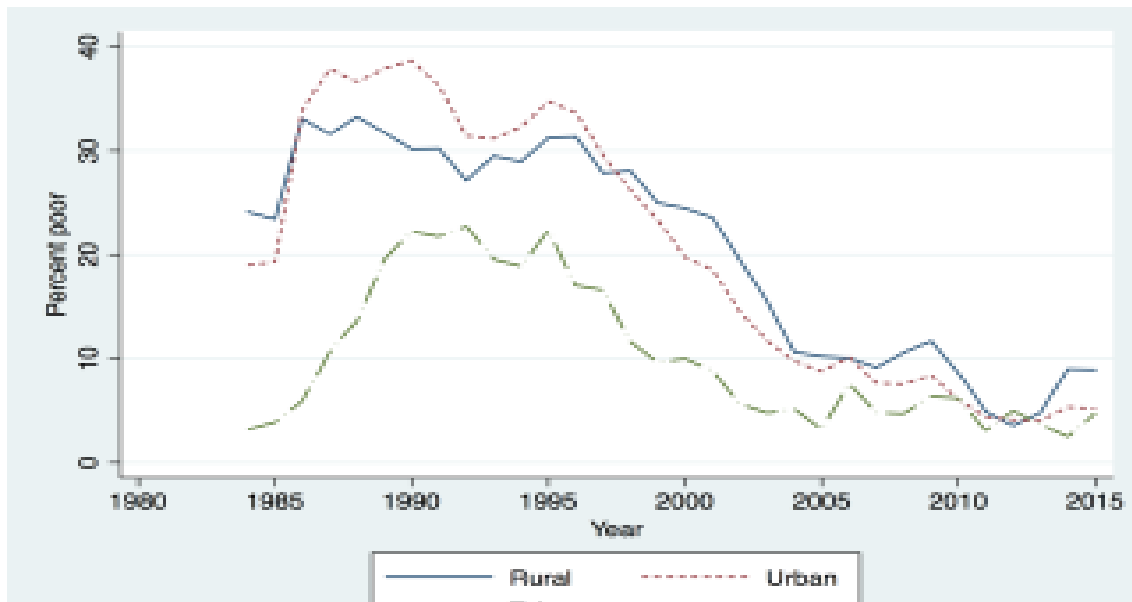
**Table 3.1: Studies on multidimensional poverty measurement**

Author	country	Selected Dimensions and number of indicators	Weights of dimensions and indicators / Cut offs/	Highlights	Findings
(Khan et al., 2014)	Pakistan	Income,1 Health,3 Education,2 Housing,5	Nested weights  Unclear k cut off	Measured absolute and MPI indexes and compared them in the province of Sindh over the period of 10 years	In overall poverty is declined over the period of 10 years in regards with both indexes.  Magnitude of MDP is much higher than the AP in all regions.
(Vijaya et al., 2014)	India	Education1 Empowerment 2, Assets,1 Living Standard,5	Nested weights  K cut off at 1/3.	Compared individual's poverty against household's poverty in the Karnataka, India	22 per cent of all individuals are identified as multidimensionally poor  poverty rate is underestimated with using households as unit for analysis
(Santos, 2013)	Bhutan	Income,1 Living standards,4 Rural,2 Education1 Health,1	Nested weights Three weights level  K cut offs at 30% of the indicators	-Income poverty and multidimensional poverty are compared - used three weighted approaches. Nested weights, equal weights and Gross National Happiness weights approach	Reduction in multidimensional poverty over the considered period  44% of the people are poor in the country
(Cowling et al., 2014)	India	Education2 Health,2 Standard of living,6	Equal weights  K cut off at 1/3	Alkire-foster method is used to analyse the Social determinants of health (SDH) in India  Other factors of SDH also is examined in this study	Reduction in multidimensional poverty over the considered period  24.7% of people were multidimensionally poor in 2006.

(Roelen et al., 2010)	Vietnam	Education,2 Health,1 Shelter,1 Leisure poverty,2 Social inclusion,1 Water,2 Child labour,	Equal weights  Second cut off is placed at the level of domains (at least one indicator of two dimensions meet the poverty line level)	Measured MPI index and compared them over the period of 10 years	37% of all children are considered to be poor.  Most pressing areas of deprivation were water, sanitation and leisure
(Yu, 2013)	China	Income,1 Living Standards,4 Health,1 Education,1 Social Security,1	Nested Weights  Different level of k cut offs is considered and analysed	Unidimensional poverty and multidimensional poverty are compared	multidimensional poverty is decreased between 2000 - 2009  Access to social security system has the largest share of multidimensional poverty
(Machad et al., 2014)	Brazil	Health,2 Labour,2 Education,2 Housing, 7	Nested weights  Different level of k cut offs is considered and analysed	Comparison of monetary and multidimensional  Analysis of patterns of deprivation based on synthetic cohorts and OLS models	Income poverty decreased by 11% during 2003-2008  -Age has affected almost all deprivations
(Basarir, 2008)	South Africa	Living standards, 3 Health,2 Wealth,2 Safety,1 Social Participation,1 Employment,1	Equal weights  Different level of k cut offs is considered and analysed	Provincial comparison of monetary and multidimensional poverty	

### **3.2 Studies on measurement and analysis of poverty in Iran**

Both pre-and post-revolution, governments have implemented different policies to reduce the poverty. Before the revolution, strategies were set up to achieve high economic growth which, it was assumed, would decrease the poverty. Estimations of poverty rates by Salehi-Esfahani (2009) identified 69% of households in rural areas as below the poverty line before the revolution. This might be the reason that welfare for all became one of the revolutionary promises (Esfahani & Pesaran, 2009). After the revolution, the regime used different strategies to deal with poverty and improve social welfare. By 1981, poverty had declined. On average, 30% of the households in rural and urban areas were below the poverty line. Despite the poverty-reduction strategies, poverty rates rose in the 80s. By the last year of the war (1987), 48% of rural households and 20% of urban households were living in poverty. In the early 90s, poverty rates sharply decreased due to post-war reconstruction in addition to the sharp rise in global oil prices. From 1993–96, the poverty rate slightly increased but in the following years poverty gradually decreased. In 2004, 10% of urban households and 20% of rural households were living below the poverty line. The decline in the poverty rate, especially in the rural area, was due to the economic growth. Strategies were put in place with the aim of improving the quality of life among the poor and enabling the poor to access basic services such as education and health. Despite the economic recession from 2011–13, poverty rates declined due to direct cash transfers to the people as a result of the subsidy reforms. However, from 2014–15, poverty rates increased due to a rise in domestic energy prices (Salehi-Isfahani, 2017).



**Figure 3.1: Poverty rates in rural and urban areas of Iran, 1980-2015**

Source: (Salehi-Isfahani, 2017)

Salehi-Isfahani (2009) illustrated the trends in income poverty and inequality for the period of 1979–2005. He adopted the consumption-based method to measure the absolute monetary poverty and compared the results with the pre-revolution years. According to the study findings, the Iran/Iraq war disrupted economic growth and the welfare goals of the first and second development plans of the Iranian governments; as a result, poverty increased in the early years after the revolution. The result indicated that serious improvement in poverty did not transpire until 1988, long after the war had ended, when reconstruction had started. In the last decade of the 20th century, economic growth, high oil prices, government welfare policies—especially in rural areas—brought about the biggest improvement in poverty rates (Salehi-Isfahani, 2009).

A study by the World Bank constructed the poverty trends in Iran from 2008–14 by employing international poverty lines. According to the study, poverty decreased from 2009–12. It claimed that the reduction was due to the direct cash transfers to households, followed by subsidy reforms. In 2012–14, poverty increased because of the high energy prices, while cash transfers suffered losses in value due to the high level of inflation (Atamanov et al., 2016).

In 2015, a study by Mahoozi evaluated multidimensional poverty in Iran. She employed the Household Expenditure and Income Surveys (HEIS) to analyse multidimensional poverty indices in rural and urban areas and also among female-headed families. Because of limitations in the data she replaced the income and wealth dimension with the health dimension. The study found that poverty in the rural areas was four times greater than in the urban areas. Also, the poverty rate among the female-headed families was twice that among male-headed families(Mahoozi, 2015).

## **Chapter 4: Research methodology**

### **4.1 Introduction**

According to Creswell (2014), every research approach must have three main components: research paradigm, research design and research methods. This chapter presents an overall picture of the research methodology, starting with a brief discussion on the definition and importance of the paradigm. While many types of research paradigm exist in the literature, it is crucial to select a paradigm that is suitable for the particular research (Saunders et al., 2007). The chapter outlines the primary paradigms extant in the literature.

Next, the discussion turns to the research design of this study and the rationale behind the selection of a mixed methods approach and the pragmatism paradigm based on the research topic and objectives. Also, the study's sampling design, data collection, research instruments and analysis procedures are explained, as well as the ethical considerations and the different stages of this study, including the pilot studies.

### **4.2 Research paradigm**

This study is adopted a pragmatic research philosophy based on the research objectives and research topic. Before discussing the rationale for selecting this research philosophy, the main paradigms and their meanings found in the literature are presented in the following section.

Rossmann & Rollis (1988) describe positivism and interpretivism as two primary research paradigms. Positivism is linked with quantitative research and involves hypothesis testing to obtain "objective" truths. Interpretivism is associated with qualitative research which is used to obtain an understanding of the world from an individual perspective. However, the debate in the literature regarding the superiority of these two paradigms led to the appearance of a paradigm called pragmatism (Creswell, 2009; Neuman, 2014).

Guba and Lincoln describe paradigms “as Basic Belief Systems Based on Ontological, Epistemological, and Methodological assumptions” (Guba & Lincoln, 1994, p. 108). Similarly, Neuman (2000) & Creswell (2009) refer to paradigms as encompassing epistemology, ontology and research methodology. These beliefs incorporate the following components: ontology (What is reality?), epistemology (How do you know something?) and methodology (How do you go about finding out?) (Guba & Lincoln, 1994). Ontology is associated with the nature of being and existence and relations in every area of the reality or in the other words what is out there to know? Epistemology is the connected nature of the knowledge and the way of obtaining knowledge, while methodology is a set of rules, methods adopted in the research (Blaikie, 2007).

A similar view on the paradigm is put forward by Neuman (2006:81) in defining the paradigm as “a general organizing framework for theory and research that includes basic assumptions, key issues, models of quality research, and methods for seeking answers”. Additionally, Denzin and Lincoln (2008: 22) describe the paradigm as a bundle comprising the researcher’s epistemological, ontological and methodological assumptions. They view all research as interpretive and based on the researcher’s world view. Furthermore, Neuman (2014, p. 96) viewed a paradigm as an aid in the overall organisation of theory and research that comprises underlying assumptions, vital issues, and models and methods for solving the research problem. Therefore, a researcher’s choice of research methodology is based on the ontological and epistemological assumptions (Neuman, 2014), while the choice of the paradigm depends on the researcher’s view of the reality and how the knowledge of this reality can be obtained. By knowing these facts, the way can be cleared to select the relevant methodology. However, the literature debate continues over which paradigm is superior. The following subsections review the three primary paradigms in the literature.

#### **4.2.1 Positivism**

As a philosophy, positivism depends on the view of the researcher that social behaviour, or a social behaviour can be studied scientifically (Bryman & Bell, 2011). On the other hand, positivism views the researcher as independent from the reality as only one reality exists, so the researcher cannot change or influence it (Guba & Lincoln, 1994). Collins, H. (2010) has noted that positivism depends on quantitative observations which lead to statistical analyses. This is consistent with the view of Neuman (2014) and Creswell (2009) who view “positivist research” as scientific method” and “quantitative research” which use the empirical data to study the individual behaviour.

However, the positivism philosophy has been criticised in the literature. Denzin & Lincoln (2008) claimed that in terms of social research positivism, because it attempts to quantify different variables of a social behaviour or phenomenon, it cannot provide a true picture of a social phenomenon and as a result its conclusions will not provide a true reflection of people’s behaviour. In any case, conducting a positivism philosophy, using only quantitative data and just measuring the multidimensional poverty statistically is not consistent with the research methodology of this study. Therefore, based on the selection of a mixed method research design, the positivist paradigm is not used in this study.

#### **4.2.2 Interpretivism**

Interpretivism as a paradigm views reality as multiple and relative in nature (Hudson & Ozanne, 1988). Interpretivists adopt a more personal and flexible research framework and avoid rigid structural frameworks in comparison with positivist researchers (Carson et al., 2001). Interpretivism states that there is not just one single reality. Instead, the researcher needs to try to understand and interpret the meanings and motives behind people’s actions rather than predicting their actions and their causes (Hudson & Ozanne, 1988; Neuman, 2000). Also,

Cohen et al. (2007) explained that the aim of interpretivism is to understand and make sense of the social realities through the perspective of the individuals. Since interpretivism assumes there is no single reality, interpretivists try to understand social phenomena through the meanings that individuals assign to them. As mentioned in chapter 2, there is controversy in the literature in terms of how to define poverty and whether or not these definitions are consistent with feelings that poor people experience. Interpretivism as a research paradigm can help to understand and interpret poverty from the perspective of the poor. This is a very considerable factor in the study of poverty. In a study by the World Bank, Nayaran et al. (2002) addressed the wide range of poverty aspects from the point of view of individuals who are poor themselves.

Interpretivism is associated with qualitative research methods and data collection is done by semi-structured or structured interviews about people's perceptions on subjects such as poverty. (Neuman, 2014). This study has used semi-structured interviews to collect qualitative data about the household heads' view on household well-being and poverty status. However, the method is selected because it met the requirements of the research questions not because of the interpretivism association.

In sum, interpretivism views research as inseparable from the reality and meanings as constructed by the individuals. Based on the assumption that there is no single reality, scientific methods alone cannot be applied to social science research.

The differences between positivism and interpretivism are presented in the following table.

**Table 4.1: Differences between positivism and interpretivism**

Assumptions	Positivism	Interpretivism
Nature of reality	Objective, tangible, single	Socially constructed, multiple
Goal of research	Explanation, strong prediction	Understanding, weak prediction
Focus of interest	What is general, average and representative	What is specific, unique, and deviant
Knowledge generated	Laws Absolute (time, context, and value free)	Meanings Relative (time, context, culture, value bound)
Subject/Researcher relationship	Rigid separation	Interactive, cooperative, participative
Desired information	How many people think and do a specific thing, or have a specific problem	What some people think and do, what kind of problems they are confronted with, and how they deal with them

Source: (Pizam & Mansfeld, 2009)

### **4.2.3 Pragmatism**

Pragmatism is a research paradigm that uses methods which focus more on the research problem and research question. Therefore, there is room to use different methods and procedures which are associated with qualitative or quantitative approaches (Creswell & Clark, 2007). It is claimed in the literature that pragmatism is well suited to research which mixes qualitative and quantitative research methods (Johnson & Onwuegbuzie, 2004; Tashakkori & Teddlie, 2010).

Poverty analyses based on quantitative methods have been dominant in the literature, while the use of qualitative approaches has been limited (Carvalho & White, 1997). However, there have been increasing attempts to mix the two approaches. Carvalho and White (1997) declared that adopting a mixed method approach leads to better identification of the various dimensions of poverty in comparison with using either a qualitative or quantitative approach alone.

Although, as mentioned previously, there has been limited use of mixed method approach in poverty studies, Kanbur (2008) followed Carvalho and White (1997) in attempting to clarify

the terms. The quantitative method of poverty measurement and analysis is described as generally employing random sample surveys and structured interviews to amass largely quantifiable data and analyse it using statistical methods. However, qualitative research is generally based on purposive sampling and semi-structured or interactive interviews and considers people’s feelings about a topic in analysis that employs sociological or anthropological research methods. Table 4-2 represents the characteristics of quantitative and qualitative approaches in poverty studies.

**Table 4-2: Characteristics of quantitative and qualitative approaches in poverty studies**

Characteristics	Quantitative Approach	Qualitative Approach
Definition of poverty	People are considered poor if their standard of living falls below the poverty line (i.e. the amount of income or consumption associated with the minimum acceptable level of nutrition and other necessities of everyday life.	Poor people define what poverty means; broader definition of deprivation resulting from a range of factors (not simply lack or income/consumption) adopted.
Philosophical underpinnings	Positivism: existence of one reality	Rejection of positivism: assumes there are multiple forms of reality and, therefore, it is senseless to try to identify one [Interpretivism]
Nature of variables for which data is collected	Quantifiable, e.g. household or (individual) expenditure on food, unemployment rate	Perception variables reflecting attitudes, preferences and priorities; the number of similar responses with respect to each variable can be added-up, but the variables themselves cannot be quantified.
Data collection format	Structured or formal interview; questionnaire	Open-ended or semi-structured interview
Sampling	Probability sampling (any sampling method which uses a form of random sampling)	Purposive sampling (non-probability sampling; researcher relies on his/her own judgement to select suitable participants)
Sample size	2000 – 8000 households	1 – 1000 individuals

Source:(Carvalho & White, 1997)

Many researchers have supported the use of pragmatism as an underlying philosophy assumption in mixed methods researches (Feilzer, 2010; Johnson & Onwuegbuzie, 2004). According to Creswell (2009), pragmatism is not tied to a single philosophy, so researchers have the ability to adopt both qualitative and quantitative assumptions when they engage in their research, which means they are free to choose multiple methods and different procedures which are a good fit for their research.

Since this study has selected a mixed method research approach, pragmatism becomes the ideal philosophy, rather than positivism or interpretivism (Creswell, 2013). According to Denzin, Lincoln and Guba (1994), the mixing of methods (quantitative and qualitative) is acceptable as long as two or more paradigms are not mixed in a study. The strength and weakness of the different approaches adopted in poverty studies have been discussed in the literature. According to Kanbur (2009), while the quantitative approach alone cannot capture the information necessary to understand poverty, the qualitative approach alone cannot quantify the information that will allow for comparison. Also, as noted in chapter 2, different dimensions with their related indicators are involved in the multidimensional poverty phenomenon. Therefore, studying this phenomenon requires the use of mixed methods to gain a comprehensive picture of the phenomenon.

### **4.3 Research Design**

Having reviewed the primary paradigms in the literature and justified the choice of pragmatism as the research paradigm for this study, the following section delves further into the rationale behind adopting a mixed method research approach for this study and also presents the research design used in this study.

This research focuses on measuring and analysing multidimensional poverty through its different dimensions. Most of the poverty studies in the past were either qualitative or quantitative (Kanbur, 2003). However, in the last decade, researchers like Alkire (2006) and Bamberger, Rao, & Woolcock (2010) have suggested the mixed methods approach as the most suitable research method for multidimensional poverty studies. Recently, more researchers have used the mixed methods research in poverty studies (Mitra et al., 2013).

Traditionally, most of the research into poverty focused on the quantitative approach to measure poverty, using income or expenditure, referred to as unidimensional poverty; However, recently different dimensions have been added to measurement and analysis of poverty (Alkire & Foster, 2011c; Alkire et al., 2017; Mitra et al., 2013).

Another reason to select the mixed methods research is that the quantitative and qualitative data can be integrated which allows because to capture the trends and details of the multidimensional poverty aspects. In addition, the two types of data complement each other, resulting in a more robust analysis when doing the mixed methods research (Tashakkori & Teddlie, 1998).

In relation to mixed method research, Creswell et al. (2003) identified six main research designs. This study selected a sequential explanatory design which involves collecting and analysing quantitative data as the first step, followed by data collection and analysis of the qualitative data. At the interpretation stage, the qualitative and quantitative data and analyses are integrated. This design was considered to be a good fit for studying multidimensional poverty in this research. Based on this research design decision, first, 378 surveys were distributed, collected and analysed (quantitative data); next, 21 respondents were interviewed (qualitative data). At the interpretation stage, the data were integrated. To summarise, this study used a sequential explanatory approach in a mixed method research design.

#### **4.4 Ethical considerations, informed consent and confidentiality**

This study followed the ethics standards of the University of Huddersfield. Prior to conducting the data collection, ethics clearance was requested and received from the Business School Research Ethics Committee.

Informed consent is one of the major requirements of research ethics. The purpose is to ensure that the participants understand what the research is about and to what they are consenting. The participants were accordingly asked to read and sign a consent form before completing the questionnaire and also at the beginning of the interview. They were informed of the objectives and purpose of the study and also of their right to withdraw from the study at any time.

Furthermore, the participants were given assurances regarding confidentiality and anonymity and non-identifiability.

#### **4.5 Sampling process**

No specific sampling method is recommended for mixed methods research in the literature. According to Teddlie and Yu (2007), the sampling process for mixed methods research could be a combination of two or more samplings. They suggested purposive-mixed-probability sampling for mixed methods research studies.

Different samplings were conducted for the quantitative and qualitative parts of this study.

##### **4.5.1 Quantitative sampling process**

Many different forms of quantitative sampling procedures exist in the literature. Daniel (2012) has categorised the quantitative sampling process into the following steps: definition of the population, identification of the sampling frame, specification of the sample unit, specification of the sampling method, determination of the sample size and specification of the sampling plan. The following subsections review these steps.

#### **4.5.1.1 Definition of the population**

The rural region of Urmia city in West Azerbaijan province was selected as the sample site. Urmia is the 10<sup>th</sup> most populous city in Iran, also the largest city in West Azerbaijan province. It is located in the northwest of Iran which and shares borders with both Iraq and Turkey. The majority of the population are Iranian Azerbaijanis who live alongside Kurdish and Armenian minorities.

It is important that the sample ‘population’ is defined in terms of the sample elements, sampling units, extent, and time. In the present study the population is composed of all the households (elements) which are located in the villages of rural districts of Urmia city, West Azerbaijan province, north-western Iran (extent) in 2017 (time). My rationale for selecting only one province was to make the study manageable in terms of population and area size.

#### **4.5.1.2 Identification of the sampling frame**

A sampling frame includes the source material of all elements of the population from which the research sample is drawn. The sampling frame should be accurate, complete, adequately covering all the population, up-to-date and free from duplication. Given the multi-stage nature of the survey process, each stage of the sampling process should have a separate frame design: an ‘area frame’ for the first stage and ‘list frame’ for the second (Turner, 2003). In this study, the area frame is obtained from the list of villages in each rural district, provided by Statistics Centre of Iran (SCI) in 2017. The list frame for the present study is obtained from the lists of the households’ characteristics which are available in the record books of the village councils (Shoraye-Roosta).

#### **4.5.1.3 Specification of the sampling method**

Sampling methods determine the way in which the sample units are selected from the sample frame. These methods are categorised as: 1) probability, and 2) non-probability (Bordens &

Abbott, 2002). In the first method, the probability of selection of every unit is known and every unit has the same likelihood of selection. But in the second method personal judgements and purposeful selection of elements are involved and the probability of selection of every unit is unknown. The probability sampling method enables the researcher to check the precision of the estimates using probability theories and provides the possibility to select a research design from the various possible options. The probability method is categorised into different groups, such as simple random sampling, stratified sampling, systematic sampling, and cluster sampling.

The rural area under study is split into five regions: Central, Anzal, Silvaneh, Nazloo, and Somay. Each region is divided into several districts, with nine districts in the central region, three districts in Silvaneh, Somay, and Nazloo, and two districts in the Anzal region. During the research sampling details were obtained on all the ethnic groups and castes in the research area. Multi-stage sampling was used to select the sample population. In the first stage, the proportion of households in each region in the whole population was computed to determine the number of villages to be selected from the districts. Then the sample villages and sample households were selected in the next stage.

#### **4.5.1.3.1 Selection of villages (clusters) from each district**

Cluster sampling, with the probability proportional to cluster size, was adopted in the selection of the villages (clusters). First, a cumulative list of the number of households in the villages of a particular region was obtained and then a systematic sampling was applied to select the required sample villages. The process of determining the sample villages was applied for all regions and a list of 50 villages was compiled. Given that the families in the same area tend to have similar socio-economic status regarding such as access to welfare services, structure of their houses, and access to health and medical services, these 50 villages were selected to

represent the target population. A study by Gholami et al. (2013) used the same number of clusters to evaluate food security in the same area as chosen for this study.

In the last stage, an equal number of eight households was randomly selected from each cluster from the list of households' characteristics available in the record books of the village councils, using the simple random-sampling method.

**Table 4-3: Percentages of the total target population in each region and the number of selected villages in each district**

regions	Number of households	Percentages of region in all population	districts	Number of the villages to be selected into region	Number of the villages selected as a sample
Central	39239	54%	Barandooz	27	3
			Sough Barandooz		0
			North Barandooz		3
			Bash Ghaleh		3
			Bakshloo Chay		4
			North Torkaman		2
			Sough Torkaman		1
			Rozeh Chay		8
			Sough Nazloo		3
Silvaneh	11969	17%	Targovar	9	2
			Dasht		1
			Margovar		6
Nazlu	7409	10%	Talatapeh	5	0
			North Nazloo		2
			Nazloo Chay		3
Somay	7390	10%	Barodoost	5	2
			South Somay		3
			North Somay		1
Anzal	5900	8%	South Anzal	4	4
			North Anzal		0

#### 4.5.1.4 Determination of the sample size

The sample size indicates the number of elements selected from the population. A larger sample will lead to more precise estimates. However, for the same sample size, a higher number of clusters will give more precise results. For example, a sample comprising 300 members will give a more accurate result than one with 200 members. But if those 300 members are

distributed in 50 clusters with 6 members in each cluster, the estimates will be more valid than in the case of 30 clusters of 10 members. The sample of 400 households was selected from the 5 study regions in Urmia, West Azerbaijan province, Iran. From these, 8 households were selected for questioning in each of the 50 villages selected. The selected villages comprised 27 villages from the districts of the Central region, 4 villages from the Anzal region, 9 villages from the Silvaneh region, 5 from the Somay region and 5 from the Nazloo region.

From earlier literature, the studies by Lekha Nath Bhattarai (2016) and Rachel Nishimwe-Niyimbanira (2016) selected the same sample size to investigate multidimensional poverty in rural areas of particular provinces in Nepal and South Africa, respectively.

#### **4.5.1.5 Pilot studies**

It is important to pre-test a questionnaire before using it in the course of data collection. This helps to ascertain its reliability, appropriateness, and the validity of contents, identifying the possible questions which are not clear in the questionnaire or interview instrument prior to the data collection (Cavana et al., 2001).

In this regard, 10 pilot studies were carried out in the first stage and two pilot studies in stage two. In the first stage, ten households were asked to complete and comment on the clarity, bias, ambiguity, etc. of the predesigned questionnaire. The stage one pilot study was carried out from 15 May to 25 May 2016. All the respondents found the questions clear except for the question related to their income. Eight respondents refused to answer the question and two were not sure about their income as they mentioned their earnings vary during the year. The questionnaire was revised, based on the comments and feedback received from the pretested questionnaires.

In the second stage, three semi-structured interviews were conducted as a pilot study. These interviews were carried out after analysis of the quantitative data. The aim was to check the validity, appropriate wording of the interview content. This stage happened in September 2018.

The participants were selected from the list of respondents to the survey questionnaire. All interviews were recorded and transcribed afterwards. No-one commented on the content of the interview questions, but these interviews helped to familiarise the researcher with the techniques needed to conduct the further interviews for the study.

#### **4.5.1.6 Execution of the questionnaire survey**

Prior to data collection, the questionnaire was translated into the Farsi language, which is the official language of Iran. The questionnaires were then handed to household heads who were asked to complete them after brief clarification of the purpose of the study and questions, having read and signed the consent form. In the event of absence of the household head, the most knowledgeable person was contacted. If nobody from the household was available, or the researcher was unable to access the household members, the next preselected household was asked to complete the questionnaire. In total, 378 out of 400 questionnaires were completed and gathered.

#### **4.5.2 Qualitative sampling process**

Purposive sampling of participants for semi-structured interviews was selected as the most suitable sampling process for collecting the required qualitative data (Onwuegbuzie & Collins, 2007; Teddlie & Yu, 2007). Purposive sampling is defined as selection of participants based on the purpose of answering the research questions, the main focus being to gather a narrative based on in-depth data (Teddlie & Yu, 2007).

Compared to probability sampling, the sample size produced by purposive sampling is small, usually less than 30. Onwuegbuzie & Collins (2007) described purposive sampling as convenient as the researcher selects the participants based on their convenience and willingness to participate in the study. In this study the qualitative sample size was 21.

To summarise, multistage sampling or cluster sampling was used for the quantitative data and purposive sampling was used for the qualitative data.

#### **4.6 Data collection**

As mentioned earlier, this study adopted a sequential mixed methods approach involving two separate stages of data collection: in the first stage, quantitative data was collected through the survey and in the second stage, qualitative data was collected using semi-structured interviews.

The survey questionnaire consisted of 42 questions, 7 of which were demographic questions. The survey was handed to the household heads in the five study regions. These 5 regions were selected because they are located within different distance of the Urmia city in West Azerbaijan province in Iran.

The second stage consisted of semi-structured interviews. The interviews were based on 12 questions to guide the interviewees. A total of 21 participants were interviewed. The interviews were conducted by face to face or over the telephone. At this stage, I used phone calls to arrange the interviews.

#### **4.7 Research instruments**

This study used two research instruments to collect the required data: a questionnaire for the quantitative stage and semi-structured interviews for the qualitative stage. Amartya Sen's capability approach theory is the underlying theoretical framework of both instruments. The questionnaire adopted the dimensions and indicators from the Alkire-Foster model which is the base of the OPHI-MPI framework. The researcher drew on similar studies from the literature review to design the questions (Alkire et al., 2017; S. Alkire & M. E. Santos, 2010; Basarir, 2008; Khan et al., 2014; Naveed, 2008; Santos & Ura, 2008). The questionnaire and semi-structured interview questions are attached in the appendix.

The questionnaire contains seven sections: the first and second sections cover demographic and socio-economic aspects of the household, such as gender, household size, age, employment, education, and marital status. The following sections assess the dimensions of multidimensional poverty in the household, including education, access to basic infrastructure services, quality of house, household assets, food security, and health. Analysis of these dimensions and their indicators will be discussed in the following section.

The interviews were semi-structured to allow the researcher and interviewer to ask predetermined open-ended questions. There were six interview questions, each one addressing one particular dimension and its indicators to investigate the participant's views and perceptions.

## **4.8 Research methods**

A mixed methods research approach was adopted in this study, combining quantitative and qualitative methods in two sequential stages.

In the first stage, the quantitative stage, a questionnaire was used to collect the required data from the respondents. In stage two, semi-structured interviews were used to collect the qualitative data. The questionnaire provided an overall view of the different dimensions of poverty in the regions, while the interviews gave participants the opportunity to express perceptions and more in-depth information on the various deprivations they had experienced.

### **4.8.1 Survey questionnaire**

The survey questionnaire was designed to collect the required quantitative data for this study, following the relevant literature review and similar studies(Alkire et al., 2017; S. Alkire & M. E. Santos, 2010; Basarir, 2008; Khan et al., 2014; Naveed, 2008; Santos & Ura, 2008). The questionnaire for this study contains six sections: the first and second parts include

demographic and socio-economic aspects of the household, such as gender, household size, age, employment, education, and marital status. The following parts include questions to assess the dimensions of multidimensional poverty in the household, including education, access to basic infrastructure, quality of housing, household assets, food security and health. The rationale and justification behind of these dimensions and their related indicators will be discussed in the following section.

#### **4.8.2 Dimensions selection**

In the capability approach, Sen argued that the selection of functioning (being and doing), mostly relies on judgements and experiences rather than practical techniques. “There is no escape from the problem of evaluation in selecting a class of functioning in the description and appraisal of capabilities”(Sen, 2008, p. 25). He proposed some general guidelines, such as the importance of the dimensions in society and the social influence of the dimensions rather than individual benefits. However, Martha Nussbaum introduced a universal list of capabilities, which she defined as basic human rights. The list includes ten capabilities: “bodily health; bodily integrity; senses, imagination and thought; emotions; practical reason; affiliation; other species; play; and control over one’s environment” (Nussbaum, 2006, pp. 57-58).

Alkire et al. (2017) developed the following criteria for selecting the dimensions and indicators required to compute the global multidimensional poverty index (MPI): 1) considering the participatory exercises and perspective of the local people and groups in dimension and indicator selection. They argued that all indicators of the MPI have been identified as elements of being poor; 2) Employing dimensions and indicators which are universally accepted. They claimed that all indicators in the PMI are related to the MDGs, HDI, and HPI. 3) The indicators are supported by the psychological and philosophical theories on basic needs and human rights; and 4) availability of data(Alkire et al., 2017). Based on these criteria, the MPI was used to

analyse global poverty through the three dimensions of health, education, and living standard. These dimensions are the same as those used by the UNDP in evaluating the HDI in 1990 and HPI in 1997. However, HDI and HPI employed three indicators, while MPI adopted ten indicators related to these dimensions. Dimensions and indicators adopted by the MPI are summarised in table 4.4.

**Table 4.4: Multidimensional poverty dimensions, indicators and Cut-offs**

Dimension	Indicator	Deprived if...	Related to	Relative Weight
Education	Years of Schooling	No household member has completed five years of schooling	MDG2	16.7%
	Children's School Attendance	Any school-aged child is not attending school in years 1 to 8	MDG2	16.7%
Health	Mortality	Any child has died in the family	MDG4	16.7%
	Nutrition	any adult or child is malnourished	MDG1	16.7%
Standard of living	Electricity	The household has no electricity		5.6%
	Sanitation	The household's sanitation facility is not improved(according to the MDG guidelines), or it is improved but shared with other households	MDG7	5.6%
	Water	The household does not have access to clean drinking water(according to the MDG guidelines) or clean water is more than 30 minutes walking from home.	MDG7	5.6%
	Floor	The household has dirt, sand or dung floor	MDG7	5.6%
	Cooking Fuel	The household cooks with dung, wood or charcoal	MDG7	5.6%
	Assets	TV, telephone, bike, motorbike or refrigerator, and does not own a car or truck		5.6%

Source: adapted from Alkire and Santos (2010) and Alkire et al, (2017)

Following the MPI, many studies such as Alkire et al (2017) adopted the same indicators of health, education, and the standard of living to investigate poverty, in 34 different countries, including Arif Naveed & Islam (2010) in Pakistan, Santos & Ura (2008) in Bhutan, Angulo, Díaz, & Pardo, (2013) in Colombia, Battiston, et al, (2013) in Mexico, and Khan et al., (2014) in Pakistan. Table 1, detailing some of these studies, is provided at the end of Chapter 2.

Using the aforementioned dimensions, in this study, the living standard dimension is divided into three subgroups: access to basic infrastructures, house quality, and household assets, in order to investigate a greater number of indicators. Likewise, the food-security dimension is added to the selected dimensions. Detailed explanations of dimensions, relevant indicators, and the associated cut-offs are provided in the following section.

#### **4.8.2.1 Education**

Sen and Dreze (2013) describe the role of basic education in human and social development as crucial. They identified the following as benefits of education: capability in writing, reading, and counting improves the quality of life, Employment opportunities are extremely dependent on the level of education, Education can affect individual and national health aspects and even a basic level of education can make people aware of their legal rights (Drèze & Sen, 2013).

Many empirical studies concluded that education leads to people having higher-wage employment(Boissiere et al., 1985; Mingat & Tan, 1996) and improves people's social lives and their health(Green et al., 2003). Investment in education not only benefits the lives of the individuals, but also improves national economic growth and labour productivity (Barro & Lee, 2001). International agencies and governments have become aware of the role of education in human development and achieving the universal primary education goal was introduced as the second target of MDGs. All of these reasons indicate the use of education as one of the fundamental dimensions for multidimensional poverty measurement.

In this study, two indicators are adopted to specify the level of deprivation in the education dimension: years of schooling and children's school attendance. Both indicators are adopted in the MPI.

The years of schooling reveal the level of understanding and knowledge among household members. A household is considered to be poor if at least one adult (above sixteen years old) has not finished primary school (five years of schooling). The selection of this indicator is inspired by the idea of 'proximate literacy' in the literature (Basu & Foster, 1998). The idea refers to the existence of at least one literate person in a household and represents the external benefits that spread from a literate member to all members in the household (Alkire & Santos, 2010). The next indicator—children's school attendance—is guided by the second goal of the MDGs. It reveals whether the children are exposed to a learning environment. A household is considered to be poor if any school-aged children are not attending school. Regarding the cut-off level of the second indicator, the MPI set the cut-off point at primary school level, which means that a household will be categorised as poor if at least one child of primary school age does not attend school. The present study has set the cut-off in the range of 7–16 years of age for school children. This means that all years of schooling (primary and secondary) are considered. This cut-off point was suggested by Alkire and Santos (2010). Non-attendance at secondary school in rural areas in Iran is mostly related to the absence of secondary schools in the villages and not all families being able to afford to send their children to the nearest city schools. Obviously, if a household does not have a school-age child, only the first indicator will be applied (Alkire & Santos, 2010).

#### **4.8.2.2 Access to basic infrastructure**

This dimension includes four indicators: Access to 1. Drinking water, 2. Clean sanitation, 3. Clean fuel for cooking, and 4. Electricity. The first three indicators are amongst the MDGs'

indicators and are closely related to human well-being (Millennium, 2015). Also, all these indicators were used to compute the global MPI (Alkire & Foster, 2011a).

The most important natural resource is water, having a major impact on human health, the quality of life, and sustainable development. Access to safe drinking water decreases the spread of diseases and improves people's health and well-being. For example, diarrhoea is directly related to the consumption of unclean water (WHO, 2008). The cut-off point is the absence of tap water or piped water in the dwelling. If the household's members do not have access to piped/tap water in their house, they will be considered as poor.

Access to clean sanitation is vital to maintain health, minimising the contacts with dangerous bacteria and viruses and also improving the quality of the living environment (WHO, 2016). The cut-off point for this indicator is the use of a flush toilet or ventilated improved toilet by the household. If a household does not fulfil this condition, it will be considered as poor.

Clean cooking fuel is closely related to health of the members of the household. Using wood, coal, charcoal, paraffin, and oil as a regular fuel for cooking and heating could harm the health of people who are living and breathing in such an environment (WHO, 2016). Provision of piped natural gas to all villages with a population of more than 100 was promised in the third development plan of Iran. The cut-off point is use of piped natural gas or electricity for cooking.

Access to electricity is the fourth indicator. If a household cannot access electricity, it will be considered as deprived. This cut-off point was selected on the basis of Iran's development plans and the findings of other researchers. Salehi (2009) found that access to basic infrastructure in Iran has improved massively since the revolution (Salehi-Isfahani, 2009).

#### **4.8.2.3 Quality of housing**

Housing quality is connected to the social class of the household and also affects the health and safety of the members (Krieger & Higgins, 2002). Two indicators are included in this dimension: 1. The quality of the dwelling structure, and 2. Crowding. A household will be considered as poor if the dwelling structure is built of mud or unbaked bricks. This indicator and the cut-off are adopted from the global MPI.

According to Krieger & Higgins (2002), overcrowding in the living environment leads to increased possibility of sexual abuse, infection, and poor mental health. Indicators for monitoring the MMDGs set the cut-off level for an overcrowding indicator at two or more persons per room (including the living room and excluding kitchen, storage areas, and garages) (UN, 2003). However, this study has set the indicators at the level of three or more people per room. The same indicator and cut-off have been applied to measure the MPI in Colombia (Angulo et al., 2013).

#### **4.8.2.4 Assets**

This dimension is used frequently to express the household's well-being. It covers the ownership of some consumer and capital goods. Two indicators are included in this dimension: 1. Ownership of communication assets, 2. Ownership of other assets.

Ownership of a mobile/landline, TV/radio, and access to the internet is fundamental to human development. Goal no. 8 in the MDGs refers to "a global partnership for development" (UN, 2003). Technologies such as the internet, personal computers, and the telephone provide opportunities for people to engage in effective communication and learn from each other. They can help people to improve their knowledge and education and can help people in rural areas to be aware of market information and charges, and as a result, sell their products at a better price. Because of the importance of communication, the ownership of those assets is considered

as an indicator. The cut-off point is having two out of the three items, which guarantees the supply of communications and access to the latest news. A study by Rachel Nishimwe-Niyimbanira (2016) adopted the same indicator and cut-offs.

As this study prioritises the capability rather than actual access to resources, the other assets, including pc/laptop, car/motorbike, washing machine/dishwasher, fridge/refrigerator, tractor/combine harvester/field cultivator, and sofa set, are listed as one indicator. The cut-off point is owning one third of these assets. The household will be considered as deprived in the indicator if they do not own two or more of the listed assets. Khan et al. (2014) and Angulo et al. (2013) have adopted the same cut-offs for the asset indicator.

#### **4.8.2.5 Health**

Health plays a core role in determining the well-being of individuals. Three of the eight goals of the MDGs are related to health aspects, including reducing child mortality (Goal 4), improving mental health (Goal 5), and combating HIV, malaria, and other diseases (Goal 6) (UNDP, 2015).

Access to the highest attainable level of health, especially access to medical facilities and insurance services, is considered in all of Iran's five-year development plans and also other development strategies. The twenty-year national vision plan has a target stating that "At 2025, Iran will be a country whose people will have the highest ranking health situation and the most equitable and developed health system in the region" (Rostamigooran et al., 2013, p. 2).

This study has adopted two indicators for the health dimension. The first indicator is linked to the availability of and access to medical facilities such as a clinic or hospital. A household is considered to be deprived in the indicator if the distance from the house to the nearest clinic or hospital is more than 30 minutes by usual transportation. The second indicator concerns whether or not household members have health insurance. A household is identified as non-

deprived if at least one person in the household has health insurance. Both indicators have been adopted to compute the MPI at a national level in Colombia and Pakistan (Angulo et al., 2013; Naveed, 2008).

#### **4.8.2.6 Food Security**

Access to food is one of the main dimensions in the evaluation of poverty. The first goal of the MDGs refers to malnutrition, with the target of eradicating extreme poverty and hunger. Inadequate and unbalanced diet in life can affect the bodily functions in both physical and mental aspects. Malnourished children experience developmental delays, learning and concentration disabilities, weight-loss, and physical illness as a result of an inadequate intake of various nutrients (Santos & Alkire, 2011).

This study has taken into consideration the nutritional dimension through the food-security concept. Food security exists when all people at all times have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The definition has taken into account the consumption and demand-aspects of nutritional dimension, but most importantly it has included the aspect of access to food for vulnerable people, which is a core part of Sen's capability approach (Food & Organization, 1996).

This study used the Household Food Insecurity Access Scale (HFIAS) to evaluate the availability, access, utilisation, and stability of food. The HFIAS consists of two sets of nine questions – nine 'occurrences' and nine 'frequencies-of-occurrence'. The first set asks whether the household has experienced the condition in the last four weeks, with possible answers of yes or no. If it has, then the second set asks about the frequency: rarely, sometimes, or often (Coates, 2013). The results differentiate households as mildly insecure, moderately insecure, severely insecure, or secure as regards food. The present study has combined the first three

groups into the food-insecure category and identifies a household as deprived (food insecure) or non-deprived (food secure) in the food-security dimension. Rachel Nishimwe-Niyimbanira (2016) adopted this indicator to investigate nutrition deprivation in South Africa.

**Table 4-5: Selected dimensions of this study**

Dimension	Indicator	If...	Assigned weight
Education	Years of schooling	At least one adult (above 16 years old) has not finished the primary school (5 years of schooling)	8.33%
	School attendance	Any of school aged children are not attending school	8.33%
Access to basic infrastructures	Access to drinking water	Absence of tap water or piped water in the dwelling	4.16%
	Access to clean sanitation	Household does not use the flush toilet or ventilated improved toilet	4.16%
	Access to clean fuel for cooking	Household does not have the piped natural gas or electricity for cooking	4.16%
	Access to the electricity	Household does not access to the electricity	4.16%
Housing quality	Quality of dwelling structure	Household dwelling structure is built of mud or unbaked bricks	8.33%
	Crowding	There is two or more persons per room in household	8.33%
Assets	Ownership of communication assets	There are not two out of the three items in the household	5.55%
	Ownership of other assets	Owning less than one third of these assets	5.55%
	availability and access to the medical facilities	Distance from the house to the nearest clinic or hospital is more than 30 minutes by usual transportation	8.33%

Health	Access to the health insurance	Nobody gets benefit from health insurance	8.33%
Food Security	Food security	Food insecure	16.66%

## 4.9 Data analysis

The following section explains the data analysis procedures adopted in this study. As mentioned before, this study is a sequential explanatory mixed method research. First the quantitative data were analysed using quantitative techniques. This was followed by qualitative data analyses using qualitative techniques and finally the two sets of data were integrated.

### 4.9.1 Quantitative data analysis

Quantitative data extracted from the survey questionnaire were coded and entered into Excel. Data description was done using frequencies and percentages to represent the socio-economic status of households, then STATA (version 15) was used for all statistical analyses, which included:

deprivation and multidimensional poverty status of households in six dimensions and 13 indicators

aggregate multidimensional poverty estimates such as multidimensional headcount ratio, average poverty, adjusted headcount ratio, the incidence, intensity, depth of poverty and inequality among the poor

decomposition of the poverty to analyse it through subgroups such as the regional level, district level, household size level and ethnic groups

determining the most important indicators of multidimensional poverty

This study adopted the Alkire-Foster method for the identification of the poor and aggregation of poverty. A dual cut-off approach was used for the identification stage and dimension

adjusted FGT family of measurements for the aggregation stage (Alkire & Foster, 2011a). The procedures are discussed in detail in the following section.

In calculating the measures, this study followed the Alkire-Foster method (OPHI, 2017). The following subsection provides a complete description on how to apply the Alkire-Foster Method.

**Identification of the poor:** Two sets of cut-offs are used to identify the poor households. These cut-offs, termed ‘deprivation cut-off’ and ‘poverty cut-off’, are applied within and between the dimensions and indicators.

**Representing the achievement matrix and setting the deprivation cut-off:** Information on the individuals and their related indicators is shown in the  $n \times d$  achievement matrix ( $X^{nd}$ ). Deprivation cut-offs determine whether a household is deprived in a particular indicator or not. Each dimension has its own set of cut-offs related to the indicators. The household’s level in a given indicator is compared with the pre-determined cut-off to label the household as deprived or not deprived in that particular indicator. Deprivation cut-offs for adopted dimensions and indicators in this study are determined and discussed in section 4.6.

Once the deprivation cut-offs related to each indicator have been determined, the next step is allocating the corresponding weight to each indicator. The framework of the Alkire-Foster method is sufficiently flexible to assign equal or different weights to the dimensions and indicators. Allocation of greater weight to a particular indicator or dimension represents the importance of that indicator or dimension. Allocating a different scale of weights to each dimension or indicator will affect interpretation in both the identification and the aggregation stage. To avoid this complication, the method uses equally weighting of the dimensions and related indicators(Alkire et al., 2017).

**Representing the deprivation matrix and deprivation counts:** The deprivation matrix ( $Y$ ) for all dimensions can be extracted from the achievement matrix and the  $Z$  vector showing the deprivation cut-offs. The deprivation matrix includes two elements. The element of 1 indicates that the household is deprived and 0 represents the household that is not deprived in the indicator. Each household's deprivation score in the dimensions is calculated from the deprivation matrix and is represented in a column vector ( $C$ ) which indicates the weighted sum or the numbers of deprivations that a particular household has experienced in every dimension.

**Identification function and poverty cut-off:** The second cut-off ( $K$ ) in the Alkire-Foster method is called the 'poverty cut-off', determining whether a household is multidimensionally poor. A household's deprivation score is compared with the poverty cut-off. If the deprivation score is equal to or greater than the poverty cut-off, the household is considered to be poor. The identification stage can follow a union, intersection, or intermediate approach. In the union approach,  $K$  is equal to a minimum number/weight across all dimensions. In the intersection approach,  $K$  is equal to the sum of weight/numbers across all dimensions. In the intermediate approach,  $K$  is expressed as a percentage of the weight/numbers of the dimensions. This study will apply the different levels of poverty cut-offs.

**Censoring stage:** At this stage, Alkire and Foster introduced three other matrixes through the censoring process. They proposed the censoring step as a transitional one that should be constructed after the identification step and before the aggregation stage (Alkire et al., 2017).

The first censored deprivation matrix is extracted from the deprivation matrix. This censoring of the deprivation matrix ( $g_0$ ) is based on the poverty cut-off.

The next censored matrix is called the 'normalised gap matrix' ( $g_1$ ), which represents the normalised gaps of every individual in a deprived dimension. The normalised gap of an individual is the difference between individual achievements and deprivation cut-offs divided

by the deprivation cut-off. This matrix reveals the depth of deprivation in any specific dimension (Alkire & Foster, 2011a).

Every individual element in the normalised gap matrix is squared to form the next censored matrix, which is named the 'censored squared gap matrix' (g2).

#### **4.9.1.2 Aggregation of the poverty**

The Alkire-Foster method developed the FGT approach to produce a dimension-adjusted family of measures to aggregate the poverty information from the identification stage into the following overall indices: adjusted headcount ratio, adjusted poverty gap, and adjusted squared poverty gap.

*Adjusted headcount ratio (M0)* is the mean of the censored deprivation matrix. The adjusted headcount ratio includes two components, namely the headcount ratio (H) and intensity (A), ( $M0 = A * H$ ). The headcount ratio refers to the proportion of the population who are poor (the extent of the poverty) and the intensity of poverty determines the average amount of deprivation which the poor people are experiencing (the severity of the poverty).

*Adjusted poverty gap (M1)* is defined as the mean of the censored normalised gap matrix, which determines the incidence, intensity, and depth of poverty ( $M1 = A * H * G$ ). G represents the depth of the poverty, which is defined as the average of normalised poverty gaps.

*Adjusted squared poverty gap (M2)* is described as the mean of the censored squared gap matrix. This index reflects the incidence, intensity, depth, and inequality of deprivation among the poor ( $A * H * S$ ). S represents the total average of the squared gap.

#### **4.9.1.3 Decomposition by subgroups**

The censored deprivation matrix is decomposed into subgroups and the relevant M0 is calculated at the subgroup level. The M0 of the subgroup can be compared with other

subgroups and M0 of the overall poverty. The contribution of subgroups into overall poverty can be determined in this stage.

#### 4.9.1.4 Brief pilot study

The method is pre-tested only in the asset dimension of five pre-tested questionnaires.

Let's define the achievement matrix (X) for five households:

Achievement in indicators in asset dimension

$$X = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 2 & 2 \\ 0 & 3 & 3 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix} \quad \text{Households}$$

$$Z = [1 \quad 2 \quad 2], \text{ the deprivation cut off}$$

The columns represent the individual's achievement in the dimension. For example, the first indicator is related to the access to the clean water. The first household and the third household does not access to the clean water. The row vector of Z represents the cut-off points.

Based on the achievement matrix and deprivation cut-offs, the first household is deprived in all three indicators.

$$Y = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix} \quad C = \begin{bmatrix} 3 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix}$$

Applying the union, intersection and intermediate approaches to the asset dimension reveals that based on the union approach, 3 households (1, 3 and 4) are poor. According to the intersection approach, only the first household is deprived. By applying the poverty cut-off in the level of the 1/3 of the indicators, 3 households (1, 3 and 4) are considered as poor. With the cut-off of 2/3, only the first household are categorised as poor.

Let's suppose the poverty cut-off at the level of 2/3. The censored deprivation matrix is:

$$Y = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 0 \end{bmatrix} \quad C = \begin{bmatrix} 3 \\ 0 \\ 1 \\ 1 \\ 0 \end{bmatrix} \quad g0 = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \quad C0 = \begin{bmatrix} 3 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$$



If a household is categorised as a poor, then the elements of censored deprivation matrix becomes same as the elements in the deprivation matrix (household 1). But if the individual identified as a non-poor, then the elements in the censored matrix will replace with 0 (household 2 and 3).

Normalized gap matrix (g1):

$$X = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 2 & 2 \\ 0 & 3 & 3 \\ 1 & 3 & 1 \\ 1 & 2 & 2 \end{bmatrix} \quad g0 = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \quad g1 = \begin{bmatrix} \frac{1-0}{1} & \frac{2-1}{2} & \frac{2-1}{2} \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \quad g1 = \begin{bmatrix} 1 & 0.5 & 0.5 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$Z = [1 \quad 2 \quad 2]$$

Squared normalized gap matrix (g2):

$$g2 = \begin{bmatrix} 1 & 0.25 & 0.25 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

**Adjusted headcount ratio (M0):**

$$g_0 = \begin{bmatrix} 1 & 1 & 1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix} \quad C_0 = \begin{bmatrix} 3 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix} \quad C_0/1 = \begin{bmatrix} 3 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$

$$M_0 = \mu(g_0) = (1+1+1)/15 = 0.2$$

$$H = \frac{qk}{n} = \frac{1}{5} \quad A = (3/1+0/1+0/1+0/1+0/1)/3 = 1$$

$$M_0 = H * A = 1/5 * 1 = 1/5 = 0.2$$

The extent of the M0 reveals that the poor in this society experience 20% of the total possible deprivations the society could experience in the asset dimension.

#### Adjusted poverty gap (M1):

$$g_1 = \begin{bmatrix} 1 & 0.5 & 0.5 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$M_1 = \mu(g_1) = (1+0.5+0.5)/15 = 2/15 = 0.133$$

$$G = 1+0.5+0.5/3 = 2/3 = 0.666$$

$$M_1 = A * H * G = 0.2 * 1 * 0.666 = 0.1333$$

The extent of the M1 reveals that the poor in this society experience 13.3% of the highest possible sum of normalised gaps that the society could experience

#### Adjusted squared poverty gap (M2):

$$g_2 = \begin{bmatrix} 1 & 0.25 & 0.25 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$$

$$M_2 = \mu(g_2) = (1+0.25+0.25)/15 = 1.5/15 = 0.1$$

$$S = (1+0.25+0.25)/3 = 0.5$$

$$M_2 = A * H * S = 0.2 * 1 * 0.5 = 0.1$$

The extent of the M2 reveals that the poor in this society experience 10% of the highest possible sum of squared normalised gaps that the society could experience.

#### **4.9.2 Qualitative data analysis**

During the qualitative data analysis process, the researcher referred to non-numeric information extracted from notes and audio recordings, mainly focusing on the semi-structured interviews.

Qualitative data analysis is conducted through three steps: (i) developing and applying codes, (ii) identifying themes, patterns and relationships, (iii) summarising the data. Accordingly, the researcher in this study started by coding through categorisation of the data (Haux et al., 2017). using open coding. Open coding is a concept-indicator model involving “constant comparison of [textual] indicators and focused on comparing regularly occurring textual material” (Williams & Moser, 2019).

For the second step, identifying themes, patterns and relationships, Sherif (2018) stated that methods of qualitative data interpretation focus on words and phrase repetitions as well as primary and secondary data comparisons.

The final step involves not only summarising data but also making powerful links between findings and the research aims or objectives (Sherif, 2018).

##### **4.9.2.1 Semi-structured interviews**

Semi-structured interviews were conducted to collect the qualitative data of this study. The participants in the interviews were 21 household heads located in the rural regions of Urmia city in the West Azerbaijan province of Iran.

The interviews were conducted through face to face communication from July 2018 to November 2018.

The initial plan was to interview 37 respondents. However, the sample size was later limited to 21 for the following reasons. First, it was a major challenge to arrange interviews with household heads or even to find heads willing and able to participate in the interviews. Second, according to Patton (1990) and (Neuman, 2014), the qualitative sample size depends on the available resources and the emergence of sufficient data from the interviewees. The researcher found that 21 interviews produced sufficient data to support the quantitative data.

Full information about the research objectives was given to the interviewees before the interview. The day and time of the interview was arranged by phone before the interview took place. At the start of the interview, the researcher introduced herself and provided an overview of the study and the intention behind the research and interviews. The duration of each interview was 40-45 minutes on average. All interviews were recorded and then transcribed after the interview.

#### **4.10 Summary**

First, this chapter explained the meaning and importance of research paradigms. Discussion followed of three primary paradigms in the literature: positivism, interpretivism and pragmatism. The chapter then justified the use of a mixed method as opposed to a single method research approach by explaining that a mixed method approach would enable better identification of the various dimensions of the poverty. Based on the methodological discussion and referring to previous experiences in using mixed methodology for poverty studies, the researcher explained the selection of pragmatism as the research philosophy, which combines positivist and interpretivist approaches. The different sampling methods used for the quantitative and qualitative approaches were also described within the chapter.

The central aim of this study is to develop a multidimensional poverty framework for the study area. The study therefore adopted the Alkire-Foster method for identification of the poor and

aggregation of the poverty. The method used the dual cut-off approach for the identification stage and the dimension adjusted FGT family of measurements for the aggregation stage.

As the first stage, following the pilot studies, the researcher collected and analysed 378 surveys as quantitative data. As the second stage, the researcher interviewed 21 respondents to obtain textual information, images and recorded audios as qualitative data. At the final stage, the two sets of data were integrated and the research findings linked to the research aims and objectives.

## **Chapter 5: Quantitative and qualitative data presentation and analysis**

### **5.1 Introduction**

This chapter presents findings from the quantitative and qualitative primary data collected through a questionnaire and semi structure interviews in this study. The general information is summarised using tables and figures. It covers characterisation of the participants, including demographic features of the sample population, also, literacy and employment of the participants by using descriptive statistics.

The qualitative data presented in this section were collected through a survey questionnaire collected from May 2017 to November 2017. The population of this study was households who live in rural regions of Urmia city in West Azerbaijan province in Iran. The sample was drawn from 50 villages located in 16 districts of the five study regions: Central, Anzal, Nazloo, Silvaneh and Somay. Collected data were entered into Microsoft Excel and STATA for analysis.

Statistics relating to the six dimensions (education, access to basic infrastructures services, quality of housing, household assets, health and food security) of the multidimensional poverty analyses are presented. This is followed by the calculation of the multidimensional poverty measures, including incidence, intensity and depth of poverty as well as inequality among the poor, according to the Alkire-Foster model.

This chapter also aims to present the participants' perceptions about multidimensional poverty. In this regard, sequential qualitative semi-structured interviews were conducted in order to inform the quantitative findings. The interviews further explored participants' views on poverty, related directly to their experience, and the findings are presented in this chapter. The interview questions were based firstly on the quantitative data analysis discussed earlier and

secondly on the functionings of Sen’s capability approach which were also applied using Alkire-Foster method.

The qualitative sample size for this study was 21 households. According to Marshall (1996), the qualitative sample size should be large enough to answer the research questions adequately (Marshall, 1996). It was considered that the sample size used in the current study was sufficient to describe the research phenomenon. The qualitative data support the findings of the quantitative data. As Patton (1990: 132) suggested, 'qualitative data can put flesh on the bones of quantitative results, bringing results to life through in-depth case elaboration'. The semi-structured interviews were undertaken in 21 selected households across five regions.

Table 5-1 provides demographic information on the interviewees.

**Table 5-1: Demographics of interviewees**

Interviewee	Gender	Region	Age	Family size
1	Male	Central	28	3
2	Male	Central	45	6
3	Male	Central	46	5
4	Male	Central	51	4
5	Male	Central	61	2
6	Female	Central	53	5
7	Male	Central	64	5
8	Male	Central	48	4
9	Male	Central	50	3
10	Male	Central	61	4
11	Male	Nazloo	72	2
12	Male	Nazloo	37	3
13	Male	Nazloo	55	5
14	Male	Nazloo	61	4
15	Male	Anzal	46	6
16	Male	Anzal	29	2
17	Male	Silvaneh	31	4
18	Male	Silvaneh	57	5
19	Male	Silvaneh	44	4
20	Male	Somay	35	4
21	Male	Somay	51	7

Semi-structured qualitative interviews were used to explore participants' perceptions and self-assessment about their well-being and about multidimensional poverty. However, a deliberate decision was made to formulate the interview questions mainly based on well-being and not on poverty as it emerged from the pilot study that participants see poverty as a very sensitive issue to talk about. Regarding Sen (1985), the idea of well-being is in fact a product of the capabilities and functionings and a lack of these leads to poverty. To analyse the qualitative data, a list of functionings and capabilities based on Sen's capabilities approach was used. As mentioned in chapter 2, Sen's capability approach formed the basis for much of the literature on multidimensional poverty.

According to the capability approach, well-being should be assessed based on the functionings (achievements) and capabilities (opportunity/freedom) which in general help to identify how people actually live, as well as their freedom to achieve personal well-being (Gasper, 2007). The qualitative part of this study is explored in two major sections which are related to major themes of Sen's capability approach. These themes are personal well-being and economic well-being. The former explores multidimensional poverty status in terms of people's living standards and lifestyle and the latter reveals people's capability to afford to buy essentials for life, as well as to find a job and earn money. Table 6-2 presents a list of functionings and capabilities used to evaluate the multidimensional poverty status of the participants based on these two major themes.

**Table 5-2: Functionings and capabilities used to evaluate multidimensional poverty**

---

1. Being able to read and write
2. Being able to access the basic services
3. Being able to live in a good quality house
4. Being able to live a healthy life

5. Being able to communicate with society

6. Being able to feel food secure

7. Being able to own material assets

These pre-determined functionings are related to the following questions:

-How do people prioritise their experience of multiple poverty dimensions?

- What are the people's own experiences of poverty?

- How can self-assessment interviews, based on a qualitative approach, help to explain the quantitative findings? Do these approaches complement or contrast with each other?

This chapter is divided into the following sections: The first section explores the participants' general view on poverty; the following sections represent the participants' views on personal well-being and economic well-being, using the different dimensions of poverty as discussed in the quantitative data chapter; the last section summarises the chapter.

## **5.2 Defining poverty based on participants' perceptions**

One of the first questions the interviewees were asked related to their perceptions as people who have directly experienced poverty in their lives. The first page of the book titled *Voice of the poor*, produced by the World Bank, included a quote from a poor man in Ghana who said 'Poverty is like heat; you cannot see it, you can only feel it: so to know poverty you have to go through it.'(Narayan et al., 2000). By considering the perceptions of those who have suffered poverty, a better understanding of the dimensions of poverty can be obtained. Also, policy makers will be better equipped to implement effective policies for poverty reduction once they understand the nature, causes and priorities of the poverty as described by the poor by themselves (Laderchi et al., 2003).

Therefore, the aim of the first question in the open-ended interviews was to understand the concept of poverty by listening to people's views. As representatives of the households, household heads were asked to explain their own understanding of poverty; thus, the first interview question was 'How do you define poverty?'

Generally, in response to this question, interviewees explained that poverty is multidimensional and goes beyond income or material deprivation. According to the information gathered from the interviewees in this study, the definition of poverty as perceived by people in RRUWA can be summarised and categorised into five main aspects of poverty as shown below.

#### Food insecurity and poverty

For many of the participants, food insecurity was the first thing mentioned when it came to poverty definition.

Poverty means deprivation of basic nutritious food for family members.

*"For me, poverty means not being able to provide the basic foods for my family. All I can bring to the table is bread and dairy products; it is filling, but it's not sufficiently healthy or nutritious"* (Participant 2)

*"Poverty means struggling to feed your family, when you don't have enough money to provide food for your family. It's getting worse every day"* (Participant 21)

*"It is when you don't have enough food and cannot fill your tummy for the whole day. Now I cannot remember the last time I bought or ate meat"*. (Participant 9)

#### Asset ownership and poverty

Poverty means deprivation of essential necessities such as money and other durable goods and materials which are necessary for household living. Poverty also means not being able to earn sufficient money to provide household necessities.

*“Poverty means lack of everything, no money, no financial resources, no savings, no decent house, no household assets”* (Participant 7)

*“I have started a family, I have one kid, but I couldn’t, and I still can’t, buy a house”* (Participant 1)

*“I have to work too hard to earn money but cannot buy anything with that money. Everything is too expensive. and I can’t buy the things that my family want. I’m not living the life that I want”* (Participant 16)

#### Poor health and poverty

Poverty is related to health condition. It can refer to an illness which prevents a person from working or having a family member who is suffering from a long-term illness.

*“I say, poverty comes from being ill all the time. I cannot work because of my back problem; I cannot stand up straight even for a few minutes”.* (Participant 5)

*“We are poor because my wife has been ill for two years. She has seen a doctor in Urmia, but nothing changed, she is not able to do everyday tasks which she used to do, we should take her to see a specialist, but it is difficult, we don’t have anybody near us”.* (Participant 11)

#### Job insecurity and poverty

Poverty means not having a job, not being able to find a job, or having an insecure job.

*“For me, now, poverty is not having a job. I used to work in Urmia in building construction, the firm closed down last year because they went bankrupt. I didn’t even get paid for three months, since then I have been unemployed and reliant on government grants which are nothing. We can only afford to buy basic food with that money now”.* (Participant 19)

*“I am working as a labourer in a cement factory on a day by day basis. The money only buys enough food to keep me alive; despite that, I don’t know what is going to happen in the next*

*week, next month. They might not need us anymore. I am worrying all the time. It is not easy to find a job with a pension, benefits or bonus. If I don't lose my job by next year, then I will be extremely lucky".* (Participant 12)

### Social interactions and poverty

Poverty means lacking relationships with others, including friends, neighbours and relatives.

*"It is when you are neglected by people around you, when you don't have money, a good house, assets, many people won't communicate with you, they ignore you and avoid seeing you".* (Participant 13).

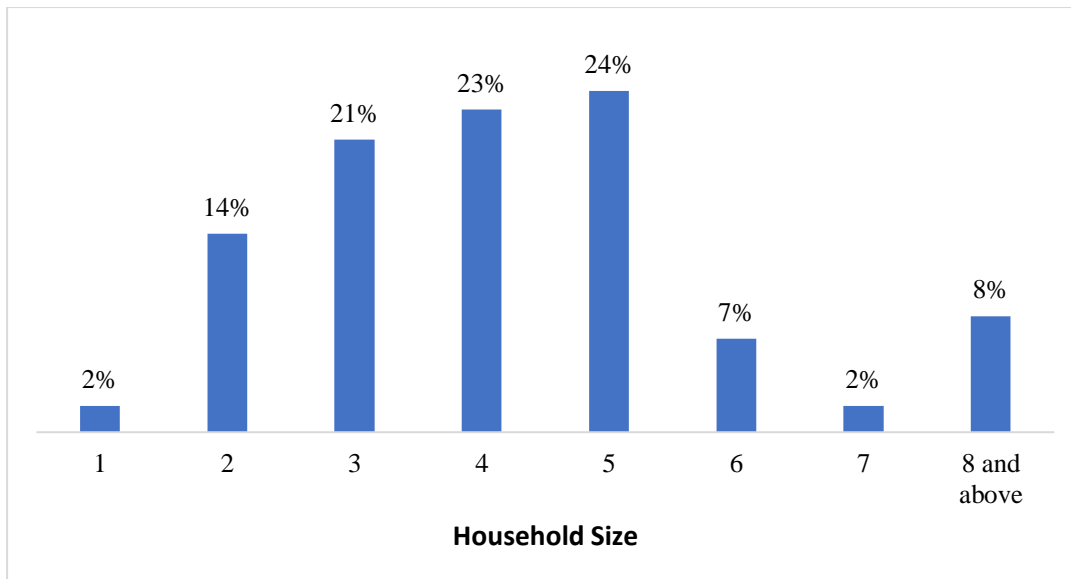
*"For me, I am poor because relatives and neighbours don't visit or come to my house as I have nothing to offer them. They even ignored me when I tried to borrow some money from them. It's not a good feeling as I feel alone and isolated in my own world. My family are also suffering from this. Sometimes we don't have visitors for months"* (Participant 20).

## **5.3 Demographic characteristics**

In the following subsection the demographic features of the sample population are presented, including household size and distribution of the members in the household by gender, age, marital status and literacy.

### **5.3.1 Household size**

The mean family size in the villages of rural regions of Urmia is 3.84. This is approximately equal to the average household size in the rural regions of West Azerbaijan (3.7) and Iran (3.4) as a whole (SC1, 2016). Figure 5.1 represents household size in the study area. In the villages of rural regions of Urmia 2% of the population live alone, whereas 14%, 21%, 23% and 24% of the population of these villages live in households with 2, 3, 4 and 5 members, respectively. Households with 6 members account for 7% of the population, while 2% of the population live in households with 7 members and 8% live in households with 8 members or above.

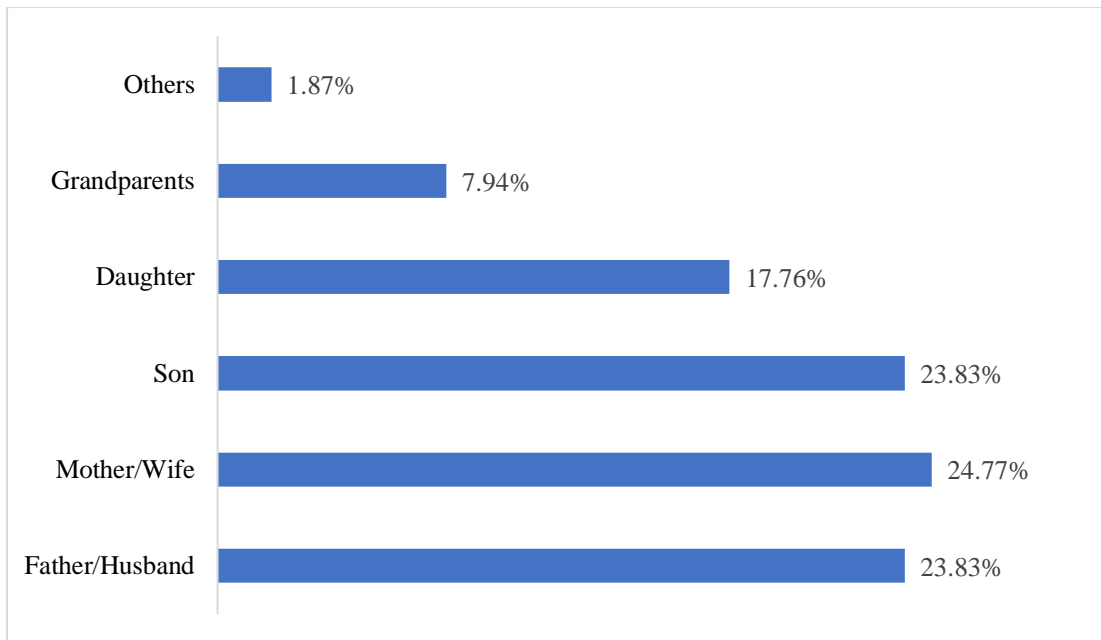


**Figure 5.1: Household size in the study area**

Source: Survey data (2017)

### 5.3.2 Distribution of family members within the households

Figure 5.2 represents the distribution of family members within the households of the sample population. It shows almost equal distribution of mothers 24.77% and fathers 23.83%, which indicates there is only a small number of single parents in the sample population. There is a higher percentage of sons 23.83% in comparison with daughters 17.76%. Meanwhile, grandparents account for 7.94% of the total distribution and the remaining 1.87% consists of other relatives, including grandchildren, uncles and aunts.

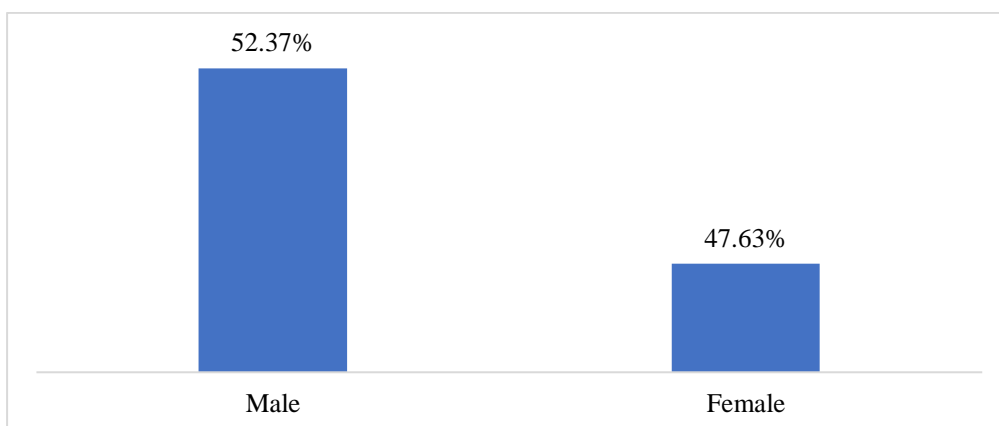


**Figure 5.2: Distribution of family members in the households**

Source: Survey data (2017)

### 5.3.3 Gender distribution of the population

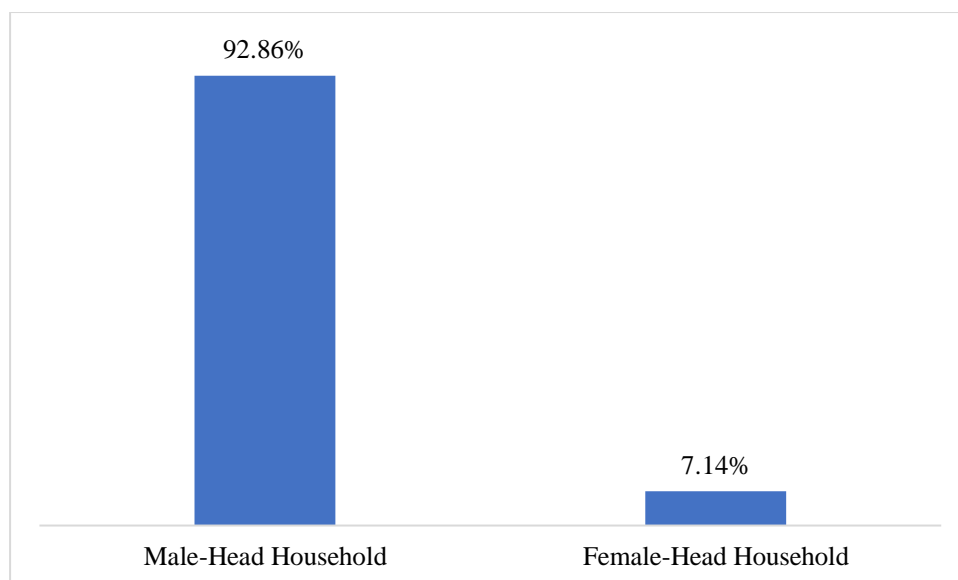
Figure 5.3 represents the gender distribution. It indicates that on average 52.37% of the population are male and 47.63% of the population are female. The latest national survey(SC1, 2016) also reported a slightly higher percentage of men 51.3% compared with females 48.7%, and similar percentages were recorded for distribution of men and women in West Azerbaijan province.



**Figure 5.3: Gender distribution among the study population**

Source: Survey data (2017)

Distribution of household heads by gender is represented in figure 5.4. Men are in the majority 92.86% in comparison with women 7.14%, which indicates that household heads in the sample area are predominantly male.



**Figure 5.4: Household head distribution by gender**

Source: Survey data (2017)

### 5.3.4 Population by age and gender

Table 5.3 presents the distribution of the sample population by age and gender. The majority of the sample population are aged 10 to 29 years old 38.84%. The table shows that around 24.41% of the population are younger than 14 years, 27.62% are between the ages of 15 and 29, 40.86% are between 30 and 64, and 7.48% are 65 years or older. The national population statistics report that 24% are under 14 years old, 25.1% are aged 15 -29 years, 44.81% are aged 30 - 64 years, while 6.1% are reported as being older than 65 years(SC1, 2016). Comparing these figures indicates that rural districts in Urmia, West Azerbaijan province have a lower proportion of population aged between 30 and 64. Migration to the cities might be the reason for this difference as families with younger children tend to migrate to cities so they can gain access to higher levels of education. Also, the table indicates a slightly higher level of older

people in comparison with the whole country. Percentages for males and females aged 60 years and older are 9.32% and 4.69%, respectively, while a higher percentage of males 27.70% is found among the population younger than 14 years, compared to 20.79% of females in the same age category. Females account for the majority in the age category of 30 to 64 years, with 45.24% females compared to 36.88% males.

**Table 5.3: Population distribution by age and gender in the villages of rural regions of Urmia**

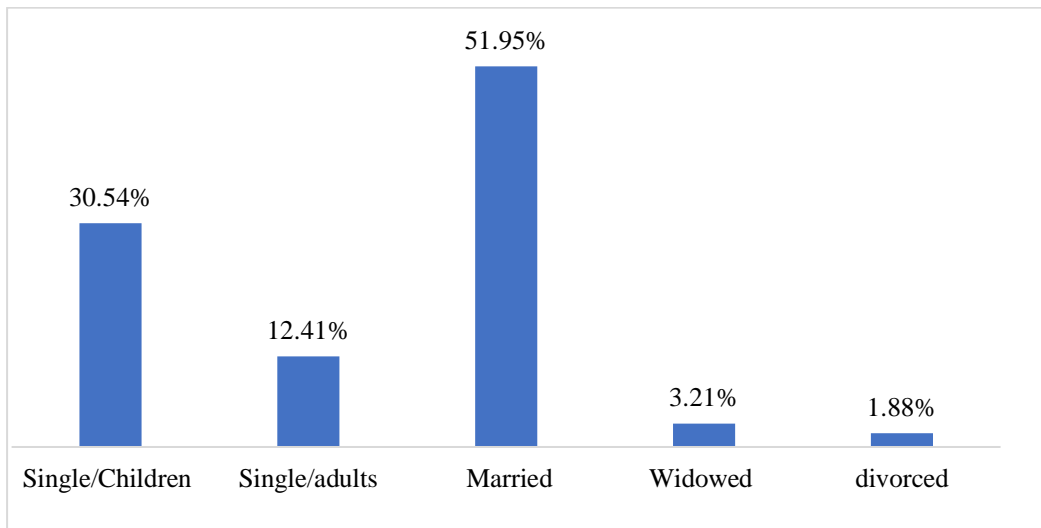
Age group	Male	Female	Total
0-5	7.46%	7.76%	7.60%
6 to 9	6.13%	4.98%	5.58%
10 to 14	14.11%	8.05%	11.23%
15 to 19	8.26%	10.54%	9.34%
20 to 24	7.99%	12.74%	10.25%
25 to 29	9.85%	6.00%	8.02%
30 to 34	6.39%	12.74%	9.41%
35 to 39	7.06%	10.98%	8.93%
40 to 44	5.06%	4.98%	5.02%
45 to 49	10.79%	5.86%	8.44%
50 to 54	3.73%	3.07%	3.42%
55 to 59	2.93%	6.59%	4.67%
60 to 64	0.93%	1.02%	0.98%
65 to 69	5.19%	3.81%	4.53%
70 to 74	0.93%	0.00%	0.49%
75+	3.20%	0.88%	2.09%
<b>Total</b>	100.00%	100.00%	100.00%

Source: Survey data (2017)

### 5.2.5 Population distribution by marital status

Details of the marital status of the population are presented in Figure 5.5. The figure shows that 30.54% of the people in the sample population aged below 18 years are not married, while 12.41% of adults above 18 years old are not married. Among the population as a whole, 51.95%

are married. Widows and widowers make up 3.21% of the population, while the divorced comprise 1.88% of the population.

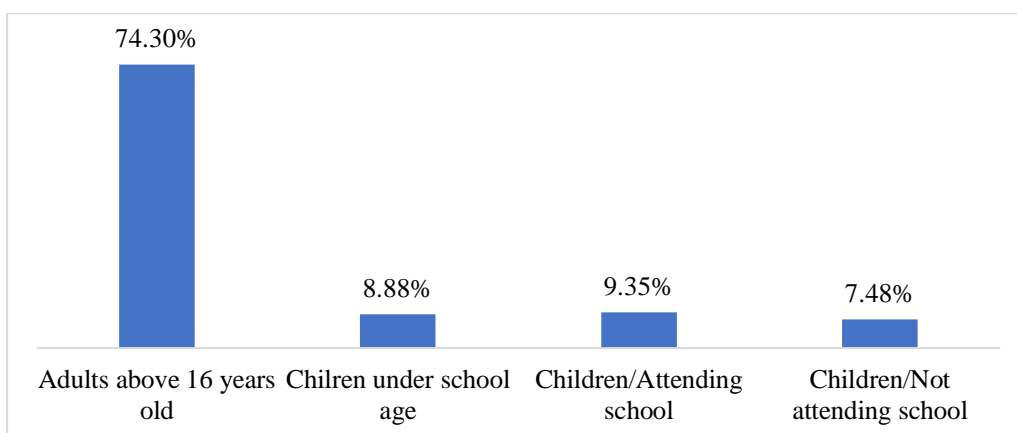


**Figure 5.5: Population distribution by marital status**

Source: Survey data (2017)

### 5.3.6 Literacy of the population

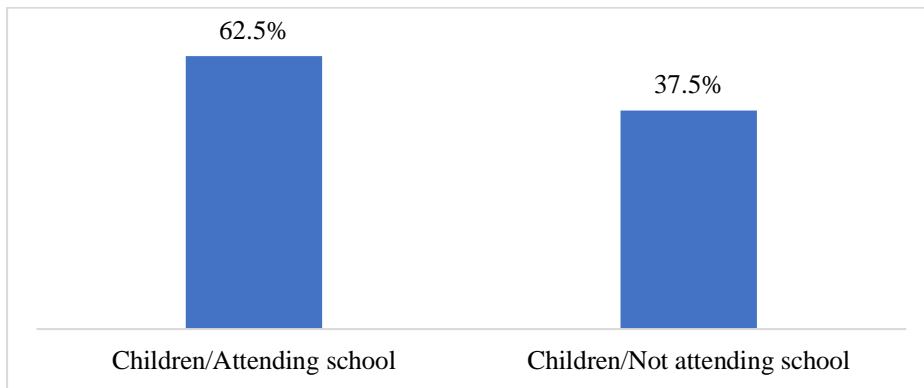
Almost 9.35% of the sample population are children attending school (figure 5.6), including primary and secondary school. The remaining 90.65% consist of people under school age 8.88%, no longer of school age 74.30%, and those of school age but not attending school 7.48%.



**Figure 5.6: Population distribution by school attendance**

Source: Survey data (2017)

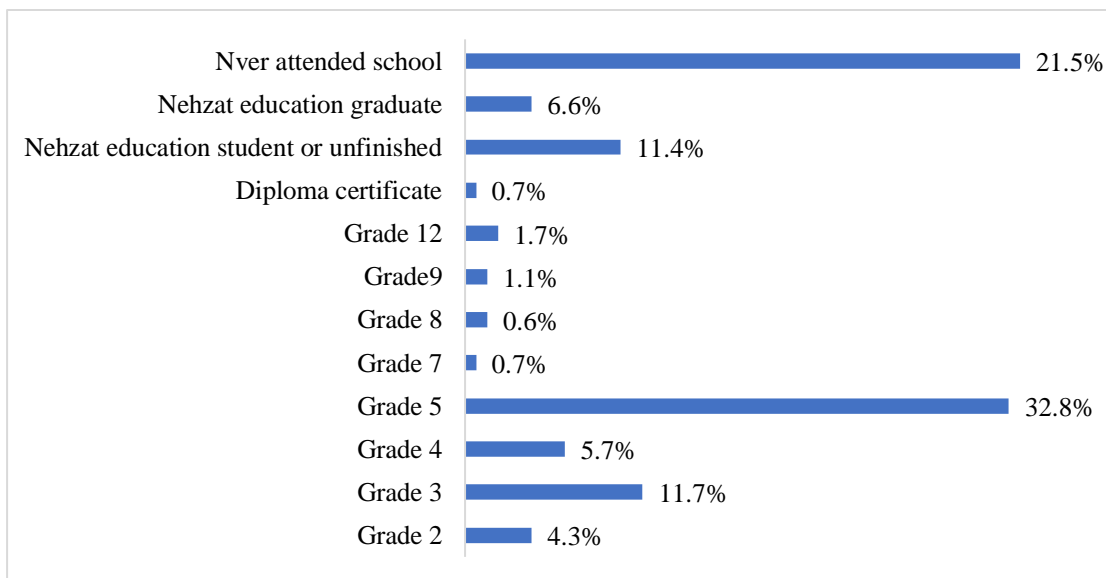
Figure 5.7 shows that 62.5% of school age children in the rural regions of Urmia were attending school, while 37.50% of these children were not attending school.



**Figure 5.7: School age population distribution by school attendance**

Source: Survey data (2017)

Figure 5.8 represents the qualifications of the non-school-going persons in the sample population. The majority 21.5% have had no schooling. About 32.8% have finished primary school (grade 5), while 4.8% have achieved qualifications higher than primary school level. Approximately 18.0% have attended Nehzat education courses which have been implemented by governments after the Islamic revolution to improve literacy among the country’s adults. Almost 6.6% have completed Nehzat education, which is approximately equal to primary school level.

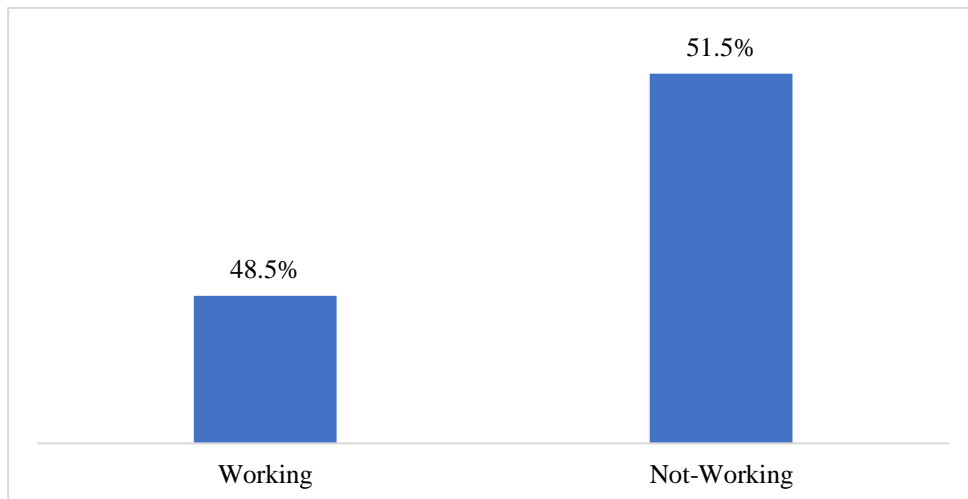


**Figure 5.8: Qualifications of post-school age population**

Source: Survey data (2017)

### 5.3.7 Employment status among sampled population

The next section will discuss the employment status of adults aged above 16 years in the sampled population. As figure 5.9 illustrates, 51.5% of adults in the sampled population are not economically active, while 48.5% of the adult population are actively employed.

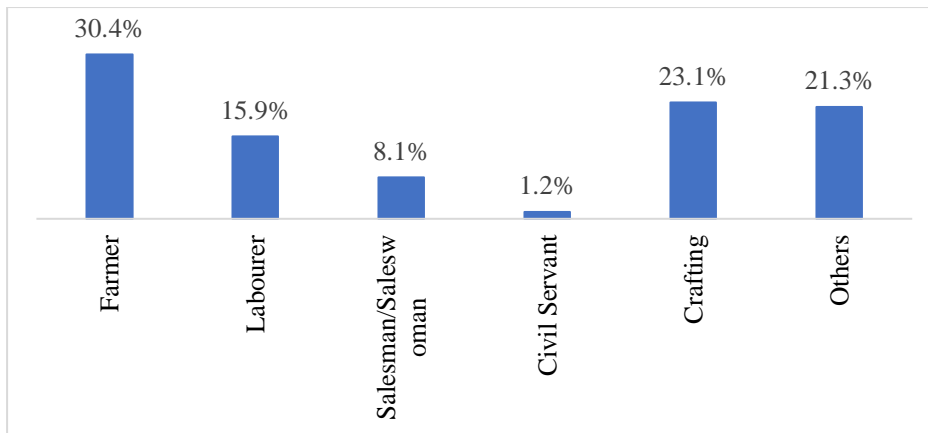


**Figure 5.9: Employment status among the sampled population**

Source: Survey data (2017)

#### 5.3.7.1 Occupations of active adults in the sampled population

Figure 5.10 provides information related to the occupations of the active adult population. Among these, 30.4% are farmers, 15.9 % are labourers, with the majority working on building construction sites and commuting to the city of Urmia to work, while 23.1% are engaged in handicrafts, mostly in weaving handmade rugs. Finally, 21.3% of the active sampled population are reported as working in other occupations which include informal jobs such as illegal cross-border trade and smuggling.

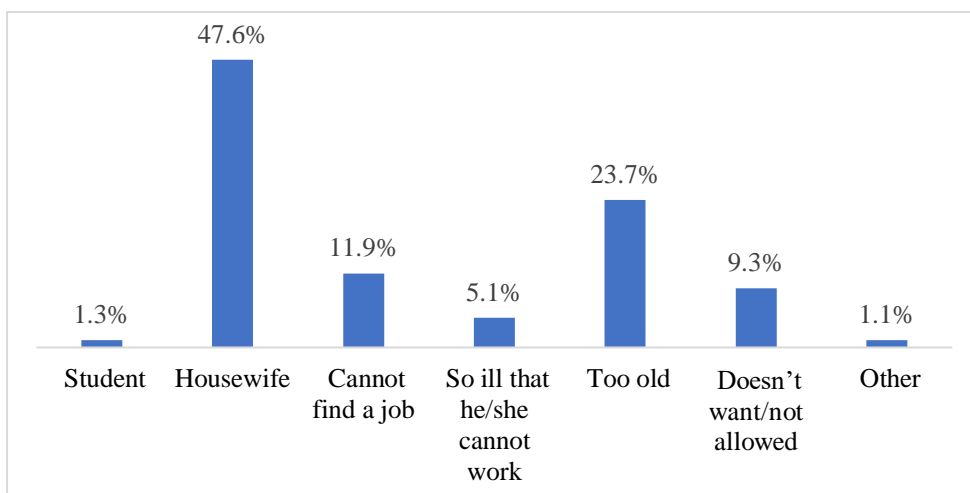


**Figure 5.10: Occupations of the active sampled population**

Source: Survey data (2017)

### 5.3.7.2 Reasons for non-activity among adults in sampled population

Descriptive statistics on the non-active sampled population are presented in figure 5.11. The majority of the non-active sampled population 47.6% are housewives, while 11.9% are unemployed and looking for a job. Further analysis of figure 5.10 and 5.11 revealed that 12.58% of the whole sampled population are unemployed, the majority being males in the age group 18-30 years. Among the non-active adults, 9.3% have chosen not to work or they are not allowed to work. For example, in most of the families in the rural districts of Iran women are not allowed to have a job.



**Figure 5.11: Reasons for non-activity in the sampled population**

Source: Survey data (2017)

## 5.4 Characteristics of poverty dimensions in RRUWA

This study analysed the deprivation and multidimensional poverty status of households in six dimensions: education, access to basic infrastructure services, quality of housing, household assets, health, and food security. The six dimensions have a total of 13 indicators (see table 4-5). Table 4.5 also shows the poverty cut-off criteria for each of the indicators in each dimension. According to Alkire-Foster method, each dimension is weighted equally. Each indicator within a particular dimension is assigned the same weight. Table 5.4 shows the relative weighting of the indicators for the dimensions.

**Table 5.4: ,Selected dimensions indicators, deprivation thresholds and relative weights used in this study**

Dimension	Indicator	If...	Assigned weight
Education	Years of schooling	At least one adult (above 16 years old) has not finished primary school (5 years of schooling)	8.33%
	School attendance	Any school aged children are not attending school	8.33%
Access to basic infrastructure services	Access to drinking water	Absence of tap water or piped water in the dwelling	4.16%
	Access to clean sanitation	Household does not have access to a flush toilet or ventilated improved toilet	4.16%
	Access to clean fuel for cooking	Household does not have piped natural gas or electricity for cooking	4.16%
	Access to electricity	Household does not have access to electricity	4.16%
Housing quality	Quality of dwelling structure	Household dwelling structure is built of mud or unbaked bricks	8.33%
	Crowding	There are two or more persons per room in household	8.33%
Assets	Ownership of communication assets	The household does not have two out of the three items	8.33%
	Ownership of other assets	Owning less than one third of these assets	8.33%
Health	Availability of and access to medical facilities	Distance from the house to the nearest clinic or hospital is more than 30 minutes by usual transportation	8.33%
	Access to health insurance	Nobody has the benefit of health insurance	8.33%
Food Security	Food security	Food insecure	16.66%

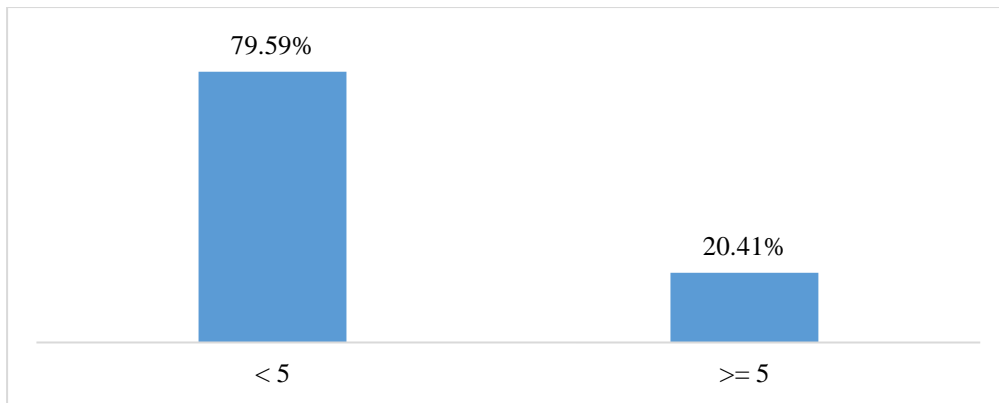
## **Participants' perceptions on personal well-being**

People who have experienced poverty in different ways throughout their lives form various kinds of ideas and perspectives on poverty. Understanding these ideas and perspectives may help to identify different dimensions of poverty as well as to develop poverty reduction policies. To examine their ideas and experiences on poverty I asked an open-ended question in the interview to explore their views on personal well-being and economic well-being. I categorised these two major themes according to the poverty dimensions. This section presents the findings for the theme 'personal well-being' according to the four following dimensions: Education, living standards, health condition and access to health.

### **5.4.1 Education**

The role of basic education in human and social development are described in Sens framework. Some of the benefits of the education are counted as capability in writing, reading, and counting improves the quality of life in this framework. Employment opportunities are extremely dependent on the level of education, Education can affect individual and national health aspects and even a basic level of education can make people aware of their legal rights (Drèze & Sen, 2013). Education not only benefits the lives of the individuals, but also improves national economic growth and labour productivity (Barro & Lee, 2001). Achieving the universal primary education goal was introduced as the second target of MDGs. All of these reasons indicate the use of education as one of the fundamental dimensions for multidimensional poverty measurement.

**Adults' education level:** Figure 5.12 illustrates the average level of education among adults aged 16 or above in RRUWA based on number of years in school.

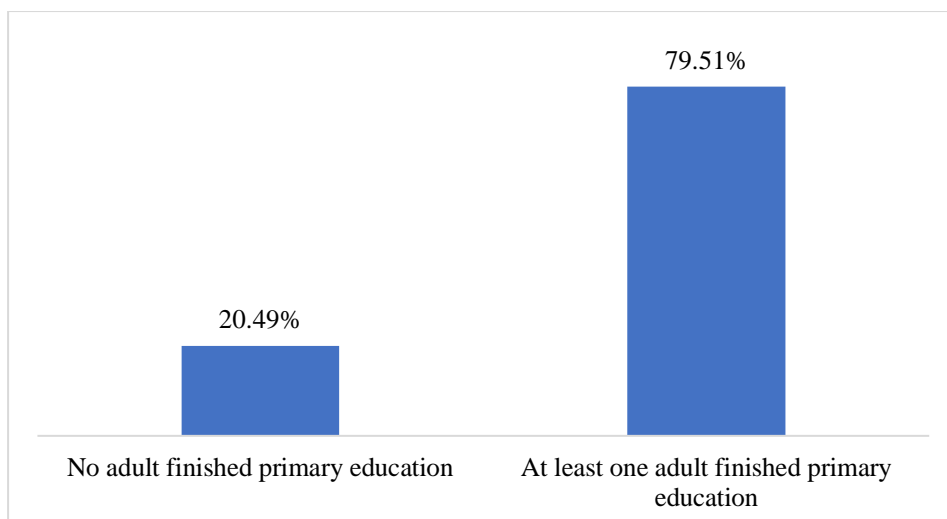


**Figure 5.12: Average education level among household members aged 16 years and above**

Source: Survey data (2017)

As presented in Figure 5.12, the great majority of the population (almost 80%) aged 16 years and above have spent five or more years in education, on average, as compared to around 20% who have, on average, spent less than five years in school.

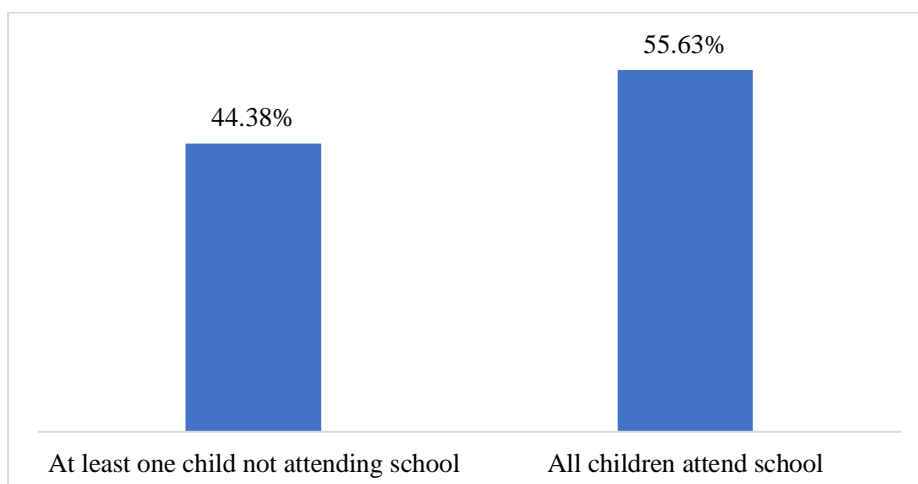
Based on the adoption of at least one of the household members aged 16 years and above having graduated from primary education in the definition of household deprivation, the study reveals that many households in the study area were not deprived. A similar definition for this indicator in multidimensional poverty analysis was used by Salazar et al. (2013) in Colombia. In considering the households, 79.51 % were found to have at least one person who had graduated from primary school, against 20.49% of households where no adults had finished primary education and were considered to be deprived in that respect. This distribution is shown in figure 5.13.



**Figure 5.13: Adults' level of schooling**

Source: Survey data (2017)

**Children's attendance at school:** Figure 5.14 presents the percentage of school attendance among the child population. Among the 371 households in the study, 200 households have children of school age. Based on the adoption of any school aged child not attending school in the definition of household deprivation, the study shows that in almost 44% of the households with school aged children, at least one of them was not attending school and the household is considered to be deprived in that respect. Meanwhile, in almost 56% of the households all school aged children were attending school.



**Figure 5.14: Children's school attendance**

Source: Survey data (2017)

A number of respondents felt that one of the main reasons that individuals experience poverty is because they have not received the necessary education during their life.

It is worth mentioning that most of the participants mainly talked about their children when discussing their own situation. Throughout their replies they stressed problems regarding their children's schooling and the great difficulty they have had in sending them to school. The researcher asked a question on the importance of education and their perception of how their life would be if they were more educated; also, the role that their education level had played regarding their poverty level if they had experienced poverty.

*"I did not even finish primary school. If I had been able to finish secondary school and obtain the diploma certificate, I could have got a job as a civil service worker in the city that time. I could have earned a regular income every month, which could have helped me to support my family a lot. I know how important education is. It wasn't possible in my time but my wife and I are trying to support our children's education in every way we can. Two of the three have finished primary and secondary school. One is attending high school and we hope that he can go on to university". (Participant 3)*

*"I know education is important for living. But we do not have enough money to send my two children to university. It is not easy to do anything without money nowadays. My eldest son couldn't enter the public and government supported university, because he couldn't compete with the kids in the city area. All facilities are accessible for them, but not for us in the villages. My son studied for one year in a private university before he gave up as we couldn't afford it. It is not like the past now. It's not only the tuition fees, we cannot pay for the room rent and living costs anymore. We were able to pay before but not anymore. Everything is more expensive now and I don't earn sufficient money even to feed my family. Also, my daughter*

*didn't enrol in school this year. To be honest we don't see any point in getting more schooling if you cannot use it in your future life” (Participant 14)*

*“I am the eldest son among 5 siblings. I am married but still live with my parents. I am working with my father as a farmer. My father tried to send us to school, but we all gave up after 6 or 7 years' schooling as the family didn't have enough money to support us. Instead I started working on a farm from my teenage years. My other siblings were in school at the time; however, they also gave up eventually. Now I have two children and am facing the same problem as my father faced. I was planning to move to a city and support them to get more schooling and higher education but with these economic conditions and lack of financial savings how can I do that? I am thinking all day and night how to escape from these poor conditions”. (Participant 17)*

*“Yes, I know how important education is throughout life. I have a neighbour who was able to send his son to university in Urmia. He is a judge now and very supportive of his father. He has a car, house in the city and supports his father in every way. But it happened around 20 years ago. I don't think families in this village can afford to do it” (Participant 4)*

*“I know many families who moved to the cities just because they wanted to provide better schooling and futures for their children, even though many of them have had to work hard as labourers or street salesmen. But they do it out of hope for the future. They don't want their children to experience what they did throughout their life in the village. So, I believe education is vital to avoid being poor”. (Participant 10)*

*“Education is important. I cannot read and write. I went to Nehzat classes for a few months in my 30s, but I didn't make any progress, so I gave up. Now, I am dependent on others in everyday life. I need to ask people to read and write for me when necessary. My family members*

*need to accompany me when I need to go and see a doctor as I speak Kurdish and many people don't understand my language in Urmia city". (Participant 18)*

The responses of the interviewees to the questioning on education generally indicate that they are aware of the importance of education for well-being, especially for their children's futures. However, it was observed that although participants mentioned difficulties due to not being educated, at the same time, they did not want to send their children to school after primary school as most of them saw no point in doing so. In many villages there is no high school, and they would have to send their children to the city, which is very costly, and they cannot afford it. They therefore lose hope and decide not to let their children have more schooling after primary or secondary school. Moreover, in some cases, because of poverty, families have needed their children to give up education and work beside them in family businesses like farming or carpet weaving. Since the interviewees generally reported that lack of well-being is related to lack of education, it is reasonable to conclude that education is a dimension of the poverty in the study regions.

These findings can be compared to the quantitative data, which showed that 44% of households had experienced deprivation in terms of their children's schooling and 20% of them experienced deprivation as adults in relation to their lack of schooling. As indicated by the qualitative data presented in chapter 5, 44% of the respondents reported having at least one school age child in their household who does not attend school. Also, in 20% of the households, no adult member has graduated from primary education.

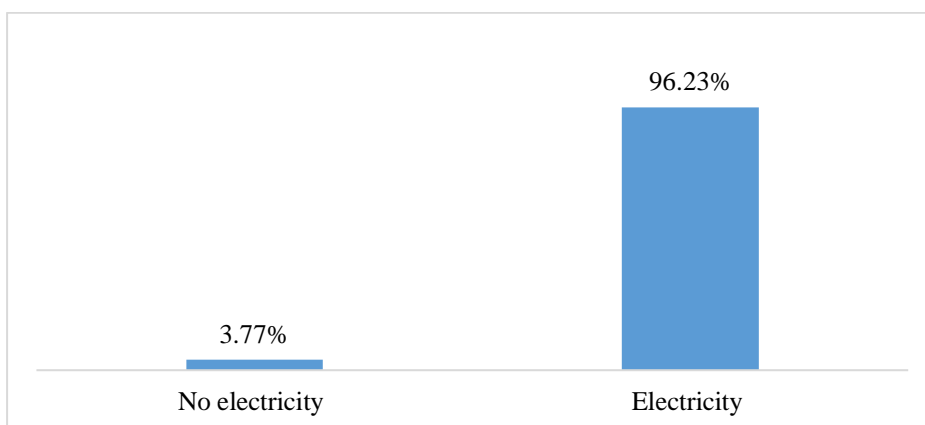
#### **5.4.2 Access to basic infrastructure services**

The following four indicators on access to basic infrastructure are directly related to the seventh MDGs. Access to these services improves the living conditions. This dimension includes four indicators: Access to 1. Drinking water, 2. Clean sanitation, 3. Clean fuel for cooking, and 4.

Electricity. The first three indicators are amongst the MDGs' indicators and are closely related to human well-being (Millennium, 2015). Also, all these indicators were used to compute the global MPI (Alkire & Foster, 2011a).

Access to safe drinking water decreases the spread of diseases and improves people's health and well-being. Access to clean sanitation is vital to maintain health, minimising the contacts with dangerous bacteria and viruses and also improving the quality of the living environment (WHO, 2016). Clean cooking fuel is closely related to health of the members of the household. Using wood, coal, charcoal, paraffin, and oil as a regular fuel for cooking and heating could harm the health of people who are living and breathing in such an environment (WHO, 2016). Provision of piped natural gas to all villages with a population of more than 100 was promised in the third development plan of Iran.

This study uses the following four indicators to determine the deprivation status: household access to adequate and safe fuel for cooking, electricity, a clean water source, as well as clean sanitation. Households' access to electricity for lighting is considered first and is illustrated in Figure 5.15.

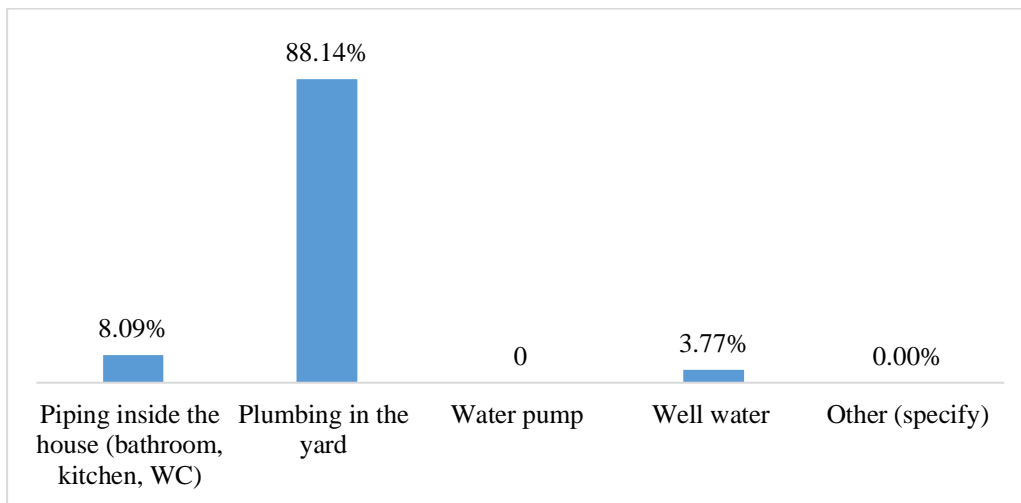


**Figure 5.15: Households' access to electricity for lighting**

Source: Survey data (2017)

Figure 5.15 indicates that most of the households in the area have access to electricity for lighting, with almost 96% having electricity as against just under 4% that do not have access to electricity and are therefore considered to be deprived in that respect.

The second category is access to safe and clean water. The household distribution regarding access to a water source is presented in Figure 5.16.

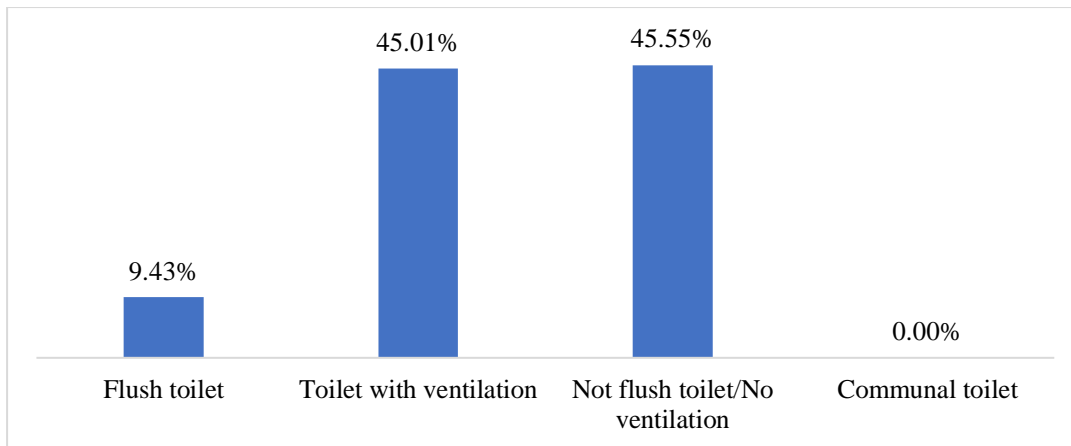


**Figure 5.16: Access to a water source**

Source: Survey data (2017)

Figure 5.16 represents that 88% of the households in the area had access to piped water in the yard, while only 8% had water inside the house. Almost 4% of the households had to fetch water from the well. Based on adoption of tap water inside the house or yard as representing non-deprivation, the figure shows that 96% of households in the area are non-deprived and less than 4% are deprived in that respect.

The third category under housing and access to basic infrastructure services is access to clean sanitation and the household distribution is presented in Figure 5.17.

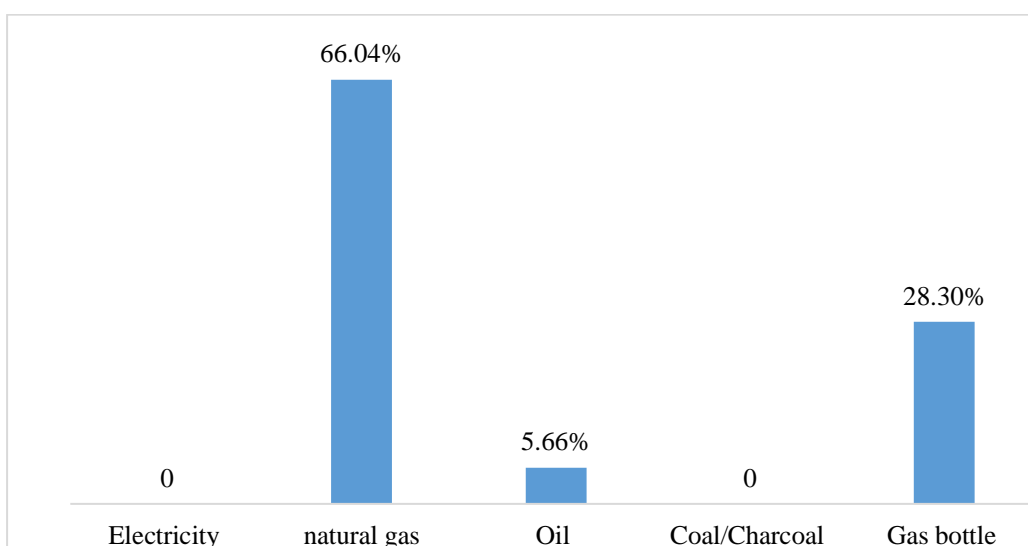


**Figure 5.17: Sanitation type**

Source: Survey data (2017)

The figure shows that only 9.43% of households in the area have access to a flush toilet, while 45% have access to a toilet with ventilation and, likewise, 45% have access to a toilet without flush or ventilation. Regarding the deprivation status, this figure illustrates that 54% of the population are non-deprived (have flush toilet or toilet with ventilation) and 46% are deprived.

The last category under housing and access to basic infrastructures services is access to clean fuel for cooking and heating and the household distribution is presented in Figure 5.18.



**Figure 5.18: Access to clean fuel for cooking**

Source: Survey data (2017)

None of the households in the area used electricity for cooking, while 66% of households were using natural gas, compared with the 34% who were using other types of fuel. Based on this analysis, 34% of the households are deprived and 66% are not.

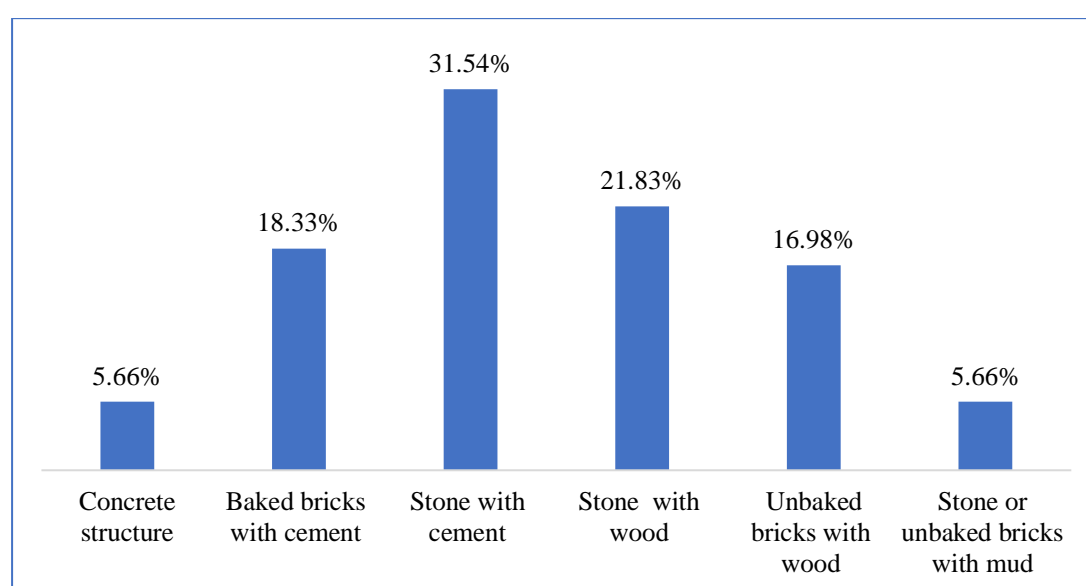
### **5.4.3 Housing quality**

Good quality housing is one of the fundamental needs of human beings. Housing conditions are related to many aspects of life, including privacy, health, security and social relations. This section reveals the perceptions of interviewees about their living standards in terms of their housing conditions. Factors affecting housing conditions vary from the construction materials to access to the basic infrastructure facilities and overcrowding.

Living in poor housing conditions has an undeniable impact on the health of family members, especially children's health. Construction materials are one aspect of evaluating housing quality. Housing that is in bad condition can make the living environment unsafe for inhabitants. For example, houses made from unstable or unsafe construction materials can be easily damaged or even cause accidents, while living in a cold, damp environment can put people at risk of viral or bacterial infections. Another indicator for evaluating living standards within households is access to clean sanitation facilities, which is directly related to household members' health. Access to basic infrastructure facilities such as electricity and water supply is another factor in measuring housing conditions.

A further aspect of housing quality is the amount of space in the house which is available to each member of the household. Space for each member is usually measured based on the number of people per room. Living in a crowded household can have a negative impact on the lives of household members, especially children. These impacts can include absence of a comfortable and quiet space for doing homework or to interact with family members, disturbed sleep and lack of privacy.

**Structure of the dwelling:** The quality of the dwelling structure is considered in this study as one of the indicators of housing quality, as included in studies in other countries (Salahuddin & Zaman, 2012; Salazar et al., 2013; Ashraf & Usman, 2012). In the present study, the main dwelling structure types are concrete, baked bricks with cement, stone with cement, and stone with wood, unbaked bricks with wood and stone or unbaked bricks with mud. The distribution is presented in Figure 5.19.

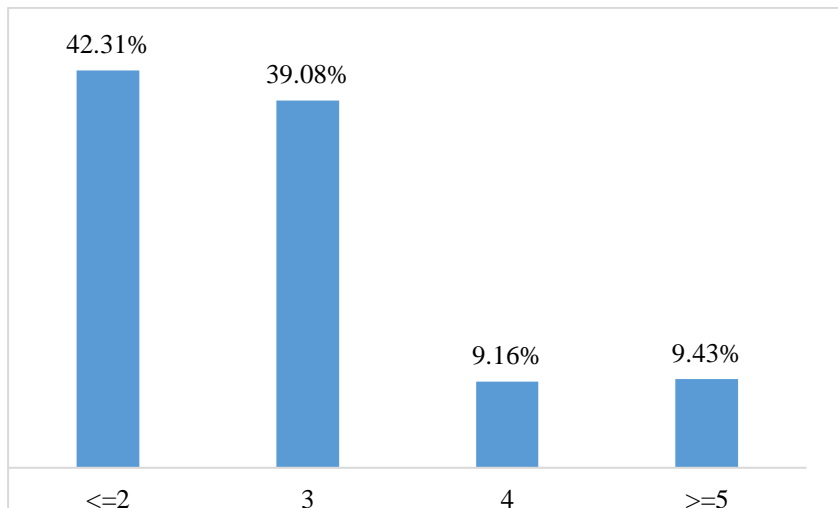


**Figure 5.19: The main materials used for the structure of the dwellings**

Source: Survey data (2017)

As shown in Figure 5.19, stone with cement was the most widely 31% used material for the dwelling structure. Among the dwellings in the study area, 5% were made of concrete and 18% were made of baked bricks with cement, while 22% and 17% were made of stone with wood and unbaked bricks with wood, respectively. In considering dwellings made of concrete, and baked bricks with cement and stone with cement as representing non-deprivation, the study finds that 55% of the households are non-deprived compared with 45% that are deprived due to their house being made of stone with wood, unbaked bricks with wood and stone or unbaked bricks with mud.

**Overcrowding:** Another indicator considered in the house quality dimension is overcrowding, defined according to the number of people per room in the household. This indicator follows the MDGs (UNDP, 2015). The percentages regarding number of people per room are presented in Figure 5.20.



**Figure 5.20: Number of people per room**

Source: Survey data (2017)

Figure 5.20 shows that 42% of households had two or fewer people per room, while 9% had five or more people per room, 39% had three per room, and 9% had four people per room. Regarding the adopted definition of deprivation, the study shows that 42% of the households are non-deprived in this respect, compared to 58% that are deprived.

The following section reveals the perceptions of interviewees about their living standards in terms of housing conditions, including construction materials of the housing unit, sanitation conditions, access to infrastructure facilities such as electricity, gas and water supply, and overcrowding.

The interviewees were asked how they perceived their living standards in terms of housing conditions and quality. The housing quality indicators were briefly explained to the interviewees.

*“Our house is old and in bad shape and needs to be renovated, but we don’t have enough money to renovate it. If we don’t even have enough money to spend on essentials, how can we renovate the house?” (Participant 13)*

*“Last year, my son and I started to build a new one-bedroom house beside our house. My son and his family were supposed to live in that house as they are living with us and there is not enough space for everybody. However, we couldn’t finish it as the building material became more costly suddenly”. (Participant 1)*

*“My house ceiling has a few holes and it leaks in the winter season. The house is so old, and the ceiling needs upgrading. A few years ago, banks had a scheme to lend money to people in rural areas to repair or upgrade their houses; however, it has been stopped now and I live on the government grant money and there is no way I can replace the house ceiling”. (Participant 7)*

*“Our house is not in good condition. You can see the signs of damp and mould in winter on the walls. We always apply new cement in summer, but it all deteriorates again”. (Participant 21)*

*“There was an earthquake in the region three years ago, many houses in a few villages were destroyed, but luckily it didn’t affect our village that much. Our house was slightly damaged, but nobody was injured. However, my nine-year-old daughter was scared and shocked. She has had several seizures since then”. We asked for help from the government for financial support to upgrade the building, but the help never came”. (Participant 3)*

*“We have access to electricity, piped water and natural gas in our house. Although the gas supply gets disconnected frequently, things are much better than before when we had access only to electricity. The water supply is in the yard and families would need to do the piping into the house for themselves, which is costly, and we couldn’t afford it”. (Participant 8)*

*“The water supply pipe brings water into the yard from a well. The government fitted all the piping to the houses in the last decade. The pressure of the water is so low and drops even more in the summer session. It takes ages to fill a bucket. It is because the well almost dries up in the summer”.* (Participant 17)

*“There is no piped natural gas in the village. The government has promised many times to bring piped gas into our houses, but it hasn’t happened yet. We used to use oil to heat our houses, but all the houses changed over to bottled gas recently. A supplier brings the filled bottles to the village every month and collects the empty bottles”.* (Participant 20)

*“The toilet is located in the corner of the yard. Despite the fact that our house is in good condition, we don’t have good toilet facilities”.* (Participant 18)

*“The toilet is outside the home in the yard. There is no water supply inside the toilet, and we have to carry the water, which is difficult in the wintertime. However, it is not only the toilet, the bathroom is worse than the toilet. We have to warm up the water every time we have a shower. We always have a large filled water pan on the heater”.* (Participant 15)

*“There is only one room in our house. We do everything in that room. We cook, we eat and sleep in that room. We have a living room but it is narrow and small. We use it just for storage”.* (Participant 17)

*“My family, including myself, my wife and two kids, are living in a one-bedroom house. The kids sleep in the living room. The main problem we have is that the house is very cold, especially in the winter season. It hardly ever gets warm, even with the gas heater on. The ceiling and the walls are not in good condition; you can feel the air coming in. My youngest son is always getting a cold and a blocked nose. The toilet is outside the house, which makes the situation even worse”.* (Participant 8)

*“I know my house is unfit for children. It is old and smells bad, but we don’t have any other choice. We have to stay in this house”.* (Participant 20)

*“Our house is small, with many people living in it. I have three children, also my parents are living with us. It is the reason we cannot invite friends and relatives to our house”.* (Participant 21)

Consideration of all the above mentioned factors revealed the relationship between poverty and housing conditions in the study area. Although some people were satisfied with their access to infrastructure facilities, such as electricity, they were at the same time living in poor conditions. Many of them complained about their house’s poor condition but did not have the necessary financial resources to improve their houses or build new houses.

The collected primary data revealed that 96% of the households have access to a water supply for their houses, but in 88% of cases the water supply is in their yard. As interviewees reported, many households have a piped water supply in their yard, but do not have tap water in their housing unit, which makes life more difficult for them. Also, many households are faced with problems regarding water supply during dry seasons. They further expressed dissatisfaction because while they may have water in their houses, the supply is not reliable. The same problem was mentioned in terms of access to natural gas. Although the quantitative data reveals that 66% of the households have access to natural gas, some interviewees mentioned that the gas supply gets disconnected frequently.

Moreover, many interviewees mentioned that although they have a toilet in the house, they are unhappy with the fact that it is situated in the yard and has no water supply to it. The quantitative data shows that only 9.43% of households in the area have access to a flush toilet, while 45% have access to a toilet with ventilation, and 45% of the population have access to a dry pit latrine. The quantitative questionnaire did not include any questions regarding whether

the toilet was located in the house or whether there was a water supply to it, but it is obvious from the interviews that these were important issues to participants.

The interviewees referred also to the difficulties of living in a crowded home and how this affected their family's wellbeing in a variety of ways, such as their children's health and their social interactions. Regarding the degree of crowding in households, the quantitative data showed that in 58% of the households, three people or more are living in one room.

#### **5.4.4 Assets**

The previous sections explored the non-economic dimensions of the interviewees' well-being. As mentioned in chapter 2, unidimensional poverty measures consider poverty as based on economic or material deprivation. Sen (1999) addressed the importance of economic well-being. However, he noted in his capability approach that it should not be the only tool used to measure poverty, and other aspects of well-being should be taken into account.

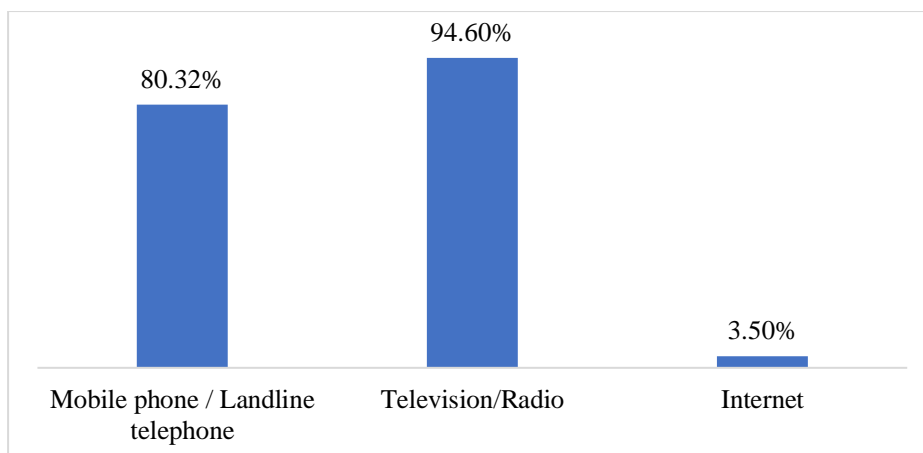
Income, employment, expenditure or consumption and material assets are factors commonly used in the literature to analyse economic well-being. Income was excluded from the interview questions for two main reasons. First, I noted the interviewees found the issue very sensitive and realised that the participants would not be willing to discuss or answer the relevant questions. Second, as the majority of the people in the study do not have a regular monthly income, they find it hard to calculate their income or earnings. However, some interviewees commented on their income in the interview. Also, consumption and expenditure are excluded from this study. As discussed in chapter 2, these indicators are not part of the multidimensional poverty framework.

Communication is regarded as a fundamental factor of human development. It positively impacts all aspects of life, especially when it comes to social interaction (World Bank 2002;

UNDP 2001; Braga, 1998). Radio, television, landline telephone or mobile phone and, in recent years, internet are the tools of obtaining information as well as communication.

Radio and television are the cheapest communication tools, particularly for the poor. The benefits offered by modern information technologies include transmission of recent news and information for local businesses and the agricultural sector, as well as educational sources for unskilled labour. Meanwhile, landline telephones and mobile phones are essential communication tools for households. Owning a telephone or mobile phone is included as one of the MDGs. Finally, access to the internet provides multiple benefits related to employment and education. It also provides opportunity, especially important for poor people, to find out what's going on, in a very fast and effective way. Access to the internet is listed in the United Nations global development goals for 2030.

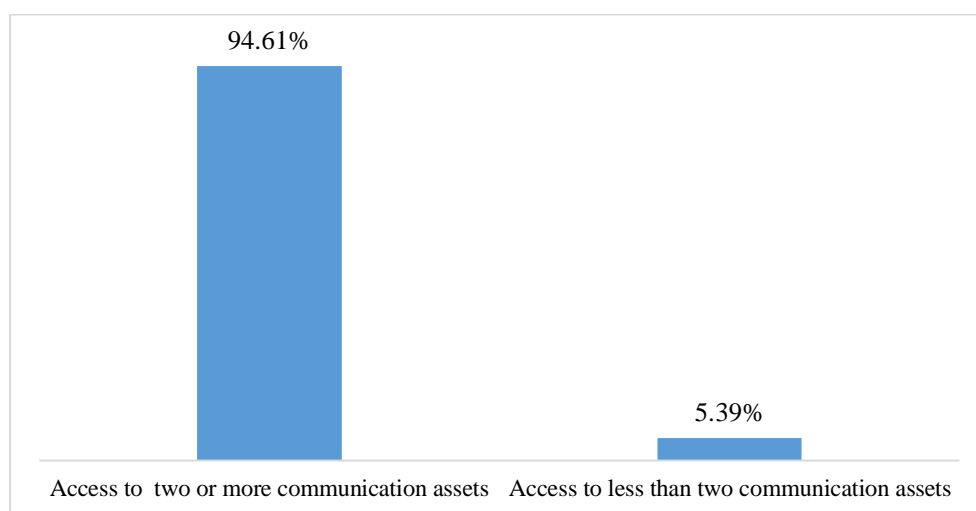
The study now discusses the dimension of assets in two categories: communication assets and ownership of other assets. The communication assets are mobile phones/landline telephone, television/radio and internet. Households with access to two out of these three assets are considered not to be deprived. The distribution of households regarding access to these assets is presented in figure 5.21.



**Figure 5.21: Access to communication assets**

Source: Survey data (2017)

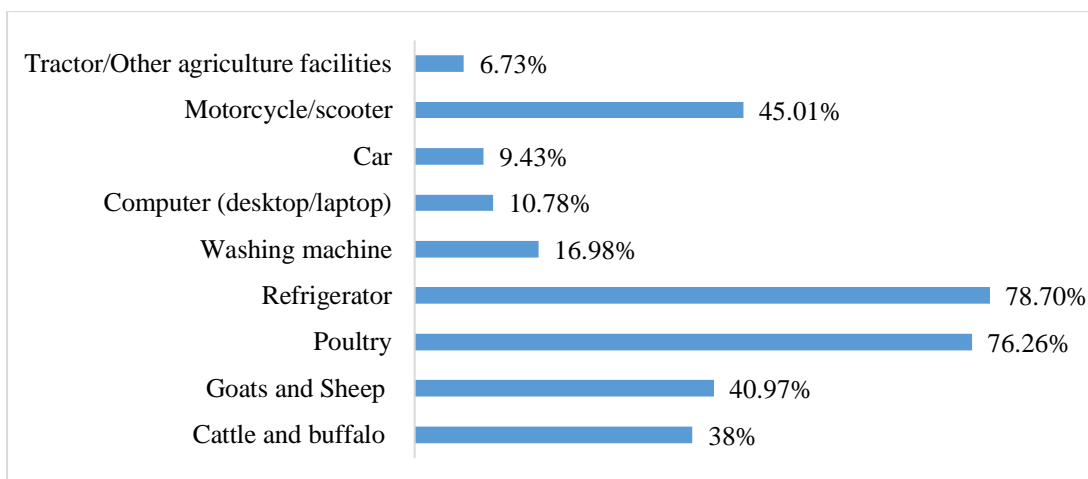
As figure 5.21 shows, there is wide use of phones in the area, with only 20% not having access to a cell phone or landline telephone for communication. The figure shows that the majority of the population 94% have access to television or radio but only 3% of the population have access to the internet. Considering the deprivation among households, figure 5.22 shows that 94% of the households have access to two or more of these communication assets, while 5.39% of the households have access to less than two of these assets and are therefore considered to be deprived in that respect.



**Figure 5.22: Access to communication assets**

Source: Survey data (2017)

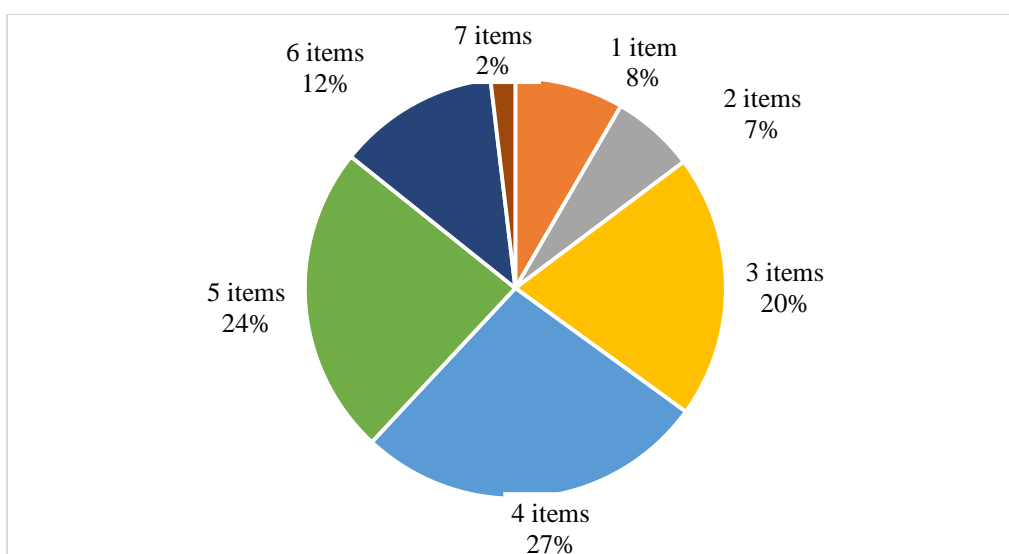
Ownership of other assets is the second indicator considered in the asset dimension. Asset poverty is mostly related to the economic condition of the household. The distribution of the selected assets is shown in Figure 5.23.



**Figure 5.23: Percentage distribution of selected assets among households**

Source: Survey data (2017)

Figure 5.23 shows that 78.70% of the sampled population own refrigerators. Ownership of a motorcycle or scooter was reported as 45%, 6% owned a tractor or other agriculture vehicle, and 9% owned cars. Also, 76% had poultry, while 40% had goats/ sheep, and 38% had cattle/buffaloes. Details of further analysis of the distribution of asset ownership are presented in figure 5.24 below.



**Figure 5.24: Distribution of ownership of assets items**

Source: Survey data (2017)

As figure 5.24 shows, 7% of the households owned two of the specified items, while 20% had three of the specified assets. In terms of asset ownership as a deprivation dimension, 35% of the households in RRUWA are deprived as they have three or less of the specified assets.

Asset ownership is an important indicator in evaluating people's material deprivation or their economic well-being, but it does not reveal the whole picture regarding their economic well-being. However, as I had all the information on asset ownership from the quantitative data, I was able to frame the questions to explore the interviewees' perceptions of their economic well-being.

The interview questions were designed to explore the interviewees' living standards in relation to their economic well-being. The participants referred to their asset ownership and their employment condition to answer the question. This section discusses the interviewees' material deprivation as well as their employment and job insecurity.

The interview questioning started with "What is your opinion on the economic well-being of you and your family? And what possessions and items are essential to your family related to their economic well-being?" The following transcripts are extracted from the interviewees' responses to these questions. Therefore, this section uses the asset dimension to explore the economic well-being of people in RRUWA.

*"In terms of the economic condition, my situation is not good. I had a plan to move to the city and buy a house and work there. Since I started a family, we have been living in my parents' home in one room and I don't have job. I had a temporary job selling clothing on a stall in the city, but I gave it up as I didn't earn enough from it. I wanted to save money and buy a house but now it's impossible. House prices have gone up and are increasing every day". (Participant 16)*

*“It was better before. We have a house and sheep and a cow. They provide dairy products for my family. I usually sell a few sheep every year and spend the money on food during the year. I always looked after them but now I am older and not to able to work the same as before. However, it is not that bad and I am satisfied. I don’t have young demanding kids; we don’t need much money. It’s only the two of us, my wife and I”.* (Participant 5)

*“We are better off than many people in the village. Two of my sons are working in the city as construction labourers. They send us money. One is married and his wife is living with us. We also receive a government grant every month. We have the assets we need: colour TV, refrigerator, we even have a washing machine. My son has a car”.* (Participant 18)

*“I don’t have a job. The only income the family has is a government grant which only covers the basic food. All our assets are old and not working very well. My kids can’t have the toys they want. My wife keeps asking me to renew the refrigerator, but we cannot afford it”.* (Participant 20)

*“I make hand-woven rugs. My two daughters are helping me. We make and sell two, sometimes three, rugs a year. I have a son who is older than my daughters, but he couldn’t find employment. It is enough to live on but I cannot save at all. I have to save money as my daughters will get married one day. We receive a government grant but it’s not much support. We live a basic life, not a fancy one. We never had fancy or good quality assets like a cooker and big screen TV. If I had enough money, I would like to buy a bigger refrigerator and television and also some furniture”.* (Participant 6)

*“Our income comes from farming. We have a few sheep and cows. I would like to buy more sheep as they could provide more economic support to my family. I have a son who is helping me and is going to marry soon. Not owning a house is preventing him from starting a family”.* (Participant 4)

The responses as a whole reveal that while material assets are important in terms of the interviewees' living standards, their ownership of material assets does not fully reflect their economic status, as the quantitative data showed that 75% of households owned three or more of the pre-determined assets in the questionnaire.

To sum up, based on the interview data, the majority of interviewees measured economic well-being in terms of being employed, having enough income and being able to save money for the future, as well as ownership of the assets they desired.

The responses show that people's main concern is not having a job or earning enough. The qualitative data shows that 52% of the adults in the study area are unemployed, among which 41% are women and 11% are men. As the quantitative data shows, the majority of the unemployed adult women are housewives. Many declared that their income, even with the support of the government grant, might be enough for day to day expenditure such as essential goods and basic foods but not enough to have the assets they wish to acquire. Also, not being able to save money was a major concern for many interviewees. Furthermore, some mentioned that owning a house is necessary to start a family and their family members struggled with that. All these concerns show that their economic well-being is, on the whole, limited, despite the fact that some declared their satisfaction with their economic conditions.

As this study is focusing on capabilities, the communication assets are considered to be an individual indicator under the asset dimension. The interviewees were asked how they received the latest news and information.

*“As an illiterate person, I only watch the local TV channel. I watch news every night and sometimes agricultural and village programmes. I share the latest news with my friends and neighbours in the mosque when I see them every day. The kids watch movies and entertainment on national TV and sometimes they translate programmes from Farsi to Turkish, so my wife*

*and I watch some of them. I also have a mobile phone and receive calls if there is news in the village, like if someone is ill or has died”.* (Participant 18)

*“I only listen to local radio. I have been doing this all my life really. I sometimes call them and talk to them if I get the chance. I receive all the world news from them. I listen to almost all of their programmes, from stories to the latest news. We also have a television, but I prefer radio. My daughter and wife watch TV, not me. I don’t have a mobile phone, but my daughter has one. My sons and other relatives call and talk to us. They live in the city”.* (Participant 14)

*“I follow the news on TV. Television has many advantages for my family. My wife always watches cooking and crafting programmes. She makes our kids’ clothes herself and even shares her knowledge with other women in neighbourhood. The kids watch cartoon and entertainment programmes every afternoon. It’s the only entertainment they have”* (Participant 17)

*“My son works in the city in construction building. It’s a seasonal job and they don’t have work every day. His employer sends him a text message when they have work for him”.* (Participant 18)

According to the interviewees’ replies, radio and television are the main sources of the latest news and information for them and their family members. They also mentioned that these devices are their sources of entertainment as well. Some noted that their family members derived benefits from educational programmes. They use their mobile phones to communicate with other people, including family members and people in the village.

Looking at the quantitative data, 94% of the households own a radio, television or both. Also, 80% have a landline phone, mobile phone or both, while only 3% used the internet, which is only available in a few Central region villages which are located nearest to the city.

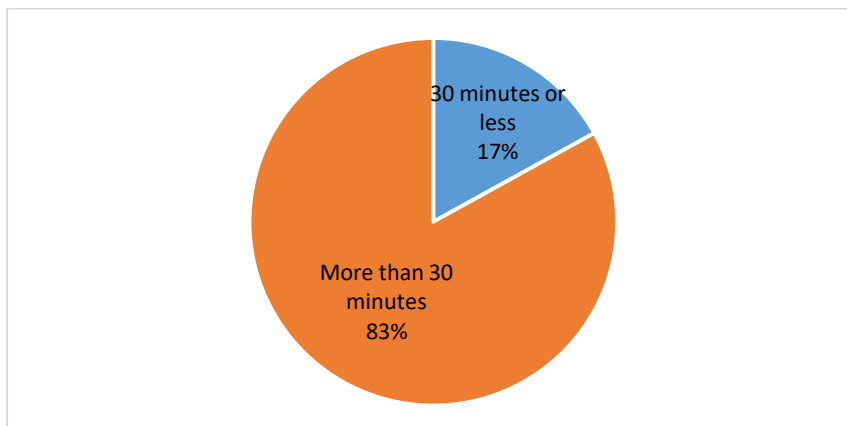
Although the internet provides more powerful information sources than radio and television and can make a huge difference for poor people, providing internet and network services to

rural areas, which generally have low population on low incomes, is a complex and costly process.

#### 5.4.5 Health

Health condition is one of the main dimensions of personal well-being and living standards. Sen (1985) has referred to living a healthy life as one of the basic functionings and capabilities and noted that living a healthy life has a major influence on an individual's standard of living. It means that having access to health care and medical facilities is vital, as well as being able to afford health care through such as having medical insurance.

The first indicator in the health dimension in the study is the time taken to access the nearest health facility. Only 17% of the households in the area reported being able to access the nearest health facility in less than 30 minutes, as presented in Figure 5.25.

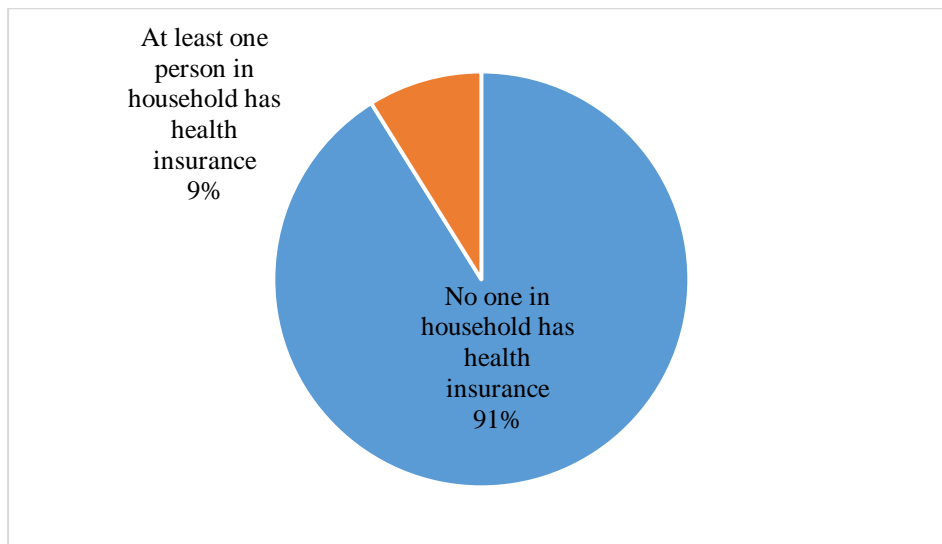


**Figure 5.25: Proximity of primary health centre**

Source: Survey data (2017)

The results of this study show that for about 83% of the households in the area it took them more than 30 minutes to access their nearest facility and they are thus deprived in that respect.

The second indicator allocated to the health dimension is access to health insurance. The household is not considered to be deprived as long as at least one person has health insurance. The household distribution regarding health insurance is represented in figure 5.26.



**Figure 5.26: Access to health insurance**

Source: Survey data (2017)

As figure 5.26 shows, in the majority of the households (91%) no one has access to health insurance, thus these households are deprived according to this indicator. At least one person has access to health insurance in 9% of the households and these households are therefore considered to be non-deprived.

Interviewees were asked questions related to access to medical facilities and having medical insurance. They were asked about their views on the accessibility of health care facilities in their regions. Also, they were asked about their ability to pay for health care when they are sick.

The interviewees all had almost similar perceptions about the availability and accessibility of the clinics and they also were agreed on the poor quality of services being offered at most of these health care facilities.

*“The nearest clinic to this village is in the city and it takes 50 minutes to get there. It’s open only during daytime. We have to take the public village minibus in the morning to get there. When my son had a high fever and was shivering, we had to wait till morning to get him to the clinic. They referred him to the hospital, and we had to stay in the hospital till late evening. By that time the minibus had left for the village and we had to stay in a relative’s house”.*  
(Participant 8)

*“My husband died five years ago from cancer. He was ill for three years and was unable to work to support the family. We couldn’t afford to pay either for the operation or medicines. My eldest son had to take him to the doctor. My two daughters went to primary school for only two years and dropped out when they were ten and eight years old in order to help me with my carpet weaving work. Their father died after two years. We sold our agricultural land but still couldn’t afford to pay for private consultants. He had to wait in government hospital queues for long hours to see a doctor. If he had had insurance, he might have been able to have the operation and live longer. Since he died, I have had to live and raise our four children alone. I sometimes get stressed and have anxiety that the same thing will happen to me”.* (Participant 6)

*“My mother is suffering from different illnesses which are associated with ageing. She can’t walk or stand for a long time and has high blood pressure. She needs to see the doctor regularly to check her medicines and health. She doesn’t have health insurance. I have had difficulty paying for her health care and medicines. My brothers help with that sometimes”.* (Participant 10)

*“Nobody has health insurance in this village, I know it”.* (Participant 4)

*“Both my parents lived with my family. They were both ill. I had to take them to the hospital clinic many times. It was hard as my father couldn’t walk during the last few years of his life*

*and I had to carry him. They always asked us to have many tests done, but it was difficult to do so as it meant staying for days in the city. We couldn't go back and forth to the city every day. It affected my work and we were in a very bad financial situation for many years". (Participant 9)*

*"Last year my five-year-old son fell down the stairs and broke his leg. It was midday but we couldn't find a car to get him to the clinic. I had to carry my son out of the village to the main road which is shared with a few villages. We waited hours for a car to pass on the road. It took us to the city, and we took a taxi to the hospital. In hospital, they wouldn't accept him for an operation unless we paid the expenses first. I had to go to a relative and borrow money". (Participant 15)*

Interviewees described very negative experiences regarding the availability and accessibility of health care facilities. They also had many difficulties in paying for health care. In some cases, illness of the household head had affected their ability to work efficiently; additionally, much of their income or savings was spent on health care bills and medicines. In some cases, the household heads had to take care of old and ill parents, which also affected their ability to work. In almost all cases, they did not have access to adequate health care insurance and, in some cases, as a result of high health expenses, their family sank into poverty and suffered from its effects. A few interviewees mentioned being stressed or anxious after losing a family member, which affected their own health. From the interview's replies, it is obvious that households had difficulties in accessing health care facilities when they required them. Also, they struggled to pay the heavy medical expenses of those faced with chronic health problems and, many times, they were unable to handle this. Moreover, they had to cope with additional costs such as transportation from the village to hospitals in the city.

In comparing this to the quantitative data, the majority of households experienced deprivation in the health dimension. As the quantitative data presented in chapter 5 demonstrated, 91% of the respondents said that nobody in their household had health insurance, while only 9% of the households had at least one member with health insurance. In relation to the availability of health care facilities, 83% of the respondents said that they had to travel for 30 minutes or more to get the nearest medical health care clinic.

#### 5.4.6 Food security

Food insecurity has been reported by USDA as “reduced quality, variety, or desirability of diet. Little or no indication of reduced food intake”. Food insecurity does not necessarily cause hunger, but hunger might be a possible outcome of food insecurity. It refers not only to the importance to healthy and productive lives of consuming a sufficient amount of healthy food on a day-to-day basis, but also to having a well-balanced diet of nutritious food

The final indicator used to assess multidimensional poverty within this dimension is food security. The Household Food Insecurity Access Prevalence (HFIAP) indicator is applied to determine the severity of food insecurity among the households (Coates, 2013). The HFIAP method classifies food security status according to four main categories: food secure, mildly, moderately and severely food insecure, based on frequency of food scarcity.

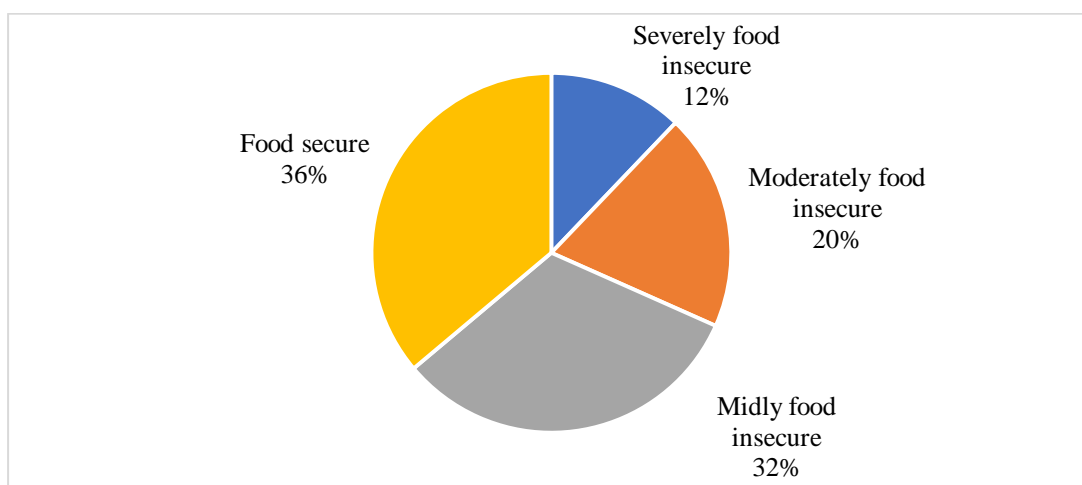


Figure 5.27: Food security

Source: Survey data (2017)

As figure 5.27 shows, 36% of the households were food secure, while 32% and 20% were mildly and moderately insecure, respectively, but 12% of the population were severely food insecure. In this study, however, the three categories of food insecurity are combined into one category of food insecure. Therefore, only two categories (food secure and food insecure) are considered. On this basis, as many as 63% of the sampled population are considered as deprived because of their degree of vulnerability regarding access to food.

To get an idea of people's perceptions on their nutritional consumption, the participants were asked about their food habits. They were asked "whether they consume enough and all types of food?". They were also asked if they had been able to provide adequate and healthy types of food for their household's members during the last month.

*"I don't remember the last time I ate meat. How can I afford it? It's too expensive now. I sometimes buy frozen chicken from the city, but my wife doesn't like the taste. We can buy other things, like bread, rice, dairy products".* (Participant 9)

*"We were able to buy some basic foods with the monthly government grant, but now, it's impossible. Everything is too expensive. We can't buy enough food. Life is so difficult now".* (Participant 21)

*"We buy vegetables from the salesman who comes once a week to the village. Also, we have some fruit trees in our garden. Our neighbours and relatives always offer us fruit and dairy products. But we are not able to buy many foods like rice, lentils and meat in the village. We used to buy enough of these foods to last us for months from the city. Now, we can't afford to buy that much".* (Participant 4)

*“We are not able to eat the foods we like to eat. We never go hungry. We make lentil soups and stews, but those foods are not desirable in my household. The kids refuse to eat these meals but, it’s all I can afford”.* (Participant 16)

*“It used to be better, I was able to provide good food for my family, but now, I am worried and I struggle to buy even the basic foods. I put my whole income and government grant together and only can afford a few things, not all”.* (Participant 1)

*“I usually buy meat and chicken from the next village as there is a butcher there. But I can afford only one kilo for the whole family for a few weeks. Not enough to feed all the family. We can’t feed our kids with nutritious foods”.* (Participant 8)

*“I have to rely on the government grant as I don’t have a job. I cannot work because I am old and am not able to work as a farmer. My kids sometimes bring food to us”.* (Participant 11)

According to participants’ replies, many of them are able to buy the basic foods like bread, rice and dairy products and they and their family members never spend a day or night without any food or skip a meal. However, their income it is not sufficient to buy all types of food. Many of the interviewees mentioned that they cannot afford to buy fresh meat or chicken. Some people do still eat these foods, sometimes frozen meat and chicken, but not very often due to the high prices.

Based on the above quotations, people cannot attend sufficiently to their food consumption and nutritional requirements due to lack of financial resources. They have to eat whatever they have and foods which are available in their economic situation. It is important to mention that this situation can lead to health problems such as obesity. Unemployed people were found to be most at risk of they and their families lacking secure access to sufficient, safe and nutritious food.

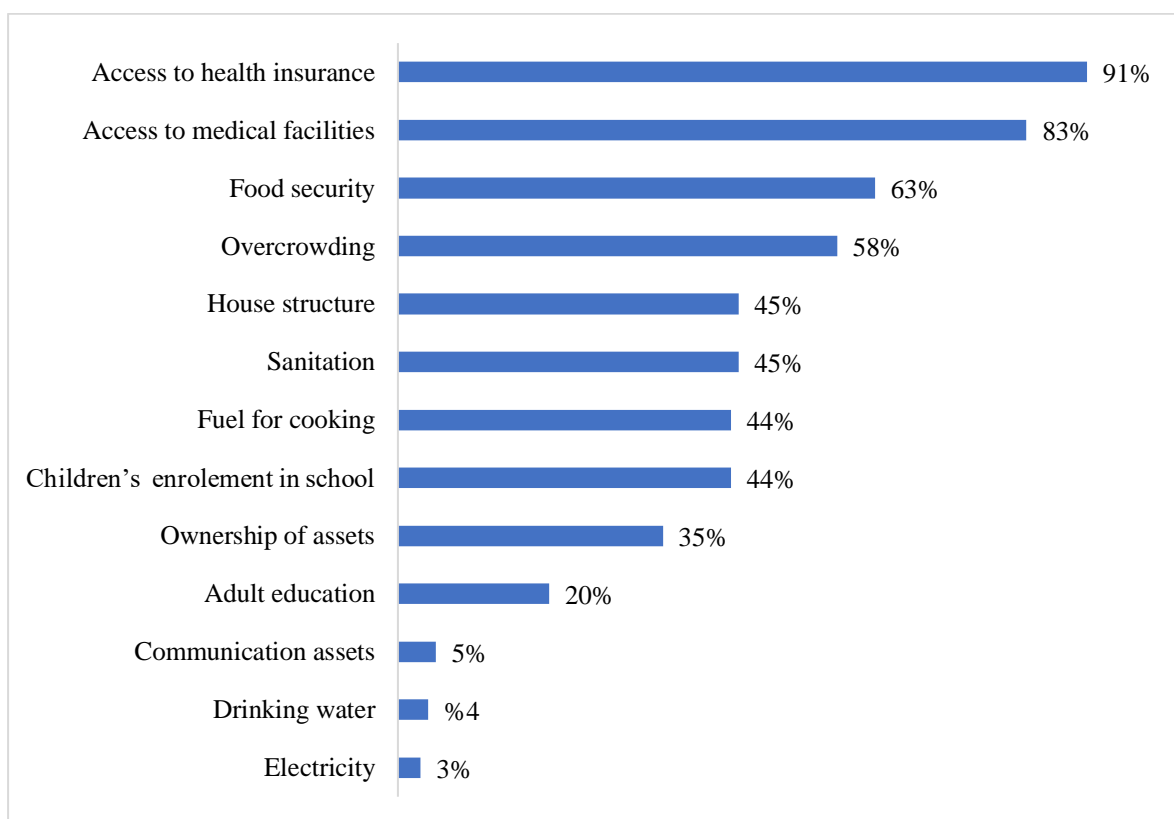
In comparing these findings to the quantitative data, 63% of households experienced deprivation in food security. It should be repeated that food insecurity can vary in degree from mild and moderate to severe. This study considered all these categories in relation to food insecurity. The quantitative data identified 32%, 20% and 12% of the households as mildly, moderately and severely food insecure, respectively. Regarding the quantitative survey questionnaire questions related to food poverty, 92% of the participants answered “No” to the questions “Did you or any household member go a whole day and night without eating anything because there was not enough food during the last month?” and “Did you or any household member go to sleep at night hungry because there was not enough food during the last month?”. However, the majority of them answered “Yes” to the questions “Did you or any household member have to eat a limited variety of foods due to a lack of resources during the last month?” and “Were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources during the last month?” The answers are in line with the qualitative findings and indicate that well-being in terms of food security is not just about getting enough food to feed the family but also getting the right food to provide them with a nutritious diet.

### **5.5 Aggregate deprivation by indicator**

Based on analysis of the dimensional aggregate deprivation, figure 5.28 shows the approximate headcount in each indicator of the six dimensions, ordered from highest to lowest. It also presents the contribution of each to the overall deprivation. From the figure it can be seen that in 91% of the households no-one has access to health insurance and that 83% of the households are not able to access the nearest medical facilities within 30 minutes by the usual means of transport. Also, 63% of the households are food insecure as defined by HFIAS.

Approximately 20% of households in RRUWA have at least one member who failed to complete their primary school education at least up to Grade 5. Meanwhile, about 44% of

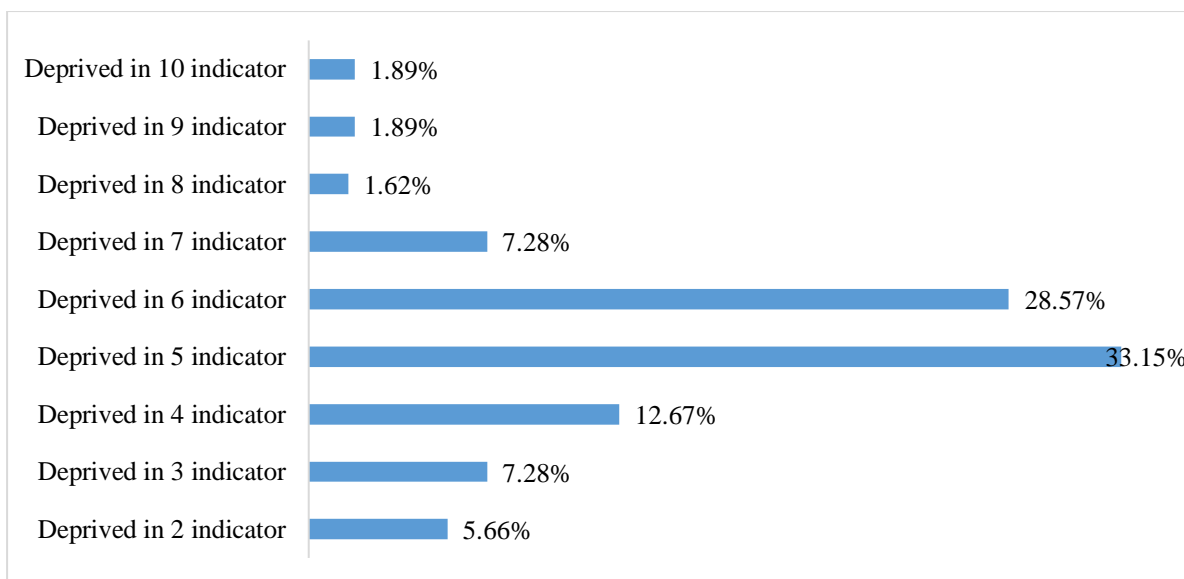
households reported having a school age child who has not enrolled in school. Almost 58% of the population live in a household with three or more people per room and 44% do not have access to an adequate type of sanitation (flush toilet). Defectiveness of materials used for the structure of the dwelling was recorded for 45% of households. Up to 35% of the population in the area reported assets deprivation, while the corresponding figure for communication assets was about 5%. Inadequacy of fuel for cooking was reported by 44% of households but only 4% and 3% lack access to drinking water and electricity, respectively.



**Figure 5.28: Aggregate deprivation by indicator**

Source: Survey data (2017)

Figure 5.29 presents the distribution of deprivation according to the specific number of deprivations affecting the household. No household was found to have no deprivation at all and all households were found to be deprived in two or more indicators.



**Figure 5.29: Distribution of deprivation across households based on the specific number of deprivations**

Source: Survey data (2017)

Also, no household was found to be deprived in terms of 12 or 13 indicators. Figure 5.29 further reveals that more than 75% of households are deprived in terms of five or more indicators. This results are in line with the results of a study is carried out in rural areas of the Hamadan province. According to research by Mohammad Hassan Fotros (2014), health indicator has a large share of deprivation in rural areas of the Hamadan. It means that the poor are more deprived in this indicator than in others.

### 5.5.1 Aggregate multidimensional poverty estimates

Table 5.4 presents the analysis of the multidimensional headcount ratio (H) and the adjusted headcount ratio M0 estimation in the area, using the 13 indicators and different values of k. Each dimension is equally weighted and each indicator within a dimension is equally weighted. It is important to note that using different weights differs from the assignment of equal weights. With equal weights, a k=1 household is considered to be multidimensionally poor when that household is deprived in at least one of the 13 indicators. However, with different weights, a k=1 household would be multidimensionally poor if the weight of at least an indicator or a

combination of indicators were summed to 1. In this study, all six dimensions are equally weighted, but indicators have different weights as the dimensions have different numbers of indicators. For example, a household deprived only in terms of drinking water is not considered to be multidimensionally poor at  $k=1$ ; neither is a household that is considered deprived only in terms of children's schooling. However, a household deprived only in terms of food security is considered multidimensionally poor at  $k=1$ . Table 5.5 also represents the assigned weights for dimensions and related indicators.

**Table 5.5: Assigned weights for dimensions and related indicators.**

Dimension	Indicator	Assigned weight
Education (13/6)	Years of schooling	(13/12)
	School attendance	(13/12)
Access to basic infrastructures Services (13/6)	Access to drinking water	(13/24)
	Access to clean sanitation	(13/24)
	Access to clean fuel for cooking	(13/24)
	Access to electricity	(13/24)
Housing quality (13/6)	Quality of dwelling structure	(13/12)
	Crowding	(13/12)
Assets (13/6)	Ownership of communication assets	(13/12)
	Ownership of other assets	(13/12)
Health (13/6)	Availability and access to medical facilities	(13/12)
	Access to health insurance	(13/12)
Food Security (13/6)	Food security	(13/6)

Source: Own calculations

Of common importance in all poverty measures is the choice of poverty lines. Lower poverty lines lead to lower poverty estimates, and higher poverty lines produce higher poverty estimates. On the other hand, a lower  $k$  decreases the number of households to be classified as poor, while a higher  $k$  increases the number of multidimensionally poor households. The value of the second cut-off, or  $k$ , can range from zero percent (all are automatically in poverty) to 100% (none are ever considered poor). However, there are no established techniques for choosing the  $k$  value. In general, most of the previous studies, such as Alkire and Santos (2010),

Bronfman (2014), Salahuddin and Zaman (2012), Salazar et al. (2013), set the k at 30%, and this study has done the same.

Table 5.6 shows the estimates of the multidimensional headcount ratio (H), average poverty (A) and the adjusted headcount ratio (M0) in the study area, using the 13 indicators and for different values of k.

**Table 5.6: Multidimensional headcount ratio (H), average poverty (A) and adjusted headcount ratio (M0) for different k values**

K	H	M0	A
0.54	1	0.447	0.447
1	1	0.447	0.447
2	0.981	0.444	0.453
3	0.981	0.444	0.453
4	0.83	0.402	0.484
5	0.757	0.377	0.498
6	0.582	0.308	0.529
7	0.482	0.266	0.552
8	0.304	0.182	0.599
9	0.072	0.054	0.750
10	0.037	0.033	0.892
11	0.018	0.017	0.944

Source: Survey data (2017)

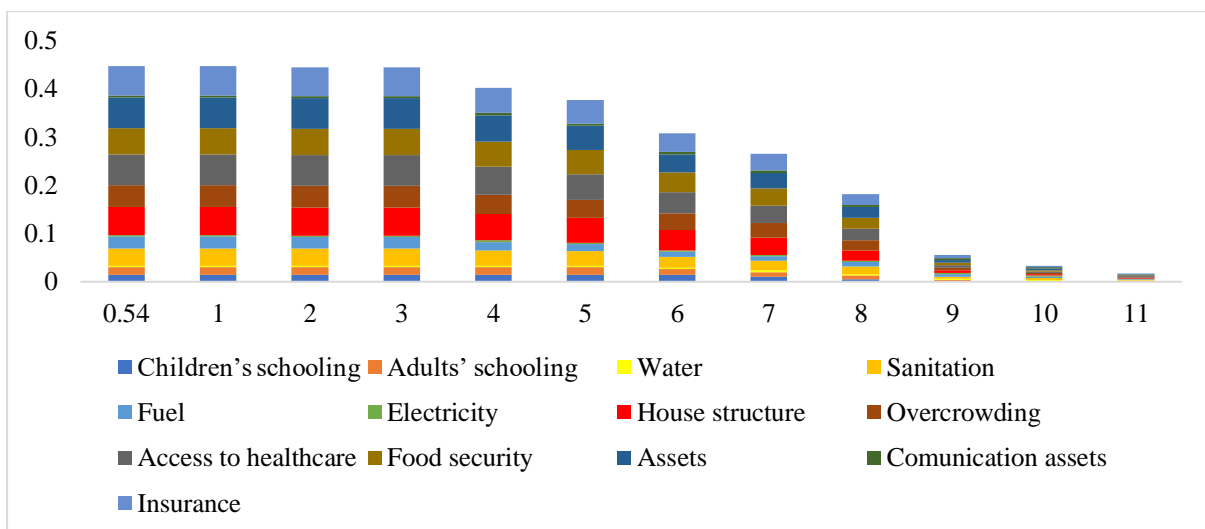
As table 5.4 shows, none of the households are deprived in all indicators and none are deprived in 12 or 13 indicators. These results are in line with the results in figure 5.30. Table 5.4 shows that 0.018% of households are deprived in 11 indicators. As mentioned in chapter 2, the union approach classifies a household as multidimensionally poor if there is household deprivation in at least one indicator or equal to the minimum weight across all indicators (k=0.54 in the case of this study) and, regarding the intersection approach, a household is considered to be multidimensional poor if the household is deprived in all dimensions (k=d) (Atkinson, 2003). Based on the union approach, all households would be considered as living in poverty as they are deprived in one indicator (or k is equal to the lowest weight when indicators are not equally

weighted). Also, based on the intersection approach, no household in the area is living in poverty as no household is deprived in all the indicators ( $k=13$ ). However, Alkire and Foster methodology adopts an intermediate approach rather than the union or intersection approach.

With the cut-off value of 4 ( $k=4$ ), approximately 83% of the households are considered as deprived, on average; they are deprived in 48.4% of total dimensions and the adjusted headcount ratio is 0.402. As  $k$ , or the cut-off value, increases, the average poverty ( $A$ ) rises, while  $H$  and  $M0$  decrease.

For  $k=6$ , about 58% of the households are considered deprived and on average they are deprived in 52.9% of the total indicators, with  $M0$  being 0.30. The results at  $k=8$  show that approximately 30% of households are deprived, on average, in 59.9% of all indicators, with  $M0=0.18$ . The results at  $k=10$  indicate that less than 1% of households are deprived, on average, and they are deprived in 89.2% of all indicators, with the intensity of poverty being  $M0=0.033$ .

Figure 5.30 summarises the contribution of each dimension to the overall deprivation in the rural area of WA by breaking down  $M0$  according to the constituent indicators and  $k$  cut-offs.



**Figure 5.30: Multidimensional adjusted headcount ratio (M0): contributions by each of the constituent indicators at different k levels**

Source: Survey data (2017)

As the diagram shows, the ranking is similar for  $k=0.54$ ,  $k=1$  and  $k=2$ , with deprivation in health making the highest contribution to  $M0$ : 30.97%, 30.90% and 30.90%, respectively, followed by food security: 22.65%, 22.60% and 22.60%, respectively, housing quality: 18.34%, 18.30% and 18.30%, respectively, education: 11.82%, 12% and 12.00%, respectively, access to basic infrastructures services: 9.02%, 9.00% and 9.00%, respectively, and assets: 7.21%, 7.19% and 7.19%, respectively. Poverty in assets makes the smallest contribution to  $M0$ , at only 4.32% and 4.34%, respectively. For all values of  $k$  the rankings are similar to those for  $k=1$  and  $k=2$ , with health being the highest contributor to the breadth of poverty 30.90%, followed by food security 22.65%, housing quality 18.34%, education 11.82%, housing and access to basic infrastructures services 9%, and assets 7.21%.

## **5.6 Decomposing poverty**

The following section will focus on how the poverty was decomposed to analyse it by subgroups. This analysis was conducted at the regional, district, ethnic group and household size levels. Focusing on the specific deprivations in subgroups will enhance the precision of poverty reduction policies.

### **5.6.1 Analysis at the village and district level**

Table 5.5 and 5.6 present poverty characteristics at the regional and district levels. The tables provide poverty estimates for each of the six dimensions at  $k=4$ , for each of the rural regions and districts of WA. These estimates include the multidimensional H and M0.

Table 5.5, columns (2) and (3) represent the head count ratio estimates for H and M0 at the regional level, while (6) and (7) show multidimensional H and M0 at the district level. Regions and districts are ranked according to their contribution to each of the aggregate measures, shown in column (4) and (8) of each estimate, to enable their comparison.

In ascending order, Anzal region is ranked in fifth place, the M0 estimate being 0.333, Silvaneh is ranked in fourth place, with an M0 estimate of 0.398, Nzloo is ranked third, with M0 of 0.403, Central is ranked second, with M0 of 0.404, and Somay is ranked first, with M0 of 0.461. In regard to the district level, South Torkaman, Central region, is ranked in first place, with M0 of .582, while at the other end of the scale, Nazloo Chay, Anzal region is ranked in 16<sup>th</sup> place, with M0 of 0.325, as shown in Table 5.7.

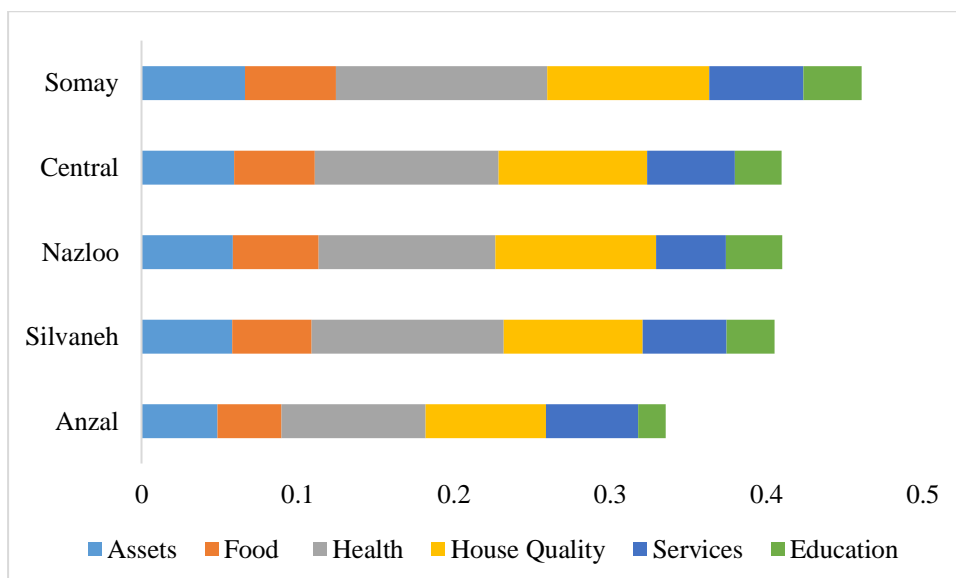
**Table 5.7: multidimensional headcount ratio H and multidimensional adjusted headcount ratio (M0) decomposed by region and district**

Region	H	M0	Rank	District	H	M0	Rank
Anzal	0.7	0.333	5	South Anzal	0.7	0.333	14
Silvaneh	0.842	0.398	4	Barandoz	0.666	0.355	12
				Targovar	0.875	0.389	11
				Dasht	1	0.451	6
				Margovar	0.804	0.392	10
Nazloo	0.815	0.403	3	Nazloo Chay	0.681	0.325	16
				North Nazloo	1	0.514	2
Central	0.826	0.404	2	Bakshloo Chay	0.714	0.326	15
				Bash Ghaleh	0.956	0.494	4
				North Barandoz	0.9	0.411	7
				North Torkaman	1	0.456	5
				Rozeh Chay	0.842	0.407	8
				South Nazloo	0.708	0.342	13
				South Torkaman	1	0.582	1
Somay	0.945	0.461	1	Barodoost	0.875	0.399	9
				South Somay	1	0.509	3

Source: Survey data (2017)

Figure 5.31 shows the adjusted headcount ratios of multidimensional poverty for the five regions, ranked according to the M0 estimates. The bar for each region depicts the composition of multidimensional poverty within each of the dimensions. Using the cut-off  $k=4$ , the Somay region shows the highest incidence and breadth of poverty, with 94% of households living in

poverty, with  $M0=0.46$ , followed by Central, where 83% fall below the poverty line, with  $M0$  of 0.404. In the case of Somay, deprivation in health is the highest contributor to the intensity of poverty and explains 29.28% of the overall deprivation. In this region, deprivation in housing quality accounts for 22.52% of the overall multidimensional poverty estimate, deprivation in assets accounts for 14.41%, and deprivation in basic infrastructure services and food accounts for 13.06% and 12.61% of  $M0$ , respectively. In Central region, respective deprivation in health and housing quality is 28.68% and 23.13%, while assets, access to basic infrastructure services, food and educational deprivation recorded 14.44%, 13.72%, 12.62%, and 7.24%, respectively. The lowest degree of poverty is observed in Anzal, where at least 70% of households are found to be in poverty, with  $M0$  being 0.33. However, this region has the highest level of deprivation in services, accounting for 17.56% of  $M0$ .



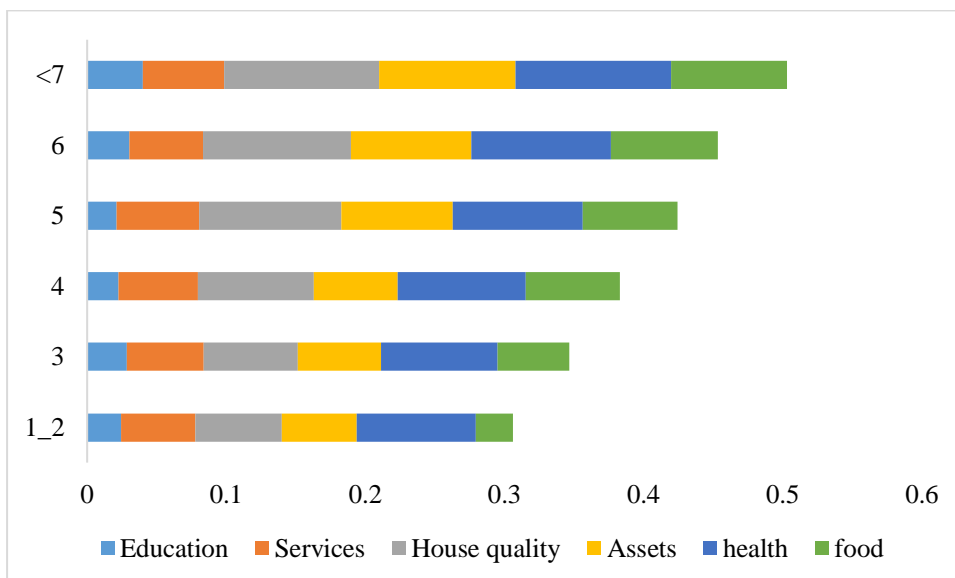
**Figure 5.31: Adjusted headcount ratio  $M0$  for the rural regions of Urmia city in WA**

Source: Survey data (2017)

### 5.6.2 Multidimensional poverty and household size

This section considers the poverty measures in terms of the link between multidimensional poverty and household size. It is worth mentioning that it is not clear whether differences in multidimensional poverty measures across the household sizes are related to the level of

welfare or to the way in which the multidimensional measure is constructed. In some indicators, multidimensional poverty measures are based on the deprivations which individuals experience. For instance, the larger the household, the greater the likelihood that it will be considered as poor if one person is found to be food insecure or illiterate. On the other hand, some indicators are related to the physical features of the household rather than the household members, such as access to adequate basic infrastructure services or medical facilities. The relationship between household size and the adjusted headcount ratio in RRUWA is presented in Figure 5.32.



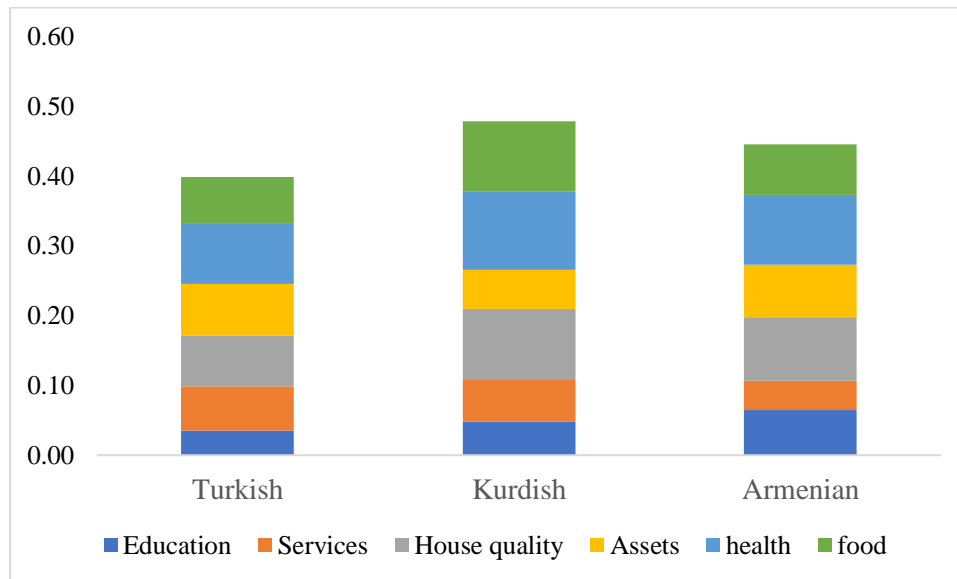
**Figure 5.32: The relationship between household size and the adjusted headcount ratio in WRRUWA**

Source: Survey data (2017)

As Figure 5.32 shows, poverty level is positively related to household size. In other words, the larger the household, the greater the multidimensional poverty. Figure 5.33 shows that poverty due to education, housing quality and food deprivation increases with increase in household size, whereas this is not the case with dimensions that are not directly related to household size. For example, household size has no effect on the household’s access to basic infrastructure services like electricity and clean water, medical facilities, or availability of assets.

### 5.6.3 Multidimensional poverty by ethnic group

As figure 5.33 shows, the highest and lowest rates of multidimensional poverty are found among the Kurdish and Turkish ethnic groups, respectively. However, the Armenian ethnic group is more deprived in the education dimension. Also, in regard to the assets dimension, Kurds are less deprived than the Armenian and Turkish ethnic groups.



**Figure 5.33: Multidimensional poverty rates among three minority ethnic groups in RRUWA based on the adjusted headcount ratio**

Source: Survey data (2017)

## 5.7 Inequalities among the poor

Improving the situation of poor people within a society is related to the development of that society. In this regard, inequality among the poor should be analysed alongside the incidence and intensity. These poverty measures can provide motivation for policymakers intent on poverty reduction. However, although focusing solely on the incidence of poverty may reduce the overall poverty, to improve the lifestyles of the poor as a whole it is necessary to identify the acutest poor by considering breadth and inequality. The Alkire and Foster poverty measures M0 and M1 measure the incidence and breadth of poverty and can target those among the poor with the highest poverty level. Nevertheless, while decreasing the incidence and breadth of the

poverty may decrease the poverty level, there is no guarantee that these measures will target either the poorest or the least poor people.

As mentioned earlier in this chapter, Alkire and Foster introduced a set of adjusted FGT measures. Their methodology of computing adjusted headcount ratio (M0), also known as the MPI, identifies both deprived and the non-deprived people. This measure reflects both the incidence of poverty (the percentage of the population who are poor) and the intensity of poverty (the percentage of deprivations suffered by each person or household on average). However, the multidimensional headcount ratio violates ‘dimensional monotonicity’ and fails to explain the depth of poverty and how poverty increases as a poor person becomes more deprived in any given dimension. Alkire and Foster, therefore, introduced two indicators which adjust for the depth of poverty:

$M1=H*A*G$  reflects the incidence, intensity and depth of poverty through adjustment of the headcount measure based on the average share of possible deprivations experienced by poor households (A) and the average gap, over all the indicators by which a household is considered as poor, between the achieved level and the poverty threshold for that indicator (G).

$M2=H*A*S$  reflects the incidence, intensity, and depth of poverty, as well as inequality among the poor, with the headcount measure adjusted here not only by A but also by the average squared poverty gap over all the indicators and all poor people (Alkire & Foster, 2011b; Alkire & Santos, 2013; Alkire & Seth, 2009).

These two measures offer additional information about the magnitude of the poverty gap among the poor, with M2 placing greater weight on the people or households that are severely deprived.

The adjusted FGT measures with different cut-offs are presented in Table 5.8.

**Table 5.8: Adjusted FGT measures based on different k cut-offs**

K	H	A	M0	G	M1	S	M2
0.54	1	0.447	0.447	0.709	0.317	0.568	0.254
1	1	0.447	0.447	0.709	0.317	0.568	0.254
2	0.981	0.453	0.444	0.714	0.317	0.572	0.254
3	0.981	0.453	0.444	0.714	0.317	0.572	0.254
4	0.83	0.485	0.402	0.692	0.278	0.562	0.226
5	0.757	0.498	0.377	0.737	0.278	0.599	0.226
6	0.582	0.529	0.308	0.740	0.228	0.636	0.196
7	0.482	0.551	0.266	0.774	0.206	0.560	0.149
8	0.304	0.599	0.182	0.725	0.132	0.577	0.105
9	0.072	0.754	0.054	0.704	0.038	0.537	0.029
10	0.037	0.884	0.033	0.758	0.025	0.545	0.018
11	0.018	0.923	0.017	0.706	0.012	0.529	0.009

Source: Survey data (2017)

Computing M1 and M2 requires considering cardinal information, as in contrast with M0, they measure the extent to which an individual or a household falls short of the threshold or poverty line. For this reason, all the indicators on housing conditions with the value 0 or 1 that did not meet these requirements were excluded from calculation of M1 and M2.

The poverty gap for indicators according to which households are deprived is calculated as the distance between the indicator and the poverty line for that indicator. The gap reflects the proportion of households who face deprivation based on that indicator: taking, for example, the adult schooling indicator, which has a cut-off point of 5 years of schooling, a household with one illiterate adult (G equal to 1) has deeper deprivation than a household with an adult with four years of schooling (G equal to 0.2). The total gap for each household ( $g_i$  for household  $i$ ) is calculated as the weighted average size of all the gaps over all the indicators on which the household is deprived. Finally, the mean gap over all deprived households is calculated. Multiplying M0 by the mean gap will lead to a reduction in the value of the poverty measure in all situations except that in which all eligible household members are deprived in

all dimensions (the mean gap is 1). Thus, in a sense, the M1 corrects the M0 measure by adjusting the adjusted headcount ratio to reflect the true proportion of individuals who are poor.

The inequality-adjusted poverty indices are advantageous when comparing poverty across time and space. The following subsection describes the analysis of M1 and M2 at region level, when  $k=4$ .

### 5.7.1 Inequalities among the poor at village level

Table 5.9 compares inequalities among the poor across the RRUWA. The average poverty gap G and M0 used to compute M1, as well as the average severity of the poverty S used in calculating M2, are presented in the table.

**Table 5.9: Decomposition of poverty measures by region**

Region	G	M0	M1	S	M2
Anzal	0.597598	0.333	0.199	0.516517	0.172
Silvaneh	0.660804	0.398	0.263	0.547739	0.218
Central	0.699752	0.403	0.282	0.565757	0.228
Nazloo	0.727723	0.404	0.294	0.581683	0.235
Somay	0.70282	0.461	0.324	0.566161	0.261

Source: Survey data (2017)

As shown in table 5.7, the regions with the highest M0 and M1 also have the highest estimates of M2. This indicates that in those regions the multidimensionally poor households are further from the poverty lines (shown by M1) and are also characterised by high inequality. Somay region has the highest estimates for the adjusted multidimensional measures  $M0=0.461$ ,  $M1=0.324$ ,  $M2=0.261$ , followed by Nazloo 0.404, 0.294, 0.235, respectively, while Anzal has the lowest: M0 (0.398), M1 (0.263) and M2 (0.218).

## 5.8 Summary

To take account of the fact that poverty has many dimensions, poverty researchers have started to move away from unidimensional measures of poverty, based on income or consumption,

toward multidimensional poverty measures. In this study, 13 indicators, constructed using six dimensions of deprivation, were identified. These dimensions include education (adult schooling achievement and children's school attendance), access to basic infrastructure services (access to electricity, safe water source, clean sanitation and fuel for cooking), quality of housing (house structure and overcrowding), assets (communication assets and other assets) and food security. The indicators and their cut-offs used in the current study follow the MDGs definitions and other related studies, mostly conducted in the developing countries.

At  $k=33\%$  (a threshold that is mostly used in Alkire and Foster poverty measures), approximately 83% of the households are deprived in 48.4% of the total dimensions, with intensity of poverty of  $M0=0.402$ . At the same cut-off, health is the highest contributor to the breadth of poverty 30.90%, followed by food security 22.65%, housing quality 18.34%, education 11.82%, access to basic infrastructure services 9%, and assets 7.21%.

Within WA, five regions and 16 districts were analysed individually, based on the decomposability property of Alkire and Foster's poverty measures. Useful information for applying appropriate poverty-decreasing policies can be obtained by focusing on the types of deprivations shaping every single subgroup. At  $k=33\%$ , the composition of the adjusted headcount ratio ( $M0$ ) or intensity of poverty showed that Somay is the most deprived region, while Anzal is the least deprived region.

Decomposition of poverty was also examined within the relationship between multidimensional poverty and household size. Poverty level was found to be positively related to size of household. In other words, the larger the household, the greater the incidence of multidimensional poverty. Across the specified dimensions: housing and clothing, water and sanitation, education, health and income, the results revealed that housing, health and income

poverty increase more with increase in household size, in contrast to results for the other categories, which, as expected, were found not to be greatly associated with household size.

Improving the situation of poor people is as important as the elimination of poverty. Therefore, inequality across the poor should be taken into account as well as the incidence and intensity of the poverty. In this regard, inequality among the poor was examined based on the adjusted poverty gap  $M1$  and squared poverty gap  $M2$ . At the  $K=33\%$  level, the average gap or  $G$  was 0.692, indicating the average distance between a deprivation in a poor household and the poverty line. The severity  $S=0.226$  presents the inequality among the deprivation statuses of the poor.

This study also analysed  $M1$  and  $M2$  at the regional level at  $k=33$ , and the regions with the highest  $M0$  and  $M1$  were found also to have the highest estimates of  $M2$ . This indicates that in those regions the multidimensionally poor households are further from the poverty lines (shown by  $M1$ ) and are also characterised by high inequality. Somay region had the highest estimates of adjusted multidimensional measures ( $M0=0.461$ ,  $M1=0.324$ ,  $M2=0.261$ ) and Anzal had the lowest ( $M0=0.398$ ,  $M1=0.263$ ,  $M2=0.218$ ).

## **Summary**

This chapter presented findings of the qualitative data collected from semi-structured interviews. This section summarises the important findings.

The findings showed that the interviewees are aware of the different aspects and indicators of poverty. They expressed multidimensional rather than unidimensional perceptions of poverty. Analysis of the data shows that some interviewees experienced deprivation in various living standard dimensions.

It was observed that participants are aware of the importance of education, especially for their children; however, a number of factors, such as lack of education facilities in many villages

and financial difficulties, were preventing them from being educated or sending their children to school. Since the interviewees generally related lack of well-being to lack of education, it is reasonable to conclude that education is a relevant poverty dimension in the study regions.

Interviewees had experienced much difficulty in accessing health care facilities and paying for health care. In many cases, illness of the household head or other members affected the household members' employment, mental health and financial resources and drove them into poverty.

The findings showed that although many households were able to buy the basic foods, they were not able to buy all types of food. It was observed that lack of the necessary financial resources prevents people from attending sufficiently to their food consumption and nutritional requirements. They have to eat whatever they have and foods which are available in their economic situation.

Responses to questioning on material deprivation or economic well-being revealed that while material assets are important regarding the interviewees' living standards, ownership of material assets does not fully reflect their economic status. The majority of interviewees measured economic well-being in terms of being employed, having enough income and being able to save money for the future, as well as ownership of the assets they want to acquire.

Some of the interviewees expressed negative views about their housing conditions. Although some people expressed satisfaction with access to infrastructure facilities such as electricity and water supply, they referred to the unreliability of these facilities. Moreover, some participants were unable to improve their house structure or sanitation facilities on account of financial difficulties. Also, the interviewees referred to the various impacts on their family's wellbeing of living in a crowded home, such as effects on their children's health and their social interactions. Overall, the qualitative findings showed awareness on the part of the interviewees

of the various dimensions of well-being and poverty, as had been expected. In chapter seven, the quantitative and qualitative data will be integrated, and conclusions will be drawn.

## **Chapter 6:**

## **Discussion and Conclusions**

### **6.1 Introduction**

Reducing poverty has always been one of the main targets of governments and international agreements. It is the first target of MDGs. Until recently, income was the main fundamental for estimating people's standard of living, but experiences have confirmed that human life is multidimensional in nature. A person can feel poverty due to lack of income or any other dimensions of life. This thesis applied the Alkire- Foster (2011) method to calculate the level of multidimensional poverty in the rural district of Urmia in West Azerbaijan province, north-western Iran.

The literature review of this study discussed the various theories relating to poverty measurement and analysis and explained the selection of the Alkire-Foster method to measure poverty in this rural district of Urmia. The research applied a multidimensional approach to measure poverty in the selected households, in order to provide the basic requirements to design and implement poverty reduction strategies. Poverty-reduction policies could then be implemented to target those deprivations, and resources could be allocated to the appropriate indicators and groups. In Chapter 3, the study discussed Iran's economic situation from the time of the revolution to the present day. The researcher outlined the national economic growth trends, subsidy reforms, and economic conditions at the time of Iran and Iraq war. The economic situation in the research area of West Azerbaijan was also addressed.

A survey of 378 households was conducted in five regions. Multi-stage sampling was used to select households from these regions. Also, this study interviewed 21 respondents to obtain qualitative data. This study used a sequential explanatory approach as part of a mixed-method research design. Separate samplings were conducted for the quantitative and qualitative parts of the research. Dimensions of the research were chosen, indicators identified, and cut-off

edges clarified. The data collected by the quantitative and qualitative methods were then integrated and analysed to produce final research findings linked to the research aims and objectives.

Parts of Azerbaijan are quite wealthy, with fertile agricultural lands and lush ranches for livestock and also valuable mineral resources. However, the rural area of West Azerbaijan is a remote area far from the capital, located on an earthquake fault and lacking governmental investment. Consequently, many of its people are living in deplorable conditions. This research aimed to highlight the main problems of its residents and to rank the level of poverty in six different dimensions, including health, education, assets, access to services, housing, and food security. Thirteen indicators were used to estimate these six dimensions.

The results of the research confirmed a high rate of poverty in this area, especially in health and food security. The thesis indicates that the primary focus of the authority must be on health. Any investment in health can push a bigger group of residents to a higher level of living standards. A comparison with poverty levels in other rural areas in Iran, based on available data, illustrated that although living standards in the rural areas of West Azerbaijan are not acceptable, they are better than in many other rural regions of Iran.

## **6.2 Poverty analysis**

This thesis presented an interpretation of multidimensional poverty based on Amartya Sen's capability approach and Alkire-Foster methodology. At the first stage, which is called the identification stage, a number of dimensions were identified in which the households were deprived, using a dual cut-off method. Also, the poverty dimensions were analysed through a breakdown of their intensity to explore their specific contributions to poverty. At the second stage, which is called the aggregation stage, the depth and level of inequality among the poor

were analysed. In further analyses, the poverty was decomposed on the basis of sub-groups within the area, such as regions, districts, ethnic groups and household characteristics.

The analysis of multidimensional poverty analysis included the level of education, access to basic infrastructure services, quality of housing, household assets, health, and food security. The following section discuss each of these dimensions.

### **6.2.1 Education**

Education, as one of these dimensions, has two indicators. Firstly, at least one adult (above 16 years old) in the household has not finished primary school, and secondly, any of the school-aged children are not attending school. The researcher discussed both indicators under the education dimension.

Primary school education in Iran used to last for 5 years, but in 2014 the primary phase was increased to 6 years, with students starting school from the age of 7 years. Almost 9 million students are attending primary schools and about 400,000 teachers and staff are involved directly in educating children in primary schools. The latest statistics, for 2016, confirm that the illiteracy rate has reduced during the last 60 years(SC1, 2016). Currently, 15% of women and 9% of men are illiterate in Iran. Almost 55% of these illiterate people are living in urban areas and 45% in rural areas. Among the provinces, Tehran has 5.3% illiteracy and Alborz 5.7%, which are the lowest rates in the country. At the opposite end of the scale, Sistan and Baluchistan Province on the border with Pakistan has the highest rates of illiteracy in the country, with 18% of men and 29% of women unable to read or write in any language. West Azerbaijan, with Urmia as its capital, is ranked third worst for illiteracy. In this province, 11.7% of men and 24.7% of women have either never been to school or their schooling time was insufficient for them to learn to read and write properly(SC1, 2016). However, as has been discussed in chapter 4, in the rural area of Urmia, almost 80% of people older than 16 years

old have had five years or more of education of years as compared to almost 20% of people who on average have had less than five years of schooling. It seems that our collected data is completely in-line with the statistics published by the SCI. According to official primary school aims for Iran, after year 5 students must be able to read newspapers fluently and to write in Persian at an average level, otherwise they cannot be regarded as literate.

In the interviews conducted for this study, most of the respondents cited lack of income as the reason they were unable to spend 5 years in school, and the same reason was given by most of them for their children not going to school. It seems the high rate of inflation in Iran is one of the main barriers for children's education as some of the respondents mentioned that they used to send their children to school but are not able to do so anymore. They stated that *everything is more expensive now and they don't earn enough money even to feed their family.*

In the last 25 years, the rate of inflation in Iran has fluctuated from 3% to 57%. Inflation has had an adverse effect on the net school enrolment rate and a direct effect on the length of time that children are able to study in school(Dougherty & Callender, 2020). The high rate of unemployment in rural areas and skyrocketing prices in Iran have clearly affected the affordability of education, especially in rural areas.

On the other hand, less connection is made between learning in school and life skills in Iran. For that reason, some respondents reiterated that they saw no point in getting more schooling for their children if they cannot use it in their future life. The high rate of unemployment, especially among higher educated people in Iran, is creating a mind-set that any form of education apart from learning to read and write is a waste of time for children.

Meanwhile, almost all participants in the interview believed that the main reason that individuals experience poverty is because they have not had the necessary education. In many villages there is no high school, and they have to send their children to the city, which is too

costly for them to be able to afford. They therefore lose hope and refuse to let their kids to have more schooling after primary or secondary school. In some cases, because of their poverty, families needed their children to give up education and work beside them in family businesses like farming or carpet weaving. Since the interviewees generally reported a lack of well-being related to lack of education, it is reasonable to conclude that education is one of the most poverty-affected dimensions in the study region.

### **6.2.2 Food insecurity**

It is obvious that food is human beings' most important need. Accordingly, the accessibility of food, affordability, and sustainability of food at any time is a considerable issue(Clark, 2002). It has been reiterated by the World Bank that food security is not only about intake of food; people, especially children, must be properly nourished. Malnutrition is still a huge dilemma around the world. Currently, more than 150 million children are suffering from a lack of enough or proper food. Despite all attempts by universal charities and governments, the number of malnourished children has increased in recent years. In 2017, the World Food Program of the United Nations reported that Iran has fallen back into economic difficulty because of international sanctions. Based on this report, increasing food prices and subsidy cuts have directly affected food security in Iran and, naturally, poor people are most affected(WFP, 2017).

This research shows that in the rural area of Urmia almost 36% of the households were food secure, while 32% were mildly or moderately insecure, 20% and 12% respectively, but 12% of the population were severely food insecure. Accordingly, about 63% of the sampled population were found to be deprived, as they demonstrated different degrees of vulnerability regarding access to food.

Some respondents mentioned that the food they are able to provide for their family is not sufficiently nutritious. They feel that feeding the family is getting more difficult every day because of reduced income or increasing prices.

Apart from the economic reasons for difficulties in getting enough food, natural disasters such as floods and earthquakes and droughts have affected food security in Iran in recent years. The UN report also mentioned political instability in neighbouring countries as another important reason for the reduction in food security in Iran(WFP, 2017). A review of statistics shows that since 2005 more than one million people have lost their jobs in the agriculture sector. Moreover, the locust attacks on farms in the south of Iran in the last two years have pushed other farmers to think about changing their occupation(MNA, 2019). Instability in political conditions in neighbouring countries also affects food security as it can cause delays or stoppages in the import and export of food. Iranian products account for almost 25% of Afghanistan's total imports, while Afghanistan exports about 4%, mostly food products, to Iran. Meanwhile, Iraq gets about 12% of its food imports from Iran and exports around 1% of its total exports to Iran. Naturally, any instability in Iraq and Afghanistan will have little effect on food security in Iran as they export such small amounts of food to Iran, but it could affect Iran's income from exporting to these countries.

### **6.2.3 Assets**

As has already been mentioned, the study discusses the assets dimension in terms of two categories: communication assets and ownership of other assets. The research shows that 20% of the respondents do not have access to a cell phone or landline telephone for communication purposes. While 94% of the population have a television or radio, only 3% of the population have access to the internet. However, 5% of the total population of Iranian have no access to any communication device. Approximately 76% of these people live in urban areas and 34% in rural areas. Also, around 38% of Iranians have no access to the internet (SCI, 2016). These

statistics confirm that access to mobile and internet in the study area is very much lower than average ownership in the country as a whole.

Interviewees reiterated that they have other needs, such as food, housing, education and clothing, which are more important than mobile and internet. In fact, they do not have any money to spend on assets apart from the bare necessities.

In terms of the ownership of the other assets, 78.7% of the sampled population own refrigerators. Ownership of a motorcycle or scooter was reported as 45%, 6% owned a tractor or other agricultural vehicle, and 9% owned cars. Also, 76% reported having poultry, while 40% and 38% had goats/sheep and cattle/buffaloes, respectively. There were no available statistics regarding refrigerator, motorcycle or scooter ownership for the population of Iran as a whole, but there are statistics to show that on average 54.6% of Iranian villagers have goats/sheep and 26.7% have cattle/buffaloes. A report published by the Statistical Centre of Iran in 2017 confirms that West Azerbaijan is still one of the main livestock provinces in Iran and is ranked fifth in this respect (SCI, 2017).

It seems that people rely on animal husbandry as an income source and they prefer to have a goat or sheep instead of spending money on mobile phones and internet. Ownership of cattle and poultry is more likely to help families financially, whereas the internet and mobiles are seen as costly luxuries for families.

#### **6.2.4 Health**

Iran's healthcare system is a combination of public and private provision. The government is responsible for developing healthcare networks in rural areas, vaccinations and subsidisation of some services. Meanwhile, the private sector is also heavily involved in Iran's healthcare system, covering mostly secondary and tertiary health services in urban areas. The private sector is normally engaged in provision of high quality and expensive services across the

country. Accordingly, in the area of the study, the government is mainly responsible for providing necessary facilities and services. Based on a report published by the World Health Organization (WHO, 2016, 8) “Iran has 15,400 health houses, 25,000 behvarzes (professional health carers), 2,200 rural health centres, 300 health posts, and 1,900 urban health centres”. After the revolution, the main aim of the health sector was improving accessibility to healthcare centres and reducing the gap between rural and urban areas in this regard. Under this new approach, behvarzes have become the main persons in contact with rural residents. During the last 30 years, about 17,000 healthcare centres have been launched around the country to provide primary health services, free of charge (Marandi et al., 2019). The report confirms that the current accessibility of Iranians living in rural areas to a healthcare centre to receive free primary services is around 90%. However, the corresponding rate in the study area is only 17% and almost 83% of residents in the area can access a health facility only by travelling for more than 30 minutes. This confirms that the study area is one of the poorest areas in Iran and accessibility of a healthcare centre is much lower than average.

In Iran, the Social Security Organization (SSO) is responsible for covering the medical costs of citizens. Salaried and wage workers automatically become members of the SSO, while older adults can join voluntarily. There is another parallel association, named the Medical Service Insurance Organization (MSIO), which covers government employees, students, and rural residents. Apart from these two general schemes, there are some other governmental or semi-private foundations which provide services to particular groups of people, such as military personnel and orphans (Arkanteb, 2020). In general, public insurance covers about 70% of the cost of medicines in the coverage list. Also, the majority of people who are admitted to a public hospital only pay 10% of their expenses (Khodamoradi et al., 2018).

However, the study confirms that in 91% of the studied households, no one has access to health insurance; thus, these households are deprived in this indicator. In the other 9% at least one

person has access to health insurance and these households are considered to be non-deprived. The main reason for this high percentage is that people tend to rely on healthcare centres, which provide free health coverage and medicines. Naturally, if people have no access to a centre then they will not receive any support or coverage.

### **6.2.5 Access to basic infrastructure services**

In this study, four indicators have been defined for the access to basic infrastructure services dimension. These four indicators are access to drinking water, access to clean sanitation, access to clean fuel for cooking and access to electricity. An investigation has shown that only 6% of water sources in Iran are allocated for drinking, while 92% are allocated for agriculture and 2% for the industry. This 6% covers the 90% of the population who can turn on the tap to drink water. But the remaining 10% of Iran's population, although they may have a water pipe at home, do not have clean drinking water. It is worth mentioning that 70% of Iran is desert and, naturally, drinking water is unavailable there. According to the findings of the study, 88% of the households in the area have access to piped water in the yard, but only 8% have water inside the house. Almost 4% of the households have to carry the water from the well. More than 70% of villages in West Azerbaijan are under the Water and Wastewater Company of Iran that needs to make sure that they have an appropriate quality of drinking water. Almost 4% of households use wells to access drinking water and around 26% of families obtain their drinking water by plumbing fountains and subterranean sources, which means it is not possible to judge the quality of their water.

The study shows that less than 10% of people in rural Urmia have access to a flush toilet, while 90% have access to a toilet with ventilation facility. It is necessary to mention that culturally the majority of Iranians use water for their toileting, obtained through a Lota vessel or plumbing. Practically, this indicator cannot be used as a reason to categorise people in Iran as

deprived. This indicator is a good example to show that due to cultural variations the same indicator used in different countries can produce different results.

Despite all its problems, including droughts and economic crises, Iran has always performed well in terms of accessibility of electricity. Based on the World Bank report, in 2014 Iran was achieving 100% electricity coverage 24 hours per day. This study has shown, however, that in contrast to governmental and World Bank (2014) reports, about 4% of the population in the study area have no access to electricity. The interviews with residents in this area confirmed that, in fact, electricity is accessible for any family who applies to the government, but some poor people cannot afford it financially.

Iran is a country with huge gas resources which have been made accessible for almost all households in its urban areas. Approximately, 80% of villagers are also linked to the national grid(Hafeznia et al., 2017). The main usage of gas for households is daily cooking and heating in the cold season. The national grid can meet people's needs for 24 hours, every day. But in very cold times of the year the gas supply can be interrupted because of low pressure and frozen pipes, and people may then be left without access to gas for hours or even days. In comparison with electricity, gas is much cheaper, and for that reason people prefer to use gas instead of electricity for cooking. Accordingly, none of the households in the area used electricity for cooking, 66% of households were using natural gas, while 34% were using other types of fuel such as firewood or charcoal.

#### **6.2.6 Housing quality**

In evaluating housing quality as a dimension of this research, the focus was on the quality of the dwelling structure and crowding in the accommodation. To assess the quality of the houses, the researcher studied the structure of the dwelling and the construction material to see whether it was built from mud or unbaked bricks. Based on a comprehensive research study on rural

housing material in Iran (2015), the majority of the rural accommodation is constructed from brick and stone. Accordingly, rural houses in West Azerbaijan can be ranked as “medium suitable” compared to rural houses in Iran as a whole(Almusaed & Almssad, 2015). This is maybe due to the cold weather in the area in winter, which leads people to pay more attention to the materials used for construction of their houses. West Azerbaijan is one of the centres of earthquakes in Iran. The history of the area has always been punctuated by distinctive earthquakes. Hence, people living in this area always have to consider both cold weather in winter and the possibility of an earthquake. Although the quality of housing construction in the rural areas of West Azerbaijan is better than in many other areas in Iran, there is still a long way to go before all the people have an acceptable and safe dwelling. In the study area, 55% of dwellings were made of concrete, baked bricks with cement or stone with cement which normally provide better resistance to earthquakes. However, 22% of houses were made of stone with wood and 17% used bricks with wood, which provide minimum stability in an earthquake. The interviews with the residents confirmed that they are all aware of the different threats deriving from bad construction or weak materials. Almost all people have some experience of living through an earthquake. They do their best to maintain their dwellings in summer, but they do not have the financial resources to reconstruct or strengthen their homes sufficiently.

Living in a crowded household can have a negative impact on the lives of household members, especially children. These impacts can include the lack of a comfortable and quiet space for doing homework or interacting with family members, health problems, disturbed sleep and lack of privacy. Based on a report released by the United Nations (2019), the average family size in Iran is 3.5 people; 49% of families have 2-3 members and 38% of families have 4-5 members. In the study area, 42% of households had two or fewer people per room. About 9% of households had five or more people per room, 39% of households had three, and 9% had four people per room. However, in Tehran the average is 1.6 people per room and in Ahvaz in the

south of Iran the average is 2 people per room. In interviews with the residents, they mentioned being upset about their overcrowded living conditions, but explained that they do not have the financial resources to change or extend their homes. Meanwhile, the increasing cost of construction materials and government standards for new construction further prevent them from having more space at home.

### **6.3 Answering the research questions**

Based on the selected research objectives, the research intended to answer: “*What is the level of various deprivations suffered by the population in rural regions of Urmia?*” as the first research question. The review of previous researches and Iran’s Economic Development Plans led the researcher toward six main dimensions and the 13 selected indicators. These indicators were based on current problems in the region. For instance, the quality of dwellings has a direct relationship to the danger of earthquakes in West Azerbaijan. Some of the indicators were suggested by Alkire-Foster as common indicators for assessing multidimensional poverty.

The research indicates that not having proper access to health insurance affects 91% of the residents, and lack of medical facilities affects 83% of the residents. Additionally, 63% of the population are facing food insecurity. Accordingly, lack of access to electricity and drinking water are affecting only 3% and 4%, respectively. Also, a large majority of people in this region (95%) own at least two communication assets.

The second research question is: “*What is the extent of deprivation in rural regions of Urmia, using different cut-off levels of identification?*” No household was found to have no deprivation at all. All households are deprived in two or more indicators, while 33.15% of the population have deprivation in five indicators, and 28.57% of the residents are deprived in six indicators.

Meanwhile, no household has deprivation in 12 or 13 indicators, but more than 75% of households are deprived in five or more indicators.

The third question of this research is: "*What is the contribution of the indicators in overall poverty?*" To answer this question, the researcher referred first to the literature collected for the review in chapter 2. Accordingly, based on the union approach, all residents are living in poverty as they are deprived of at least one indicator for this condition. K is equal to the lowest weight when indicators are not equally weighted. According to the intersection approach, no families are living in poverty in the area if none of them are deprived in all indicators (K=13). However, Alkire and Foster's methodology adopts an intermediate approach compared to the union and intersection approaches.

Based on the intermediate approach, in the case where K=4, then almost 83% of the families are living in poverty, and they are deprived in approximately 48.4% of the total dimensions. The adjusted headcount ratio for the K is 0.402. When we consider that K=6, then 58% of the households are living in poverty. On average, they are deprived in 52.9% of total indicators, with M0 being 0.30. The results at K=8 show that approximately 30% of households are deprived, at an average of 59.9% of all indicators and M0=0.18. The results at K=10 indicate that less than 1% of households are deprived; on average, they are deprived in 89.2% of all indicators, with intensity of poverty of M0=0.033.

For all values of K, health is the highest contributor to the breadth of poverty, at 30.90%, followed by food security 22.65%, housing quality 18.34%, education 11.82%, housing and access to basic infrastructures services 9%, and assets 7.21%.

The fourth research question asks: "*What is the degree of the deprivations, considering poverty decomposition and using sub-groups within the area?*" In this case, the researcher considered poverty in villages and districts, household size, and ethnic groups.

Accordingly, Anzal is ranked in fifth place, with the M0 estimate being 0.333, and Silvaneh ranks in fourth place, with an M0 estimate of 0.398. Nazloo ranks third, with M0 being 0.403,

Central ranks second, with M0 being 0.404, and Somay is ranked first with M0 being 0.461. In regard to the district level, South Torkaman from the Central region is ranked in first place, with M0 being 0.582, and Nazloo Chay is ranked in 16th place, with M0 being 0.325.

The Somay region recorded the highest incidence and breadth of poverty at cut-off point  $K=4$ , with as many as 94% of households living in poverty, with  $M0=0.46$ , followed by Central, where 83% fall below the poverty line, with M0 being 0.404. In the case of Somay, deprivation in health is the highest contributor to the intensity of poverty and explains 29.28% of the overall deprivation. In this region, deprivation in house quality accounts for 22.52% of the overall multidimensional poverty estimate, deprivation in assets for 14.41%, and deprivation in basic infrastructures services and food account, respectively, for 13.06% and 12.61% of M0. In the Central region, deprivations in health and house quality account for 28.68% and 23.13%, respectively, while assets, access to basic infrastructure services, food and education deprivation recorded 14.44%, 13.72%, 12.62%, and 7.24%, respectively. The lowest degree of poverty is observed in Anzal, where at least 70% of households were found to be in poverty, with M0 being 0.33. However, this region has the highest level of deprivation in services among the regions, accounting for 17.56% of the M0.

The study confirms that the poverty level in the study area is positively related to household size. In other words, the larger the household, the more multidimensionally poor. Hence, education, housing quality, and food poverty increase more with increase in household size in comparison to the other dimensions, as the latter are not directly related to household size. For example, household size has no effect on the household's access to basic infrastructure services like electricity, clean water or medical facilities, or availability of assets.

The study shows that the highest and lowest rates of multidimensional poverty are found among the Kurdish and Turkish ethnic groups, respectively. However, the Armenian ethnic group is

more deprived in the education dimension. Also, in regard to the assets dimension, the Kurds are less deprived in comparison with the Armenian and Turkish ethnic groups

#### 6.4 Research outcome

Based on the latest estimation, in 2019, approximately 72,000 households, equating to 290,000 people, are living in the rural area of Urmia in West Azerbaijan. This research is proposing clear guidance for governors and planners to increase the efficiency of their planning and to allocate investment meaningfully. This means the authorities need to consider the effect of each indicator on the total population of the region and set priorities for investment of government budget accordingly. For instance, normally, the government has an annual plan, budget, and investment for developing electricity infrastructure in the rural area of Urmia, which can benefit at most 2160 families or 8700 people. Based on the extracted information from this area, if the government were to invest in health insurance instead of electricity, it could benefit approximately 65520 families or 263900 people. This approach could speed up economic development and decrease poverty in the region. Clearly, additional investment in the 3 neediest indicators: access to health insurance, access to medical facilities, and food security, could benefit a population of between 182700 and 263900 people. Table 6.1 shows the numbers of households and population affected by poverty in each indicator.

**Table 6.1: Poverty affected households and population for each indicator**

Regions	Number of households	Population	Poverty in each indicator		
RRUWA	72000	290000	Years of schooling	14400	58000
			School attendance	31680	127600
			Access to drinking water	2880	11600
			Access to clean sanitation	32400	130500
			Access to clean fuel for cooking	31600	127600

			Access to electricity	2160	8700
			Quality of dwelling structure	32400	130500
			Crowding	41760	168200
			Ownership of communication assets	3600	14500
			Ownership of other assets	25200	101500
			Availability of and access to medical facilities	59760	240700
			Access to health insurance	65520	263900
			Food security	45360	182700

Accordingly, government, state planners, local authorities, and the other researchers have this opportunity to improve the efficiency of their plans and make better choices at the time of investment. Also, as this research is the first multidimensional poverty study to be conducted in the rural area of Urmia, it can provide a base for other multidimensional poverty studies to compare various indicators and identify poverty trends in this region.

## 6.5 Limitations of the research

The main limitation of this study is the lack of previous research in this area. Consequently, there was no possibility to make comparisons of the current poverty with poverty in the past. There is no data to show a trend of poverty for selected indicators or dimensions; hence, the present researcher faced other limitations and challenges in breaking new ground. As a local researcher studying in a foreign university, the researcher was not able to use any information or secondary data collected by the local authority, and no cooperation or support was forthcoming in the form of local or governmental research. Lack of trust was another challenge or limitation faced by this research, as residents in this area belong to different ethnic groups and have different religions, cultures, and languages. While the Azeri people speak Turkish,

Kurdish people in this region speak Kermangi Kurdish, and Armenian people speak Armenian. Although all these people are able to understand Turkish Azeri/ Persian, they were unwilling to trust a person who could not speak their language. Another limitation of this research is related to questions about assets. The majority of people, when filling in the questionnaire or even in the interviews, were not happy to answer questions about their assets. They were very conservative in highlighting what was under their ownership. Consequently, the collected data relating to the respondents' asset ownership could have been affected by bias.

## **6.6 Policy recommendations**

First, the study recommends that the Alkire and Foster methodology be adopted as a method for identifying poor households in Iran. By adopting this methodology, policymakers would be able to identify in which dimensions households are most deprived and which make the largest contributions to the intensity of poverty. They would then be able to design properly targeted policies. Also, the potential to analyse the poverty level by subgroups would help with effective budget allocation.

Finally, this study found that the households in rural areas of Urmia are most deprived in relation to health, food security, housing quality, education, assets ownership and access to basic infrastructure services, in that order of priority. By adopting this methodology policymakers would be able to prioritise the needs of the poorest households in terms of policy design and resources allocation.

## **6.7 Future contributions**

Having finalised this research, a variety of recommendations can be made for future studies. Further multidimensional poverty studies need to be conducted in the same area over a fixed period of time. This would help to identify the trends of poverty or development in the area. It would highlight the weaknesses and knots in investment or development in the region, and

researchers would over time develop better analysis methods for understanding the dimensions and indicators in the rural area of Urmia. This study indicates that there are some other dimensions which could potentially be selected for further research, such as employment, transportation, and the environment. Moreover, other indicators could be added to the current dimensions, such as access to primary and secondary schools, access to banks, bath inside the house, or access to warm water in winter.

## **6.8 Summary**

The data analysis conducted in this study showed that participants are aware of the multidimensional aspects of poverty. They fully acknowledge the importance of education, especially for children, overcrowding of family members, quality of housing, clean sanitation, etc. But, clearly, the majority of people have financial difficulties that prevent them from improving their quality of life without public investment and governmental support. Inflation and national financial problems are affecting these people and pushing them into poverty.

The discussion confirms that the selected indicators fall into three separate groups. The first group of indicators clearly relates to the poverty situation throughout the country, such as indicators under health, education and food insecurity. Regarding this group of indicators, the study area is one of the poorest in the country. Regarding the second group of indicators, including asset ownership and housing, although the households in the study area are far from reaching an acceptable standard, they are at a good level compared with other rural areas in the country. For the third group of indicators, including such as access to electricity, no signs of poverty were identified.

The research findings indicate that at  $K=33\%$ , approximately 83% of the households are deprived in 48.4% of total dimensions, with an intensity of poverty of  $M0=0.402$ . At the same cut-off, health is the highest contributor to the breadth of poverty (30.90%), followed by food

security (22.65%), housing quality (18.34%), education (11.82%), housing and services (9%), and assets (7.21%). Analysis and synthesis of the collected data showed that participants are aware of the multidimensional aspects of poverty, but due to financial difficulties the majority are unable to improve their quality of life without public investment and governmental support. Inflation and the country's financial problems are affecting these people and pushing them into poverty. The research confirms that health is the dimension in which people are most deprived, with a population of between 240700 and 263900 people affected, which equates to 83% to 91% of the population living in the rural area of Urmia in West Azerbaijan. After health, 182700 residents, or 63%, are affected by a lack of food security. However, access to electricity and drinking water had the minimum effect.

Decomposition of poverty was also discussed within the relationship between multidimensional poverty and household size. The poverty level was positively related to the size of the household. In other words, the larger the household, the more multidimensional poor. Within the specified dimensions, education, housing quality, and food poverty increased more with the increase in household size.

The depth and level of inequality among the poor were examined based on the adjusted poverty gap  $M1$  and squared poverty gap  $M2$ . At the  $K=33\%$ . The average gap or  $G$  of 0.692 indicates the average gap between a deprivation of a poor household and the poverty line. The severity  $S=0.226$  represents the inequality among the deprived statuses of the poor.

This study also discussed  $M1$  and  $M2$  on a regional level; at  $K=33$  the regions with the highest  $M0$  and  $M1$  have also the highest estimates of  $M2$ . This indicates that in those regions the multidimensional poor households are further from the poverty lines (shown by  $M1$ ) and they also reflect high inequality. Somay region had the highest estimates based on the adjusted

multidimensional measures ( $M_0=0.461$ ,  $M_1=0.324$ ,  $M_2=0.261$ ) and Anzal had the lowest ( $M_0=0.398$ ,  $M_1=0.263$  and  $M_2=0.218$ ).

Despite the abovementioned limitations, the present research has the capacity to be a guideline for government and other authorities in prioritising indicators to achieve maximum benefits from their limited annual investment. Based on these findings, greater investment in health would benefit a larger population in comparison with the other dimensions. Hopefully, future studies on multidimensional poverty in the region will be able to contribute by refining the analysis of the selected dimensions and indicators and monitoring development trends.

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## APPENDICES

### APPENDIX I

#### Questionnaire

Region		Date	
District		Household No.	
Village			

Please note that the head of the household should preferably answer the questionnaire (Circle the relevant answer)

A	BACKGROUND INFORMATION					
1	Respondent's relationship to the household head	Head (1)	Spouse (2)	Child (3)	Extended family (4)	Others (5)
2	Gender of the household head	Male (1)			Female (2)	
3	What language do you mostly speak at home?	Turkish (1)	Kurdish (2)	Armenian (3)	Farsi (4)	Others (5)

B HOUSEHOLD CHARACTERISTICS				
Please provide the following information about your household (Circle the relevant answer)				
B1. Number of people living in the household	B2. Gender	B3. Age	B4. Relationship to Head	B5. Marital Status
	1. Female 2. Male		1. Household Head 2. Wife/Husband 3. Son 4. Daughter 5. Grandchild 6. Brother/Sister 7. Grandparent 8. Others (Specify)  99. I do not know	1. Single 2. Married 3. Divorced 4. Widowed  99. I do not know
1				
2				
3				
4				
5				
6				

7				
8				
9				
10				

<b>B HOUSEHOLD CHARACTERISTICS (CONTINUED)</b>																															
Please provide the following information about your household (Circle the relevant answer)																															
	B6. What is the current/last school that the family member is attending/has graduated?																														
	<table border="1"> <thead> <tr> <th>Members above 16 years old</th> <th>Members below 16 years old</th> </tr> </thead> <tbody> <tr> <td>1. Grade 1</td> <td>1. Grade 1</td> </tr> <tr> <td>2. Grade 2</td> <td>2. Grade 2</td> </tr> <tr> <td>3. Grade 3</td> <td>3. Grade 3</td> </tr> <tr> <td>4. Grade 4</td> <td>4. Grade 4</td> </tr> <tr> <td>5. Grade 5</td> <td>5. Grade 5</td> </tr> <tr> <td>6. Grade 6</td> <td>6. Grade 6</td> </tr> <tr> <td>7. Grade 7</td> <td>7. Grade 7</td> </tr> <tr> <td>8. Grade 8</td> <td>8. Grade 8</td> </tr> <tr> <td>9. Grade 9</td> <td>9. Grade 9</td> </tr> <tr> <td>10. Diploma Certificate</td> <td>10. Grade 10</td> </tr> <tr> <td>11. University Graduate</td> <td>11. Grade 11</td> </tr> <tr> <td>12. Nehzat education student or unfinished</td> <td>12. Grade 12</td> </tr> <tr> <td>13. Nehzat education graduate</td> <td>14. Diploma Certificate</td> </tr> <tr> <td>14. Never attended school/Nehzat Education</td> <td>14. Not attending school</td> </tr> </tbody> </table>	Members above 16 years old	Members below 16 years old	1. Grade 1	1. Grade 1	2. Grade 2	2. Grade 2	3. Grade 3	3. Grade 3	4. Grade 4	4. Grade 4	5. Grade 5	5. Grade 5	6. Grade 6	6. Grade 6	7. Grade 7	7. Grade 7	8. Grade 8	8. Grade 8	9. Grade 9	9. Grade 9	10. Diploma Certificate	10. Grade 10	11. University Graduate	11. Grade 11	12. Nehzat education student or unfinished	12. Grade 12	13. Nehzat education graduate	14. Diploma Certificate	14. Never attended school/Nehzat Education	14. Not attending school
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<b>B HOUSEHOLD CHARACTERISTICS (CONTINUED)</b>					
	B7. Has the household member worked in an occupation which brings income in the last 12 months?  1. Yes 2. No  99. I do not know	B8. If household member is not working, please mention the reason.  1. Retired 2. Student 3. Housewife 4. Cannot find a job 5. Pregnant 6. So ill that he/she cannot work 7. Too old /young 8. handicapped 9. Looks after house works 10. Looks after elderly/ children 11. Not allowed to work (e.g. female members) 12. Other (please specify)  998. Not applicable  999. Don't know	B9. What is/are the household members' occupations?  1. Farmer 2. Livestock breeder 3. Retired 4. Civil Servant 5. Worker 6. Teacher 7. Other (please specify if different than the above.  998. Not applicable  999. I do not know		
			Primary occupation	Secondary occupation	
<b>1</b>					
<b>2</b>					
<b>3</b>					
<b>4</b>					
<b>5</b>					
<b>6</b>					
<b>7</b>					
<b>8</b>					
<b>9</b>					
<b>10</b>					

<b>C HOUSING QUALITY</b>			
<b>1</b>	How many rooms does the household occupy, including bedrooms and living rooms? (do not count storage rooms, garages, bathrooms, toilets, kitchen or rooms for business)		
<b>2</b>	Select the main material used for the dwelling		
	Baked bricks with cement (1)	Cement/Concrete (2)	Stone with cement (3)
	Stone or unbaked bricks with mud (4)		Other(specify) (5):

<b>D HOUSING AND SERVICE</b>						
<b>Select the main water source used by the household</b>						
<b>1</b>	Plumbing inside the house (bathroom, kitchen, WC) (1)	Plumbing outside the house (2)	Water pump (3)	Well water (4)	Other (specify) (5):	
<b>2</b>	<b>What main type of toilet is used by the household?</b>					
	toilet with flush tank (1)	toilet without flush tank (2)	Public WC (3)	Other (specify) (4):		
<b>3</b>	<b>Select the type of fuel for cooking used by the household</b>					
	Electricity (1)	natural gas (2)	Coal/Charcoal/Wood (3)	Gas bottle (4)	Other (specify) (5):	
<b>4</b>	<b>Is the household connected to the main source of electricity?</b>			<b>Yes (1)</b>	<b>No (2)</b>	

<b>E ASSETS</b>						
<b>1</b>	<b>Select whether the household has the following assets</b>					
	More than one cattle and buffalo	Yes	No	How many		
	More than two goats, Sheep					
	More than six poultry					
	1. Other (specify)					
<b>2</b>	<b>Select whether the household has the following assets</b>					
		Yes	No		Yes	No
	1. Mobile phone			7. Washing machine		
	2. Landline telephone			8. Computer (desktop/laptop)		
	3. Television/Radio			9. Car in working condition		
	4. Dishwasher			10. Motorcycle/scooter		
	5. Refrigerator			11. Tractor/Other agriculture facilities		
	6. Internet					

<b>F</b>		<b>HEALTH AND FOOD SECURITY</b>	
<b>1</b>	<b>How long does it take you to get to the nearest clinic/hospital (using your usual means of transport)?</b>		
	30 minutes or less (1)		More than 30 minutes (2)
<b>2</b>	<b>How many members in your household have health or medical insurance?</b>		
	One person (1)	Two or more people (2)	None (3)

<b>G</b>		<b>FOOD SECURITY</b>	
<b>Household Food Insecurity Access Scale (HFIAS)</b>			
(rarely: once or twice; sometimes: 3 to 10 times; Often: more than 10X in the last 4 weeks)			
<b>1</b>	In the past four weeks, did you worry that your household would not have enough food? (if answer is No, skip to Q2)	1: Yes	0: No
<b>1a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>2</b>	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources? (if answer is No, skip to Q3)	1: Yes	0: No
<b>2a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>3</b>	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources? (if answer is No, skip to Q4)	1: Yes	0: No
<b>3a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>4</b>	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food (if answer is No, skip to Q5)	1: Yes	0: No
<b>4a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>5</b>	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food? (if answer is No, skip to Q6)	1: Yes	0: No
<b>5a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>6</b>	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food? (if answer is No, skip to Q7)	1: Yes	0: No
<b>6a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>7</b>	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food? (if answer is No, skip to Q8)	1: Yes	0: No
<b>7a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>8</b>	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food? (if answer is No, skip to Q9)	1: Yes	0: No
<b>8a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often
<b>9</b>	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	1: Yes	0: No
<b>9a</b>	How often did this happen?	1: Rarely	2: Sometimes 3: Often

## **APPENDIX II**

### **SEMI-STRUCTURED INTERVIEW QUESTIONS**

#### **Overview**

1. Please describe how do you define poverty?

#### **Education**

2. In terms of education, could you explain your views on importance of education in your life and the role that your education level had played regarding your poverty level if you have experienced poverty.

#### **Health**

3. Would you care to discuss your views on accessibility of health care facilities in your regions?
4. Could you please discuss on your ability to pay for health care when you are sick?

#### **Food security**

5. Do you think you consume enough and all types of food?
6. Have you been able to provide adequate and healthy types of food for your household's members during the last month? Could you perhaps give one or more examples to clarify your viewpoint?

#### **Assets ownership**

7. What is your opinion on the economic well-being of you and your family? what possessions and items are essential to your family related to your economic well-being?"
8. how you received the latest news and information?

#### **Housing quality**

9. Considering the housing quality indicators (refer to housing structure and overcrowding), how you perceived your living standards in terms of housing conditions and quality?

#### **Closing**

10. Is there anything else you would like to discuss or add?

**Thank you for participating in the interview.**