Are BISP Beneficiaries have Better Resilience and Food Security? A Critical Review of Regression Discontinuity Design Evaluation Approach

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CERTIFICATE

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Author's Declaration

I am Seemab Riaz here by state that my MPhil thesis titled _Are BISP Beneficiaries have Better Resilience and Food Security? A Critical Review of Regression Discontinuity Design Evaluation Approach_ is my own work and has not been submitted previously by me for taking any degree from Pakistan Institute of Development Economics or anywhere else in the country/world.

At any time if my statement is found to be incorrect even after my Graduation the university has the right to withdraw my MPhil degree.

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Seemab Riaz

Dedication

This thesis is dedicated to:

My beloved parents without whom I could not be, what I am today and all those people who are suffering from food insecurity due to low income and unequal distribution of income.

ACKNOWLEDGEMENT

"Sometimes our light goes out but is blown into flame by another human being. Each of us owes deepest thanks to those who have rekindled this light."

Foremost I want to offer this endeavor to our Almighty Allah on whom we ultimately depend for sustenance and guidance. I am sure this work would have never become truth without His guidance revere the patronage and moral support extended with love by my parents whose financial support and passionate encouragement made it possible for me to complete this project.

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Seemab Riaz

ABSTRACT

RDD is a quasi-experimental regression discontinuity design. When reviewing new policies and treatments, this strategy is utilized to reduce confounding bias. This method is used when a policy intervention has been assigned to people based on whether they are above or below a pre-determined cut-off on a continuous variable. The proposed study evaluated the assumption of RDD and also analyze the impact of BISP's cash transfers on food security and nutrition in the HH by using Oxford Policy Management BISP's impact evaluation panel survey (OPM) 2019. Primary data were collected by conducted qualitative research such as conducted in-depth interviews from BISP beneficiaries to assess what poor needs, proposed study were conducted in-depth interviews 30 BISP beneficiaries from the Islamabad and Muzaffarabad tehsil office.

This study found that, where as in the context of our investigation, the RDD assumption was generally met. According to the findings, BISP unconditional cash transfers have no substantial influence on food security and nutrition. Finding of the study suggested that with the varying bandwidth leads to increase the value of standard errors. Results of the RDD analysis specify that when number of covariates increases then the value of coefficient also increase. Standard error is depend on number of regression coefficient, number of data points and deviation of data sets from assumed regression model. Thus, for a given data set, the standard error also increase when we increase no of regression co-efficient. So, the results of different round is differ to each other because of different data sets and different regression co-efficient, different covariates in the regression model and also by inclusion and exclusion of co-variate in the model. The necessity of examining the validity of RDD design assumptions, testing them, and making adjustments to promote reliable causal inference is demonstrated our findings.

Key words*:* *Malnutrition, Food Security, child nutrition, anthropometry, proxy mean test, and unconditional cash transfers*

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LIST OF ABBREVIATIONS

RDD	Regression Discontinuity Design
UCT	Unconditional Cash Transfers
CCT	Conditional Cash Transfers
HH	Household
Ind	Individual
OPM	Oxford Policy Management
BISP	Benazir Income Support Program
FCS	Food consumption score
FEI	Food energy intake
WHZ	Stunting
HAZ	Wasting
WAZ	Underweight
Nutri	Nutrition
PMT	proxy mean test
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

1.1. Introduction

RDD is a quasi-experimental method that use for avoiding confounding bias while evaluating new policies and interventions. This strategy is employed when people are assigned to a policy intervention based on whether they are above or below a certain threshold on a continuously measured variable. Recent years have seen a large expansions in the use of rigorous impact evaluation techniques. The impact evaluation provides detail about the impacts of program that is negative impact or positive, planned or un-planned directly or indirectly (Smith, 2017).

The purpose of evaluating the impact of the BISP to examine the performance of a quasi – experimental Regression Discontinuity Approach. Overall the performance of RDD was remarkably good. As RDD is non-parametric and parametric approach but here this study used non-parametric approach, they do depend on kernel function and narrow bandwidth. One of the kernel function used is the uniform kernel function which assigns equal weights to all observations within assigned bandwidth and zero weight to observations outside the bandwidth. Alternative kernel function allow assignment of the weights inside the band closer to threshold level and less weight on observation inside band but away from threshold level. In order to examine the sensitivity of RDD usually use alternative kernel function (Buddelmeyer, 2004).

This study assessed the Regression Discontinuity Design using data of 2019 round from the governments largest and most systematic social security programme, the BISP. According to Oxford Policy Management's (OPM) latest effect review report on BISP, the programme has no influence on poverty reduction, food security, or child nutrition, but had a positive impact on consumption, female education, and women empowerment 2011-2019. As in 2011 food security is not estimated only child nutrition is consider in 2011 round and found a positive impact. So, what is the issue behind it that the impact vary from 2011- 2019 impact evaluation reports? Is it the issue of data or approach that is used? Usually social protection programs .i.e. the regression discontinuity design (RDD), propensity score matching (PSM), and difference in difference (DID) technique are all used by BISP. The proposed study assessed the RDD to determine the influence of unconditional cash transfers on food security, as well as the RDD assumption to ensure the

validity of the desired outcomes. Proposed study evaluate that why these results differ, what is the reasons behind it?

Table1.1.Impact on variables in BISP Evaluation Reports 2011-2019

Variables Name	Impact Evaluation 2011	Impact Evaluation 2014	Impact Evaluation 2016	Impact Evaluation 2019
Food security	Not included	Not included	Negative impact	No impact
Nutrition	improved	positive impact on girls only	Negative impact	No impact
Food cons	Increase FC	Positive impact	Positive	positive
poverty	Reduce poverty	19% reduction	Negative impact	No impact
Vulnerability to shocks	Reduced	Not included	Not included	Not included
Education	Better	better	Not increase	positive
Women Empowerment	Increase	better	positive	increase
Child Labor	Reduce	reduce	No impact	No impact

As in developing countries, people spend on average 60 percent of their household budget on food obviously, shocks and disasters affect the food basket of poor households (Fiedler & Bulletin, 2012). Poor people are less able to adapt their consumption baskets to cope with income losses in general, which means that reducing food basket consumption can have an immediate detrimental impact on health (if food intake is reduced or medical care becomes unaffordable). These consumption cuts have a big impact on nutritional status and child health, as well as human capital via health, with long-term repercussions for income and prospects (Hallegate et, al.2020).

In the developing countries are mostly used labor - intensive techniques. Poor people are mostly working on daily wages. In Pakistan State Bank reported that every 4^{th} person does not eat a full meal. Annually loss because of people no fully potentially work is about 7.6 Arab dollars in this case labor force does not work properly, 45 percent of child have small height according to their age and 10 percent of the child with underweight according to their height because of no proper food and nutrition's available to them (SBP, 2019).

Food security and nutrition are affected because of no availability of clean and nutritional food, all the time to all people (Sher & Mazhar, 2018). When income and riches are reduced and people's health is compromised as a result of a shock occur, social protection programs address households' risk and vulnerability by intervening and working together to improve their standard of living and

resilience to shocks. Different types of actions are classified as social protection: social safety nets (SSNs), social security, labor market efforts, natural disaster management, laws and regulations to protect women from assault, and so on (Haq, 2015).

As the situation has changed, social protection programs have been improved to protect the poor by controlling unknown risk, strengthening their resilience, and promoting social equity. Vulnerability is a risk factor and disaster resilience is a capacity to respond to the ability of a system or process to deal with a shock or stress on exposure (Hallegatte, 2014). Social protection is risen to prominence as an approach to address threat and susceptibility. Cash transfer can deliver measurement well-being and stimulates economic growth. Where or not cash transfer schemes are successfully determined by targeting, the robustness, and capable of delivery mechanisms, corruptibility, and affordability (Nawaz & Iqbal, 2020).

1.2. The Case of Pakistan

Pakistan is a developing country and has been facing a variety of shocks. Pakistan is classified as being an extremely vulnerable disaster country e.g. the country is lying on fault lines that could result in earthquakes. Similarly, the country has a high prevalence of floods, the country is facing high degradations due to its geographical location (Kurosaki & Khan, 2012). In Pakistan earthquakes, floods and drought have caused tremendous damage to livelihoods and infrastructure with severe implications for food (Kosec & Mo, 2017). Shocks, risk, disaster effects the long term food security and nutritional security these natural disaster affects human life and food security. The earthquake of 2005, 2010 floods, and 2014 drought/famine affects human life, agriculture, and livestock (Haq, 2015).

Food is often regarded to improve health by supplying energy and critical nutrients to living organisms. Food with sufficient nutrients and energy, on the other hand, might be harmful to one's health if it causes disease (Havas, 2011). To address the problems that poor families face, Pakistan's government has begun to implement social safety programs. Social protection refers to a wide range of public and private mechanisms for safeguarding people's livelihoods and preventing them from slipping into (or worsening) poverty (Bizikova, 2013).

Cash transfers are increasingly popular social protection mechanisms used by many developing countries to improve the food security and nutritional status of lower socio-economic groups. Prior to BISP, social protection programs in Pakistan had a limited role, with only a reactionary approach, i.e. only a tiny fraction of aid is provided to households in floods and natural disasters, and the Asian Development Bank took the initiative (ADB). The current situation in Pakistan, as well as the level of poverty and vulnerability, was examined in previous research (Cromwell, 2004). Following a description of the current social protection framework and its shortcomings, the paper makes recommendations for enhancing the structure of social protection. The government of Pakistan then introduced BISP in 2008 as a social security program aimed at underprivileged women with the immediate priority of regulating consumption and absorbing the negative consequences of weak economic growth.

The goal of this study is to test the assumptions of Regression Discontinuity Design (RDD) by predicting the impact of BISP unconditional cash transfers on household food security. This study offers a practical introduction to RDD for food security, as well as four empirically testable design assumptions are met in given study. These procedure have been implemented in the proposed study to determine whether the RDD is appropriate for investigation or not i.e. impact evaluations.

1.3. Problem Statement

The government began BISP in July 2008 with the intended goal of providing cash transfers to the underprivileged, especially the women, to minimize the negative impact of food and fuel constraints and inflation. Initially the BISP program that provides monthly cash transfers of 1,000 Rupees to female head of eligible families having income per month that is less than PKR 6, 000. This amount is considered to be used to satisfy the flour needs of 5-6 members of the family for 20-25 days. For FY 2009, the government set allocated $415 million to support 3.5 million families (Ambler & De Brauw, 2017). It is expected that the core objective of BISP's will smooth the consumption of household's leads to improve the food security of the poor household, as poor households mostly expense on the consumption of food leads to improve the state of nutrition of household. When a person's health improves, so does his or her earning capacity, and the household's overall well-being improves. As the government of Pakistan established it in July 2008 with the initial goal of consumption smoothing and the primary goal of resolving food insecurity.

The purpose of this research is to assess the assumptions of Regression Discontinuity Design (RDD) by estimating the impact of BISP's unconditional cash transfer on a household's food security. As defined by WHO the component of food security includes availability, accessibility, utilization, stability, and malnutrition. This study has measured food security through food consumption score by using BISP's (OPM) 2019. This study has used a quasi-experimental approach by comparing the recipient households with non-recipient to catch the impact on food security in the current time period. This analysis provided us that where BISP stands in current circumstances, BISP cash transfer impacts on food security or not, and how much its effects on household consumption patterns on food. The method of quantifying the impact has also been a problem in previous studies, as none of them have used a robust evaluation method i.e. Regression Discontinuity Design (RDD) approaches. This study also provided us that where and on which data type we should use estimation technique i.e. The Regression discontinuity (RDD) design by exploring its assumptions.

The proposed research have conducted an in depth interview of 30 BISP beneficiaries from two districts (i.e. Muzaffarabad and Islamabad) to know what the poor's need and what they think the government should do to end poverty and how the government should take steps to protect poor people's food security and nutrition. This survey has observed that what the poor's need and whether this amount is enough for them or not. BISP is a social protection program its primary objective is to provide cash transfer to households and we expect that it has positive impact on food security in Pakistan.

1.4. Objective of Study

The aim of this research is to measure how the BISP's unconditional cash transfer affects the HH's food security and nutrition. The proposed research has following objectives:

1. To evaluate the assumptions of Regression Discontinuity Design (RDD) .
2. To analyze the impact of BISP's UCT on food security and nutrition of HH by using RDD.
3. To assess that whether BISP's beneficiaries have better coping strategies as compared to non-beneficiaries or not.

1.5. Contribution of Study

This study evaluated the assumptions of Regression Discontinuity Design (RDD) and link social protection to resilience of Food Security, this research is conducted to check effect of UCT on household's nutritional status. This study provided a detailed picture of the impact of BISP's unconditional cash transfer on food security in Pakistan. And also analyzed that either BISP's beneficiary households improved their food security or not.

This research conducted a short survey from 30 BISP beneficiaries by interviewing them from two districts (i.e. Muzaffarabad and Islamabad) to know what the poor's need and what do they think the government should do to end poverty and how the government should take initiatives to ensure poor people's food security and nutrition. This survey gathered information about what the poor's need and whether this amount is enough for them or not. The questionnaire has covered comprehensive information on poor people's needs, their current food security, and nutritional condition. Secondly, it provided a comprehensive study that after launching this program BISP's achieved their desire outcome or not? And by evaluating the assumptions of RDD this study also figures out RDD technique is better for impact evaluation for BISP evaluation reports. This research will also helped the BISP to make policies to take further steps to achieve the desired outcome.

1.6. Organization of the study

The structure of this document is as follows: Introduction was addressed in Chapter 1, Chapter 2 has covered literature review, and Chapter 3 covered methodology as well. In chapter 4 results are

estimated and in chapter 5 conclusion and policy recommendation is covered. In chapter 1 an introduction of the topic is given, it has six sub-sections that provide detail on the problem statement, research questions, and the contribution of the study. A brief account of relevant literature is given in chapter 2 .Chapter 3 describe the data used and the methodology employed in the study. In chapter 4 results of the study is estimate and in chapter 5 conclusion and policy recommendation is given.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This chapter provided a comprehensive background knowledge by discussing the main finding from existing literature and it has four sub sections. First section begins with a brief review of available literature Regression Discontinuity Design, second section provided concept of food security and nutrition. Third section is provided existing literature on Food Security in Pakistan, most important four section is the potential role of BISP's in Food Security.

2.2. Overview of Regression Discontinuity Design (RDD)

The regression discontinuity design (RDD) is a quasi-experimental tool for determining the possibility of receiving treatment discontinuously as a function of one or more variables. An evaluation's goal is to determine the consequence of a binary treatment variable on an outcome variable. The problem occurred because individuals are either treated or not treated, and that no one is seen in both states at the same time. Sharp and fuzzy discontinuity are the two most common forms of discontinuity in the literature. With a sharp design, likelihood function is known to be deterministic and with a fuzzy design, likelihood function is known to be discontinuous.

The effect of student scholarships on career aspirations was examined in the first application and discussion of the RD method (Thistlethwaite, 1960), taking advantage of the fact that awards are only awarded if a test score reaches the threshold. More recently, (Van der Klaauw, 1997) evaluated the impact of the financial aid offers on students' decisions to attend a particular college, adjusting for administrative rules that set the assist amount in part dependent on a discontinuous function of the students' grade average and SAT score. Similarly, (Angrist,1999) estimated the effect of class size on student test scores, taking advantage of a rule stipulating that another classroom be added when the average class size exceeds a threshold level.

Finally, Black (1999) used an RD approach to estimate parents' willingness to pay for higher quality schools by comparing housing prices near geographic school attendance boundaries. Regression discontinuity methods have potentially broad applicability in economic research,

because geographic boundaries or rules governing programs often create discontinuities in the treatment assignment mechanism that can be exploited under the method. As (Cerqua, 2014) proposed a non-parametric multiple rankings regression discontinuity design that exploits the sharp discontinuities and it applies the regression discontinuity design (RDD) method to a situation in which the treatment is determined by a series of rankings with different cut-off points. And they discover that the subsidies have a favorable and statistically significant influence on employment, investment, and turnover, but have a minimal impact on productivity.

A tabulated summary of literature discussed above is given in table 2.1

Table 2. 1 Summary of literature review on Regression Discontinuity Design

Author	year	method	Finding and result
Thistlethwaite	1960	RDD	Analyzed the influence of student scholarships on career aspirations, taking advantage of the situation that rewards are only given if a student's test score exceeds a certain threshold.
Van der Klaauw	1997	RDD	Estimates the impact of financial aid offers on students' decisions to attend a particular college, adjusting for administrative processes that determine the assistance amount in part dependent on a discontinuity function of the students' grade point average and SAT score.
Angrist	1999	RDD	Estimate the effect of class size on student test scores, taking advantage of a rule stipulating that another classroom be added when the average class size exceeds a threshold level.
Black	1999	RDD	By comparing house prices near geographic school attendance boundaries, you can estimate parents' willingness to pay more now for better schools.
Cerqua	2014	RDD	Find that the impact of the subsidies on employment, investment, and turnover is positive and statistically significant, while the effect on productivity is mostly negligible.

2.3. Concept of Food Security and Nutrition

The use of a nation's human capability is critical to its economic growth and development. Which is largely determined by individual's food and nutritious status (Babatunde et al, 2011). Food security exist when all people, at all times, have physical and economic access to sufficient, safe

and nutritious food to meet their dietary needs and food preferences for an active and healthy life (FAO,1996). According to the concept, food security and nutrition are intertwined since poor people suffer from malnutrition as a result of insufficient dairy intake and food utilization for a healthy existence. People of all ages are affected, however especially newborns and children. Although achieving household food security is contingent on a national food security level that is undesirable. Despite the fact that food is available on the market, poor households may not have access to appropriate food due to a lack of purchasing power (Ababa, 2005).

The literature has consistently found food insecurity to be negatively associated with health. For example, after confounding risk factors were controlled for studies found that food insecure children are at least twice as likely to report being in fair or poor health and at least 1.4 times more likely to have asthma compared to food secure children and food insecure seniors have limitations in activities of daily living comparable to those of food secure seniors fourteen years older (Gunderson, 2015).

However, the framework of food security is influenced by two determinants: a physical and a temporal factor. Food flow is the physical determinant: availability, accessibility, and usage. The phrase "temporal determinant" refers to a level of stability that impacts all three physical aspects at the same time. Nutritional status is a result of food intake and health state, according to the conceptual framework (Gross, 2000). Three factors significantly impact nutritional status: immediate, underlying, and basic causes (UNCIEF 1990), The immediate reasons are linked to dietary consumption and disease occurrence, but the underlying causes include food access, health care, and environmental circumstances, people are living in. The country's economic, political, and institutional structure, as well as the availability of resources, are the primary causes. Food security and nutrition appear to be linked; the former might influence the latter through dietary intake or a household's inability to purchase enough food. However, food availability may not be alone sufficient for nutrition security similarly, nutrition status should not be interpreted by inadequate food intake.

The literature has identified six ways for gauging food security. The method of nutritional consumption (DIM),food consumption score (FCS), the food insecurity experience scale (FIES), the dietary intake assessment (DIA), household income and expenditure survey (HIES), Individual dietary intake (IDI), anthropometry. The most commonly method using to measure food security

and child health is the FSC and anthropometry (Bashir, 2012). The FCS is a number based on a household's frequency of consumption of several food groups in the seven days leading up to the survey (Hossain, 2019). Anthropometry is a study of physical characteristics such as height and weight, as well as the fat mass composition of the body, in order to determine a personal nutritional state (Secker, 2007).

A tabulated summary of literature discussed above is given in table 2.2

Table 2. 2.Summary of literature review on concept of food security and nutrition

Author	year	method	Finding and result
(Gross, 2000)	2000	PSM	Nutritional status is a result of dietary intake and overall health.
(Hossain, 2019)	2019	FCS	The frequency of consumption of different food groups consumed by a household during the 7 days before the survey.
(Secker, 2017)	2007	anthropometry	is a study of physical characteristics such as height and weight, as well as the fat mass composition of the body, in order to determine a personal nutritional state

2.4. Food Security and Nutrition in Pakistan

Pakistan's overall food security is poor. The high rate of poverty and high food prices have given Pakistan some of the highest rates of malnutrition, undernourishment and childhood stunning in the world. Because of the economic and environmental shocks, many impoverished People have gone deeper into poverty, limiting their access to food. Pakistan is a lower-middle-income country and has the highest malnutrition rates in the world particularly affecting women and children. The current estimates suggest that 61 percent of young children and 50 percent of women are anemic, 54 percent of children and 46 percent of women suffer from vitamin A, 40 percent of women suffer from zinc deficient, and micronutrients deficiencies in children's exceed 50 percent in maternal, infant mortality and morbidity. The World Food Program (WFP) reported that 60 percent of the population faces food insecurity (Tiwari, 2013).

Now in Pakistan food availability is not an issue the main problem stems from poor access to food. According to the WEP, affordability is the greatest barrier to achieving a nutritious diet it estimates the most Pakistanis are unable to afford a nutritious diet. Economic and environmental shocks have a significant impact on food accessibility. Pakistan's food security has deteriorated

since 2000 as a result of a series of natural disasters, wars, and economic crises. With economic pressure increasing it seems unlikely that the Pakistani government will able to successfully implement a series of proposed reforms designed to reduce poverty and increase food security (Ali & Khan, 2013).

In Pakistan, about 42 million people had to lack adequate income to purchase the food they need for a healthy life. The fact that about one-third of the population does not have access to food needed for adequate nutrition is manifested by the widespread incidence of malnutrition (Iram & Butt, 2004). Nearly half of the children under five years of age are underweight. Pakistan was ranked 135th out of 174 countries in the latest assessment using the human development index (HDI). Pakistan is a low-income developing country with a per capita income of US$ 443 in 1999-2000. Pakistan is not a food-insecure country. It generally has the economic ability to import the required food (food import cost less than 20 percent of exports). Average food consumption is 150kg per person per year of cereals and pulses in total with a minimum of about 130kg in 1960 and a maximum of 162kg in 1993. Per capita availability, however, fell to 140kg in 1995 and marginally went up to 145kg in 1996 (FAO, 1996).

Non-food elements including clean water, sanitation, and universal healthcare have a consequence on an individual's malnutrition. In order to eradicate malnutrition worldwide, all of these issues must be considered. Demonstrated that household food insecurity is influenced by age, gender, education, remittances, unemployment, inflation, assets, and disease (Zhou et al., 2019).

Summary of literature between food security and nutrition in Pakistan is given in table 2.3

Table 2. 3.Summary of literature between food security and nutrition in Pakistan

Author	year	method	Finding and results
(Zhou et al., 2019)	2019	A binary logistic regression analysis technique	The results of this study revealed that age, gender, education, remittances, unemployment, inflation, assets, and disease are important factors determining household food insecurity ,gender played a dominant role in food insecurity as female headed household were food insecure while male headed household were food secure.
(FAO, 1996).	1999-2000	PSM	With a per capita revenue of Us$ 443, Pakistan is a low-income developing country.
(Ali & Khan, 2013).	2013	Propensity score matching	Found that With Economic pressure increasing Pakistani government will able successfully implement a series of proposed reforms designed to reduce poverty and increase food security.
(Iram & Butt, 2004)	2004	RDD	Malnutrition affects one-third of the population, indicating that one-third of the population lack access to healthy food sufficient for adequate nutrition.

2.5. Potential Role of BISP in Food Security and Nutrition

World programs have shown positive effects as the evaluations of cash transfer schemes in countries like Mexico (oportunidadses), Malawi (Malawi social cash transfer scheme), Kenya (cash transfer for orphans and vulnerable children) and Zambia (child grant program), among others have all shown significant productive effects. Even the social pension Bonosol, targeted at the elderly who are usually expected to be less productive increase productive of farmers in Bolivia (Beazley, 2016). Another study (Paes-Sousa, 2011) evaluated the link between Brazil Bolsa Familia Programme (BEF), the world largest cash transfers programme , and anthropometric markers of children's nutritional status. The BEF has been shown to improve nutritional outcomes in children aged 12 – 59 months and no statistically significant deficit in weight for height was found. BISP is a programme launched by the Government as a social protection program in July 2008 for easing the consumption of poor and vulnerable families attempts to reduce poverty and promote equitable distribution of wealth especially for the low-income groups (Honorati,& Yemtsov, 2015). The BISP as a national cash transfer program (CTP) financially support ultra-

poor families across Pakistan. The program aims to minimize the impact of adverse economic shocks and inflation on the ultra-poor. The BISP covers around 5 million families belong to marginalized and excluded segments of society (Iqbal and Nawaz, 2019).

Another study (Durr-E-Nayab, Farooq 2014) analyzed that BISP provide five other conditional cash transfer (CCT) programs namely Waseela-e-Taleem conditional cash transfer program, with the condition of sending 5-12 years old children to school, Waseelae-Sehat, CCT program provides health insurance, Waseela-e-Rozgar, CCT program provides unemployment funds and vocational skill trainings, Waseela-e-Haq, CCT program to issue loans for small businesses and a new venture of E-Commerce, CCT program to encourage specially female entrepreneurship through production of local goods. In March, 2019 Ehsas program launched by government. The key initiatives includes Ehsas kafaalat, Ehsas Aamdan, Ehsas Emergency cash during covid pandemic, Ehsas scholarships, Ehsas cash assistance for women (Asghar, 2020). Another study (Saeed & Hayat, 2020) discovered that cash assistance had favorable effects on poverty as assessed by Food and Energy Intake (FEI) and women's empowerment as measured by women's mobility and control over funds, and used the Household Integrated Economic Survey to check the impact of BISP on receipt on poverty in Pakistan (HIES) 2015-16.

Another study Farooq (2014) estimated the welfare impact of BISP cash assistance and discovered that it had a beneficial influence on each household's health and food expenditures In addition, (Arif & Farooq, 2014) found that recipients' social standing remained consistent after the BISP began, and their consumption patterns also exhibited an upward tendency. Although (Pasha, 2018) it can be extrapolated that BISP helped BISP beneficiaries enhance their welfare and reduce their poverty levels. Using source data from Mankera, Bhakkar district, and Punjab, a previous study (Naqvi, 2014) examined the impact of BISP cash support on poverty. Cash aid has a favorable impact on consumption, according to the findings. Similarly, utilizing primary data for the Peshawar district, Malik (2013) discovered that BISP cash assistance has a positive effect on poverty reduction.

Using primary data from Barikot, district Swat, KPK, the previous study (Hassan & Ahmad, 2016) aimed to quantify the importance of BISP financial support in achieving food security. Certain food products, such as wheat, sugar, milk, and vegetable consumption, had positive effects. Similarly, (Cheema, 2016) provides a report on the impact of BISPs on its recipients. The purpose

is to assess the BISP's impact eight years after it was introduced.The BISP is projected to influence consumer spending and as a result food security and poverty.

Another study (Shehzad, 2011) used primary data to investigate the impact of BISP cash support on women's empowerment in four cities (Multan, Maniwali, Sangahar, and Mirpurkhas) and found a favorable influence on household consumption. Similarly, (Tariq, 2019) investigated the effects of the Unconditional Cash Transfers (UCT) programme Benazir Income Support Program (BISP) on household food consumption patterns and poverty in Mardan, Pakistan.. Findings suggest that the Unconditional Cash Transfer program is affected the household consumption pattern and has reduced their poverty.

Summary of literature on role of BISP in food security and nutrition status is given in table 2.4

Table 2.4. Summary of literature on role of BISP in food security and nutrition

Author	Year	Method	Finding and result
Pasha, shah et al 2018)	2018	Ordinary least square (OLS)	The results demonstrate that recipients' social status improved once the BISP began, and their consumption patterns likewise indicated an upward .direction.
Farooq,(2014)	2010	Propensity score matching	The welfare impact of BISP financial aid was estimated, and it was determined that it had a favorable impact on each household's health and food expenditures.
Paes-Sousa, Santos et al.2011)	2005-2006	Anthropometric method	evaluated the association between Brazil Bosla Familia program (BFP), The BFP can lead to better nutritional outcomes in children 12 to 59 months of age and No statistically significant deficit in weight for height was found.
(Hassan, Ahmad et al. 2016)	2013, 2014 and 2016.	Propensity score matching	Using primary data from Barikot, district Swat, KPK, an attempt was made to assess the role of BISP financial support in achieving food security. Certain food products, such as wheat, sugar, milk, and vegetable consumption, had positive effects.
(Cheema, Hunt et al. 2016)	2011-19	Regression discontinuity design and propensity score matching	Consumer spending should benefit from the BISP, according to estimates. Beneficiaries' food security is supposed to improve as a result of the increased purchasing power, which will enable them to increase both the quantity and quality of food consumed.
(Arif & Farooq, 2014	2001,2004, 2010	Anthropometric method	Beneficiaries' social status remained consistent when the BISP began, and their consumption patterns still exhibited an upward direction.
(Shehzad 2011)	2011	PSM	Using primary data from four cities (Multan, Mianwal, Sangahar, and Mirpurkhas), researchers investigated the impact of BISP cash support on women's empowerment and discovered a beneficial influence on household spending.
(Naqvi, Sabir et al. 2014)	2014	Ordinary least square (OLS)	Using primary data in Mankera district, Bhakkar, Punjab, estimated the impact of BISP cash support on poverty. Cash assistance has a favorable impact on consumption, according to the findings.

2.2. Research Gap

The proposed research estimated the impact of UCT on food security and nutrition of BISP's beneficiaries and also evaluated the assumptions of RDD.

While studying the literature, this study found another gap that there is no qualitative research on the assessment of BISP beneficiaries from AJK (i.e. Muzaffarabad and Islamabad) research should address the problem of poor's belong to backward areas that what they want to meets their needs and in Pakistan and AJK, what steps should the government take to ensure impoverished people's food security and nutrition?

CHAPTER 3

DATA AND METHODOLOGY

3.1. Data Description

In this research, both primary and secondary data were employed. Primary data has used to determine what the poor require, what they want from the government, whether this quantity is sufficient for them, and how the government should proceed to ensure the poor's food security and nutrition. Primary data was gathered through qualitative research, such as conducting in-depth interviews with BISP recipients. In-depth interviews with 30 BISP recipients from the Islamabad and Muzaffarabad tehsil offices were conducted as part of the proposed study. The BISP impact evaluation panel survey, done by Oxford Policy Management, is a secondary source of data (OPM) 2019 in this study.

This study used in-depth interviews of BISP beneficiaries from Islamabad and Muzaffarabad. This data is collected to observe what the poor require, what they want from the government, whether this amount is sufficient for them that is given from BISP, and how the government should proceed to ensure the poor's food security and nutrition. The BISP impact evaluation panel survey, done by Oxford Policy Management, is a secondary source of data (OPM) 2019 in this study. The Proposed research selected 2019 round because the survey is consisted of five rounds, where the baseline was carried out in 2011 followed by in 2013, 2014, 2016, and 2019 that's why this study selected latest round for analysis. This study has used the 2019 round by comparing the beneficiary households (having score from 11.17 to 16.17) with the non-beneficiary households (having score from 16.18 to 21.17). This study has used 16.17 cut-off point in this analysis.

The use of small samples for qualitative research is common, and they are often chosen for a specific reason. The goal of qualitative research, according to different writers, is to provide detailed descriptions of social reality using participants' natural language in order to acquire a true insight of their social worlds. In qualitative research, the researcher cannot avoid bringing his or her own interpretation to the data analysis (Creswell, 2003).

The research focused on Pakistan as its case study country. The case-study method normally asks questions such as how and why something occurs, questions appropriate for the current study. For

qualitative analysis, research questions are definable in terms of the questions who, what, where, how, and why. This study has conducted in depth interviews from 30 BISP beneficiaries by interviewing them from two districts (i.e. Muzaffarabad and Islamabad) to know what the poor's need and what they think the government should do to end poverty. What steps should the government take to ensure impoverished people's nutritional status and child health? This survey have captured information about what the poor's need and whether this amount is enough for them or not. The questionnaire have covered comprehensive information on their financial problem, poor people's needs, their current food security and nutritional condition, the impact of current inflation on their lifestyle.

The purpose of this study is to see how Unconditional cash transfers from the BISP has an impact on food security in HH and nutrition at individual level by using data the BISP's effect evaluation panel survey for this study (OPM) 2019 round. The purpose of the panel study has to assess BISP's cash transfer based on a range of consumption factors (on food and non-food), nutrition, livelihood, saving, headcount poverty, multidimensional poverty index (MPI), and women empowerment. The survey is consisted of five rounds, where the baseline was carried out in 2011 followed by In 2013, 2014, 2016, and 2019, four follow-up rounds were held, survey is adopted quasi-experimental approach by constructing a target (having a score up to 16.17) and control (having a score between 16.18 and 21.17) groups. The cross-sectional sample was enhanced in both the 2016 and 2019 round to improve cross-sectional results.

This study used the 2019 round of BISP impact evaluation survey to gauge the impact of UCT on household's food security and nutrition. The data was gathered for evaluation purposes where its earlier round was conducted in 2011 (baseline), 2013, 2014 and 2016 (see details in appendix Table A-1).The sample of the 2019 round is comprised of 12557 households (see detail in appendix table-2), 9975 households evaluated the UCT components. The sample allows to apply the quasi-experimental techniques as information of both the recipient and non-recipient households are available. The sample is representative at the provincial level. The survey adopted the quasi-experimental approach by constructing a target (having score up to 16.17) and control (having score between 16.18 and 21.17) groups. The cross-sectional sample was enhanced in both the 2016 and 2019 rounds to improve cross-sectional results. The cross-sectional sample for 2019 round comprises of 9,975 households, including 5,665 beneficiary and 4,310 households who are not eligible for assistance. At the provincial level, the sample is representative (see details in appendix

Table A-1). For the cross-sectional analysis, we used the 2019 round by comparing the beneficiary households (having score from 11.17 to 16.17) with the non-beneficiary households (having score from 16.18 to 21.17). We have dropped 2,582 beneficiary households because they received conditional cash transfers for children's (aged 4-12 years) primary education. Another 210 beneficiary households were dropped who had not received any cash assistance from BISP during the 12 months preceding the survey. Additionally, we have dropped the beneficiary households having a score below 11.17 to ensure strong internal validity. The sample size of recipient and non- recipient is shown in table 3.1.

Table.3. 1 Sample Size of Recipient and Non-Recipient of UCT in 2019 round

Provinces	**PTM score**	**PTM score**	**Overall**
	11.17 to 16.17	**16.17 to 21.17**	
Punjab	1,093	1,286	2,379
Sindh	1,001	1,432	2,433
Khyber Pakhtunkhwa	7,81	1,075	1,856
Baluchistan	5,44	6,27	1,171
GB	6,52	7,06	1,358
FATA	3,92	3,86	7,78
Total	4,463	5,512	9,975

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The exhibition of data shown in the table above, indicates the sample size of household selected from all the provinces and connected states in Pakistan. Total of 9975 household unites are selected for the analysis. Greater number of sample is selected from Sindh followed by Punjab, KPK, GB, Baluchistan and FATA. The sample shows that beneficiaries are greater in Punjab comparatively and lowest in FATA region. It is because of population distribution in selected provinces and regions.

Food security is measured at HH level and child nutrition is measured at individual level so, the sample size of both is different but at same cut-off is used by using 2019 round of BISP impact evaluation survey to gauge the impact of UCT on child nutrition at individual level.

For the analysis on child nutrition this study used the 2019 round of BISP impact evaluation survey to gauge the impact of UCT on child nutrition at individual level. The sample of the 2019 round is 74,867 (see detail in appendix table-2), the cross-sectional sample for 2019 round comprises of 8214, including 5,665 beneficiary and 4,310 non-beneficiary households (see detail in appendix

table-4). 6,240 is children of aged (0-59) months of UCT beneficiaries, the sample allows to apply the quasi-experimental techniques as information of both the recipient and non-recipient are available at individual level. We have dropped 1974 beneficiary households because they received conditional cash transfers. The UCT beneficiaries are 6240 out of 8214, the treated group is 3410 and control group is 2830 out of 6240 beneficiaries.

3. 2 Sample size of child (0-59) month UCT beneficiaries at individual level

Provinces	Treated	Control	Total
Punjab	695	671	1,366
Sindh	865	644	1,509
KPK	707	562	1,269
Baluchistan	423	344	767
GB	424	375	799
FATA	296	234	530
Total	3,410	2,830	6,240

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

In this table indicated that sample size of household selected from all the provinces and connected states in Pakistan. Total of 6240 children aged (0-59) months are selected for the analysis. Greater number of sample is selected from Sindh followed by Punjab, KPK, GB, Baluchistan and FATA.

3.2. Variables Description

This study used following variables

(1) Food security (2) Nutrition

Following covariates (control variables) are used in the study to check the impact food security and nutrition other than unconditional cash transfers. The variables are HH head age –complete year of age , HH head gender dummy variable -1 for male and 0- female, HH head marital status dummy variable -1 for married and 0- otherwise and size of HH. Household size is a continuous variable depending on the total number of member in the family.

(1) Food security: The indicator of food security is availability, accessibility, utilization, and stability. There are five commonly used methods that can be used to assess food security, the Food and Agriculture Organization (FAO) method for estimating calories available per capita at the national level ii) household income and expenditure surveys iii) individual's dietary intake iv) anthropometry and v) Food insecurity experience scales.

But this study uses Food Consumption Scores (FCS) to measure food security because FCS aggregates household-level data on diversity and frequency of food group consumed over previous seven days, which is then weighted according to the relative nutritional value of the consumed food groups (see detail in table appendix A-3). In 1996, the World Food Program (WFP) developed the Food Consumption Score (FCS). The FCS, which analyzes the cumulative consumption in days of several food groups that are weighted according to their caloric efficiency, is used to evaluate food security.

The food consumption score is a proxy indicator of household caloric availability. Validation studies have demonstrated that the FCS and (HDDs) are both associated with caloric intake, as well as with each other. Although the FCS has been tested against calorie intake, it has not been evaluated against macronutrient or micronutrient sufficiency (Leroy et al., 2015). Food consumption is deemed inadequate in households with an FCS of less than 21. A core of 21.5-35 indicates borderline food security and a score greater than 35 is considered acceptable food security.

Household food security group by FCS is mentioned in table given below 3.3

Table 3. 3 Household Food Security groups by Food Consumption Score (FCS)

	Food security group	FCS
Food insecurity	Poor	0-21
Moderate	borderline	21.5-35
Food security	acceptable	>35

This study evaluated home food expenditure per adult equivalent to assess the impact of the BISP's unconditional cash transfer on household food security. Which directly measures the entire amount spent on food in the previous seven days. The food consumption score (FCS) also reported in this study, which indicates not only the quantity but also the quality and variety of food consumed in the previous seven days. To see how unconditional cash transfers affect food security, including consumption of food and non-food commodities, as evaluated by human corresponding household consumption expenditure.

To see how unconditional cash transfers affect food security and nutrition, food and non-food consumption, as determined by adult equivalents household consumption. Food availability, child health, and the assessment of child anthropometry will all be examined as part of this study.

(2)Nutrition: This study used three standardized anthropometric indicators to assess the child health of aged 0-59 months: height-for-age z-score (HAZ), weight-for-age z-score (WAZ), and weight-for-height z-scores (WHZ).

Child anthropometry: Every child here between aged - 0 and 59 months will have their height, length, and weight measured in order to determine their child nutritional status. For children under the age of five, there are three basic anthropometric indexes.

If an infant drops more than two standard deviations below the standard reference population, he or she is considered malnourished. WAZ, HAZ, and WHZ are three anthropometric metrics that provide varied information on a child's nutritional status. Stunted HAZ is a condition that occurs as a result of persistent starvation. WAZ captures features addressed in both HAZ and WHZ while WHZ measures a child's current nutritional state.

Wasting: It captures key factors propelling the growth of malnutrition, such as inadequate existing food intake, inappropriate nutrition security, illness, and inflammation.

Stunting: The concept shock describes the long issues such as chronically inadequate proteins, carbohydrates, and micronutrient, as well as continuous infections or diseases.

Underweight: It is a composite measure of child malnutrition that takes into account a kid's weight in relation to his or her age. Underweight children may be stunted, wasted, or both.

Child malnutrition: The term malnutrition refers to deficiencies, excesses, or imbalances in a person's intake of energy and nutrients. The indicator is low birth weight in newborn, low weight-for-age in pre-school children and low body mass index. The level of malnutrition in the population groups is assessed by anthropometry (the measurement of body size and composition). In the WHO considers rates of wasting greater than 15% and stunting greater than 30% in children aged 0-59 months to be very high, signifying a child nutrition crisis (World Bank, 2008).There are three primary anthropometric indices for children under five year of age given below in table 3.4

Table 3. 4 Three primary Anthropometric Indices for Children under Five year of age

Indicator		**What is used for/what it measures**
Low weight -for- height	WHZ	Wasting (Acute malnutrition)

Low height -for -age	HAZ	Stunting (chronic malnutrition)
Low weight –for- age	WAZ	Underweight (acute or chronic malnutrition)

3.3. Methodological Framework

The proposed research used RDD techniques to gauge cross-sectional impact of UCT on HH food security and child nutrition at individual level. The testable assumption of RDD is also evaluated in proposed study. Beneficiary HH were compared to non-beneficiary families in this study, for the 2019 round, the Regression Discontinuity Design (RDD) technique was employed to assess the cross-sectional impact. This study analyzed which group of people face food insecurity issues in Pakistan.

3.3.1. Regression Discontinuity Design (RDD) Technique

The regression discontinuity design (RDD) technique is widely used in social protection programs to gauge welfare impacts cross-sectional households by comparing the treated group with the control group (Bergolo & Galvan, 2018). The technique allows compares recipient households with the non-recipients within a narrowed bandwidth. In this study, the effect of unconditional cash payments on household food and nutrition security will be determined by comparing the outcomes of the target and control observations. This research provided a practical introduction to RDD for social protection programs, outlined four experimentally validated RDD assumptions, and suggested methods for verifying Whether or not these assumptions are met in a particular study. For the sake of illustration, this study will use these methodologies to see if the RDD is appropriate for studying the impact of UCT on nutritional status and child health. This study implemented RDD on set of HH that were samples in 2019 round with the bandwidth (+/-5, +/-3) from the eligibility threshold of 16.17.This study has a treatment and control group, and the strategy is based on the assumption that the treated and control homes are highly similar, with only minor variances in poverty scores distinguishing them, thus avoiding the problem of selection bias.

3.3.2. Regression Discontinuity Design (RDD)

Regression Discontinuity Design (RDD) is a quasi-experimental evaluation option that measures the impact of an intervention, or treatment, by applying a treatment assignment mechanism based on a continuous eligibility index which is a variable with a continuous distribution.

Assumption:

- For everyone, on the probability of receiving treatment, the assignments parameter has a cumulative effect.
- At the eligibility level, the assignment variable must be a function of the treatment.
- There must be a discontinuity in the chances of being treated around the eligibility level.
- The when the assigned score reaches the eligibility condition, the observable must be a continuous function of the assignment score.

This study clearly define the cut-off points (16.17) that determines eligibility for treatment and control group, and because the results are only generalizable near the cut-off point, RD has limited external validity. By applying cross validation test, the proposed study will determine whether there is a discontinuity in the chance of receiving treatment and the comparability of units within the bandwidth (+/-3 and +/-5) There may be cross contamination between people who are eligible and those who are not, depending on the sort of treatment.

3.3.3. Fuzzy Regression Discontinuity Design

This study employed use of the Regression Discontinuity Design (RDD) on the 2019 cycle to assess the impact of unconditional cash transfers on food security and nutrition, as mentioned above. In order to analyze the impact of any intervention, this technique contrasts beneficiary and non-beneficiary families. The RDD is a quasi-experimental technique used in cross-sectional survey evaluation. The PMT score is used in the RDD study to compare beneficiary and non-beneficiary homes in a restricted PMT bandwidth and drop the beneficiary household who have a PMT score below (11.7), as they differ on socio-demographic characteristics, not typically comparable due to the selection bias issue (lee and Lemieux,2010). As some beneficiary just above the threshold level (16.17) had also received cash assistance due to other criteria, and then their food security and nutrition is better to others who are really eligible for this. This study applies the Fuzzy RDD technique. The technique assumes that the treated and the control group that are on

the verge of crossing the cut-off line differ only through the BISP's eligibility status. Any other difference between households above and below the cutoff should not change discontinuously at the eligibility threshold (Ambler & De Brauw, 2017). The proposed research will estimate the impact of UCTs on food security and nutrition by calculating the difference between the target and control observations as shown in the equation:

The general equation written as below;

$$Y(1) - Y(0) = E(Y_i|x_i, BISP_i = 1, BISPSCORE_i) - E(Y_i|x_i, BISP_i = 0, BISPSCORE_i) \qquad (1)$$

The equation can be written as for food security;

$$\text{Food secure (1)} - \text{Food secure (0)} = E(\text{food secur}|x_i, BISP_i = 1, BISPSCORE_i) - E(\text{food secur}|x_i, BISP_i = 0, \text{BISPSCORE}_i) \ldots\ldots\ldots (2)$$

The equation can be written as for nutrition;

$$\text{Nutri (1)} - \text{Nutri(0)} = E(\text{nutri} \mid x_i, \text{BISP}_i = 1, \text{BISPSCORE}_i) - E(\text{nutri} \mid x_i, \text{BISP}_i = 0, \text{BISPSCORE}_i) \ldots\ldots (3)$$

The Equation for food security is given below as;

$$\text{Food secure} = \alpha + \beta\,(\text{uct}) + \varepsilon \quad \ldots\ldots \qquad (4)$$

For food security analysis current study will use 2019 round data at the household level to gauge the consequences of unconditional cash transfers on food security.

The equation for Nutrition is written below as;

$$\text{Nutri} = \alpha + \beta\,(\text{uct}) + \varepsilon \quad \ldots\ldots \qquad (5)$$

For nutritional analysis, this research will look at the influence of unconditional cash transfers on child nutrition in the 2019 round.

The proposed research used the 2019 round of BISP round to gauge the consequence of UCT on household's food security and nutrition. The data was gathered for evaluation purposes where its earlier round was conducted in 2011 (baseline), 2013, 2014, and 2016. The sample of the 2019

round is comprised of 12557 households (see detail in appendix A-2); 9975 households [1]evaluated the UCT component of the BISP. For the BISP's (CCT) component, a total of 2582 households were interviewed; however, this study only examines the (UCT) impact on HH food security and child nutrition because we expect the UCT sample to produce impact results that are representative of BISP beneficiaries at both the national and provincial levels, whereas the CCT sample will only be representative of BISP beneficiaries in 32 districts. With multiple bandwidths ranging from +/-3 to +/-5 and the ideal bandwidth, this study employed RDD to examine the impact of BISP's monetary support on food security. Bandwidth is used to assure internal authenticity. The impact of the BISP's UCT on food and nutrition security was assessed using a non-parametric technique in this study. Calculating the differences in intercepts (i.e. discontinuity) of two local polynomial estimators, one on either side of the c0 eligibility condition, is required. A positive bandwidth is formally known as h.

$$min\beta \sum_{i=0}^{n} \quad (yi - \sum_{j=0}^{p} \beta j(\, bispscore - co)2j \quad k(\frac{\boldsymbol{bisp\ score - c0}}{\boldsymbol{h}}) \ldots\ldots \qquad (6)$$

The use of a local linear model in some bandwidth around the inherent part is one of the approach's key aspects. The bandwidth selection has an impact on the impact estimation. With a range of bandwidths, the bandwidth presents estimates of the discontinuity observed. The kernel function K is used to establish the kernel weighting technique. As a result, the data is weighted based on how far it is from the cut-off point (16.17).

[1] For instance, consider Lee, H., and Munk, T. (2008), Using Regression Discontinuity Design for Program Evaluation. Survey Research Methodologies

CHAPTER 4

ESTIMATION AND RESULTS

The present chapter details the descriptive analysis of on food security at household level. This study also conducted analysis on child nutrition at individual level by using (OPM) 2019 round. Proposed study also compared this analysis with previous round of BISP that why there is variations exist in results by using RDD approach and also evaluated the assumption of RDD. This chapter divided into three parts, where 4.1 provided qualitative research, 4.2 provided overview of RDD approach its testable assumptions, and 4.3 provided analysis on food security, and child nutrition by using RDD approach.

4.1. Qualitative Evaluation approach

In this chapter qualitative approach is described that was took to observe what the poor's need and what they think the government should do to end poverty and how the government should take steps to make sure the food availability and child health of the poor people, their current food security and nutritional condition, the impact of current inflation on their lifestyle.

For this purpose the proposed study collect a sample of 30 BISP beneficiary from two districts (Muzaffarabad and Islamabad), the qualitative research such as focus group discussion, and in-depth interviews from BISP beneficiaries which were recently sampled for the first time in 2020 to be questioned Between October 2020 and November 2020, fieldwork was carried out. (See detail in appendix A-5).

The goal of interview was not only to answer the research questions, but also to grasp the view of BISP beneficiaries, about their financial condition, their needs, and their food security and nutritional status, through their own voice, to get an insight into how they experience the issues in their life. We have seen that poor people in Pakistan are not in good health due to lack of healthy and nutritious food, many people not afford three time meal properly.

According to this study, the problem of food security and nutrition is more serious in cities. (Islamabad) areas as compare to rural areas (Muzaffarabad) because in rural areas people use their

own land [2]for agriculture and they eat at least two time meal. But in rural areas it is observed that there is people not ate meal properly one time in a day. The response of the BISP beneficiary (see detail in appendix A-6). Respondent to qualitative research consistently reporting that BISP's amount is not enough for even monthly expenditure, because the prices of everything is double in the markets. The current inflation rate decrease the purchasing power of the BISP beneficiaries which in turns decrease the consumption on food items that directly impact on the HH food security and child nutrition status.

Response record from Muzaffarabad is that

She said that from BISP cash transfers I bought main items of grocery such as pulses, rice, and floor for 2 months me and my children's at least never sleep without having dinner *(Female beneficiary, rural Muzaffarabad, AJK)*

In other cases women reported that they consider BISP amount as extra amount received , with this amount they buy children's cloths , schools bags, shoes or any other extra things rather than food expenses. Because their food requirements fulfill from their own land, they enjoy seasonal fruits and vegetables from their own garden *(group of female beneficiaries, rural Muzaffarabad, AJK)*

In some cases women reported that they invest money BISP money i.e. buy stitching machine, start stitching cloths in their area , or buy hens and sold its eggs or chickens in their village , this help their households monthly expenditures *(group of female beneficiaries, rural Muzaffarabad, AJK)*

The response record from Islamabad is that

In some cases women's reported that from BISP cash transfers I bought main items of grocery such as pulses, rice, and floor, vegetables ,chicken once in month, these selected items can buy in this amount *(Female beneficiary, Islamabad)*

[2] Qualitative research provides for in-depth investigation of phenomena from the perspective of the subject of inquiry in its natural setting. However, due to the limited sample sizes and sampling strategy used, the conclusions are rarely generalizable. Quantitative research, on the other hand, allows for generalization through the use of randomized sampling and bigger sample sizes, however it lacks the depth of investigation.

In some other cases women's reported that this amount is not enough for them because prices of everything rise after three month they received BISP amount , which is not enough even for a month (*Female beneficiary, Islamabad*).

Some women's reported that their husband work on daily wages sometime they found work and sometimes not, from march 2020 there is no work due to lockdown, they do not received BISP amount from six months , people suffered from very difficult situation in those days (*Female beneficiary, Islamabad*).

Most of the women's reported that they take their medicine from this amount mostly people are suffering from diseases (*Female beneficiary, Islamabad*).

Now BISP beneficiaries adopted some coping strategies to survive so what coping strategies have households used to deal with financial problems in the aftermath of a shock or financial crisis? Which coping strategy have proven to be the most effective in easing the effects of adversity on diverse household groups?

To survive these people adopt some coping strategies most of the people reported that they borrow from their friends, Nabors, took Rashaan for a month from shop located near to them and some people reported that they sale their assets i.e. goat, hens etc some people reported that they used their saving but not mostly because usually they can't save money but sometime these people use saving in shock or any crisis. At the time of covid-19 these people adopt some coping strategies

Table: 4.1. Ex-Post Adopted Coping Strategy by the Households (in %)

Coping Strategy	**PTM score 11.17-16.17**	**PMT Score 11.17 -21.17**	**Overall**
Behavior-based	67.4	68.7	68.3
Did nothing	11.4	13.9	12.5
Change in food patterns	36.9	36.2	36.5
Labor supply was improved	31.1	30.4	30.3
Temporary Migration	0.5	0.6	0.55
Involved in divine efforts	13.2	13.3	13.2
Assistance-based	25.7	24.7	25.7
Social networking (family & friends)	23.1	23.5	23.3
Formal sources (NGO & govt.)	3.7	1.1	2.7
Borrowing based	38.9	37.3	38.1
Asset-based	19.5	18.9	19.2
Sale assets	29.4	30.5	29.9
Used saving	41.2	40.4	40.8

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

In male questionnaire finally the households were asked to report the coping strategy for mitigating the adverse impacts of shock. A list of 15 coping strategies is placed that includes: did not do anything, used saving, received unconditional help from relatives & friends, received unconditional help from formal sources (NGO & govt.), changed eating pattern, labor supply was enhanced, migration, reduced expenditures on education and health, obtained credit and sold asset etc.

The data shown in table 4.1 indicate that 67.4 percent of the recipients of BISP modified their behavior with respect to shocks as coping strategy and 68.7 percent among the non-recipient followed the same copying technique. 11.4 BISP recipient did nothing against any shock and the percentage of non-recipients was further high comparatively. 36.9 percent of the BISP recipients changed their pattern of food consumption as comparing strategy, while 31 percent improved labor supply to the market and only 0.5 percent recipients migrated as adaptation strategy against shocks. Non-recipients were dominantly involved in divine efforts, as adaptation strategy against shocks, whereas recipient of BISP used formal sources like NGOs and Family friends to support their damages during Shock hit times. The data shows that each strategy of BISP recipients was dominant as compare to non-recipients to cope the situation against shocks.

4.2. Top four coping strategies adopted by HH in (%)

Main coping strategies adopted by HH	PTM score 11.17- 16.17	PTM score 16.17 - 21.17	Overall
Behavior -based	67.4	68.7	68.3
Assistance based	25.7	24.7	25.7
Borrowing based	38.9	37.3	38.1
Asset-based	19.5	18.9	19.2

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

In the male questionnaire the recovery status of food consumption is also questioned. This tabular data shows the top 4 coping strategies of household against shocks, they received. Most of the households have changed their behavior towards certain things after receiving the shock or before shock to cope with the shock. However, high percentage of none beneficiaries have adopted top listed strategy against shocks. Assistance base coping strategy against shock, was dominantly adopted among beneficiaries with 25.7 percent households. A quarter of the entire sampling has adopted this strategy. Non beneficiaries, who received assistance to cope with shocks are only one percent less than beneficiaries. 38.9 percent of the households from the treated group adopted borrowing base strategy. 37.3 percent household from control group went for borrowing base strategy against shocks they received. The data shows that intensity of every strategy is greater among the treated group members, which is evident from the first to last top four strategies of the households adopted in the treated group.

4.2. Overview of RDD Approach and assumptions

For the impact evaluation report RDD approach is very useful technique. When the treatment is a deterministic function of an assignment variable and the threshold that determines the treatment is known, RDD is used to estimate the causal influence of the treatment on one or more outcomes of interest. Under certain assumptions, this study used some observations near the eligibility criterion and worked with them as though treatment was random around this threshold. The RDD is a technique through which exposure is assigned is the RDD's defining feature. Individuals are assigned to exposures based on whether they are close a pre-determined threshold on a constantly measured scale, and the RDD is utilized in these cases. Consequently, at the cut-off, the chance of being exposed changes discontinuously as a function of the underlying continuous variable. In RDD literature, this underlying continuous variable is referred to as the "forcing" or "running" variable. Any such discontinuous change in the likelihood of the outcome at the same cut-off is then determined by the RDD analysis. The extent of this break or discontinuity is utilized to determine the causal effect of a policy change or intervention on HH near the cut-off.

This study used sensitivity tests to ensure the validity of our findings.

1. The study's findings were examined for sensitivity to bandwidth selection. The findings were calculated using a bandwidth of +/-5 and +/-3 points around the cut-off.
2. Examine the area outside of the eligibility criterion for any discontinuities. Another cause is causing the observed discontinuity at the eligibility barrier if a discontinuity exists distant from the eligibility criterion.

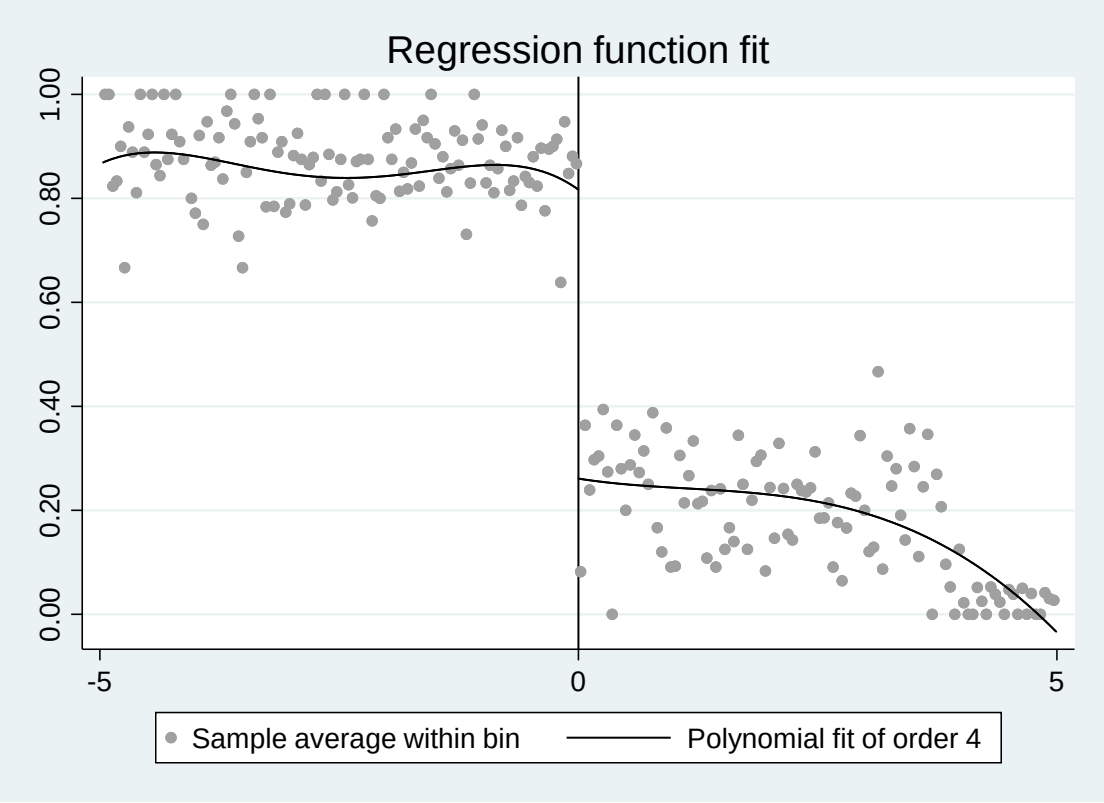
4.2.1. Assumptions of RDD

Assumption 1: The probability of exposure at the cut-off point is discontinuous.

At the assignment cut-off, there is a discontinuous shift in the probability of exposure, which is a major premise of the RDD.As a result, we initially looked to see if our study had any exposure discontinuity. Any discontinuities in exposure at sites other than the cut-off had to be identified, as these could suggest trend in time, such as further new policies or initiatives, which could skew the outcomes. To put this assumption to the test, we make a rdplot that depicted the likelihood of programme eligibility and treatment status for each of our exposure definitions. On the vertical

axis probability of BISP cash transfers program eligibility is shown, and on the horizontal axis how that how value of forcing variable is operationalized.

Figure 4.1.Discontinuity at probability of treatment



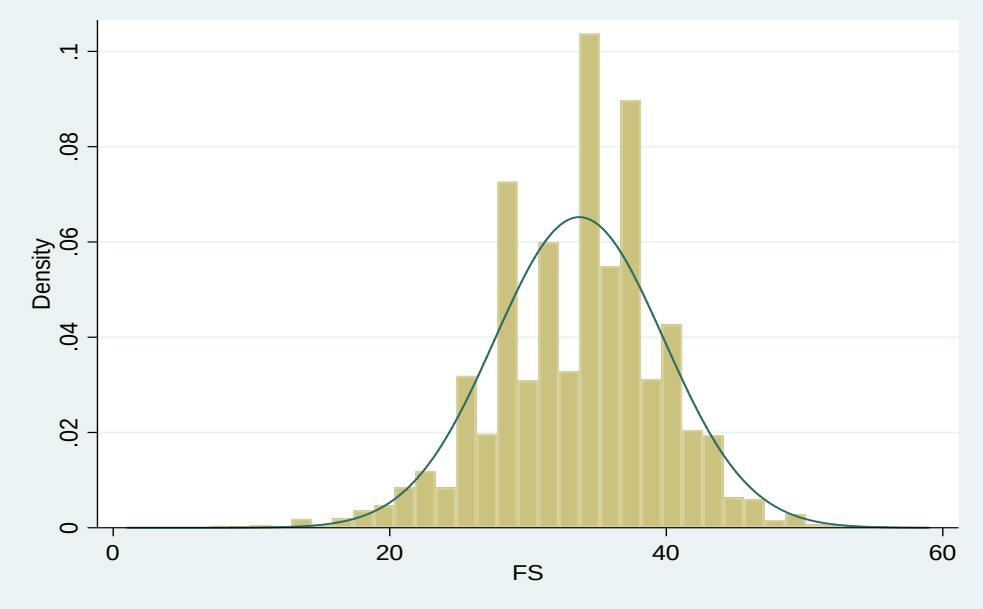
Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The chance of treatment deviates from zero to one at the cutoff with sharp designs. There are no no-shows or cross-overs. For example, if all of the households receive BISP assistance, which are beyond the threshold level of PMT score, there is a clear rule that deterministically specifies the treatment status with probabilities of 0 or 1. Thus, the design here indicates that it is the fuzzy design distribution, the above graph also indicate the sharp RDD if the design is comprehended through straight line. The concentration of distribution around cut off changes significantly after treatment through the BISP.

Assumption 2: The forcing variable's value for each individual was not manipulated.

Second prerequisite for interpreting is that if RDD estimates as causal the individuals had not control on the forcing variable's value, as this would contradict the assumption that groups are randomly assigned to the interference. On the vertical axis of the graph it is shown that the density of the cash transfers at eligibility across the forcing variable (FS) on the horizontal axis is represented. For example, if the HH is just above the PMT score, the HH may be considered eligible for BISP cash transfers. As a result, there is a disruption at the cut-off point for eligibility, in the occurrence of observation. If this condition is met, however, we can anticipate consistency in observation density across all driving variable values. Although density continuity is not required for valid inference, discontinuity suggests that the non-manipulability criterion has been violated. As a result, we check the density of data to the driving variable and generate a histogram of forcing variable density.

Figure 4.2.Density of BISP cash transfers at eligibility threshold



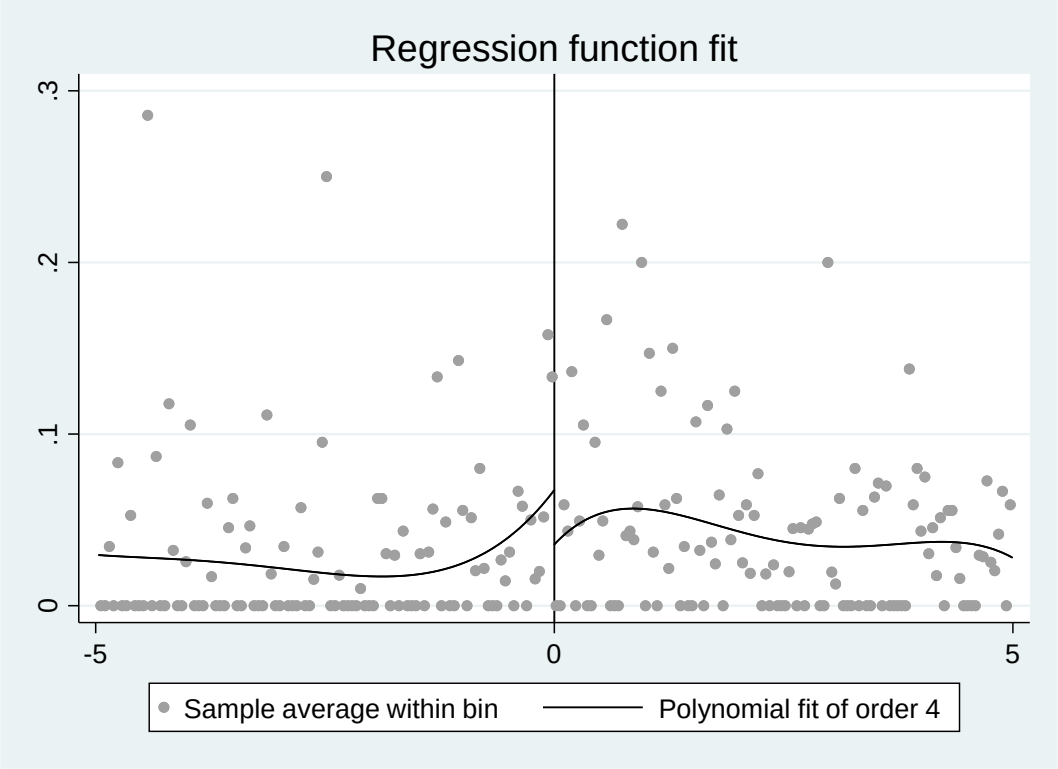
Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Assumption 3: Around the cut-off, exposure groups can be exchanged

Excluding the outcome of interest, everything else is the same. The RDD's quasi-experimental character requires that groups are equal in terms of all measured and unmeasured factors. By directly comparing the beneficiary and non-beneficiary groups, the possibility for confounding is

determined. The exchangeability assumption in RDD applies to the observations the one that comes nearer to threshold level since these are the ones influenced by way of the causal influence. To determine exchangeability in the vicinity of the cutoff, we exhibit the baseline distribution attributes based on the forcing variable (food security). Because there are more than two types of food security, each one was evaluated separately. Food security is divided into three categories: poor, borderline, and acceptable.

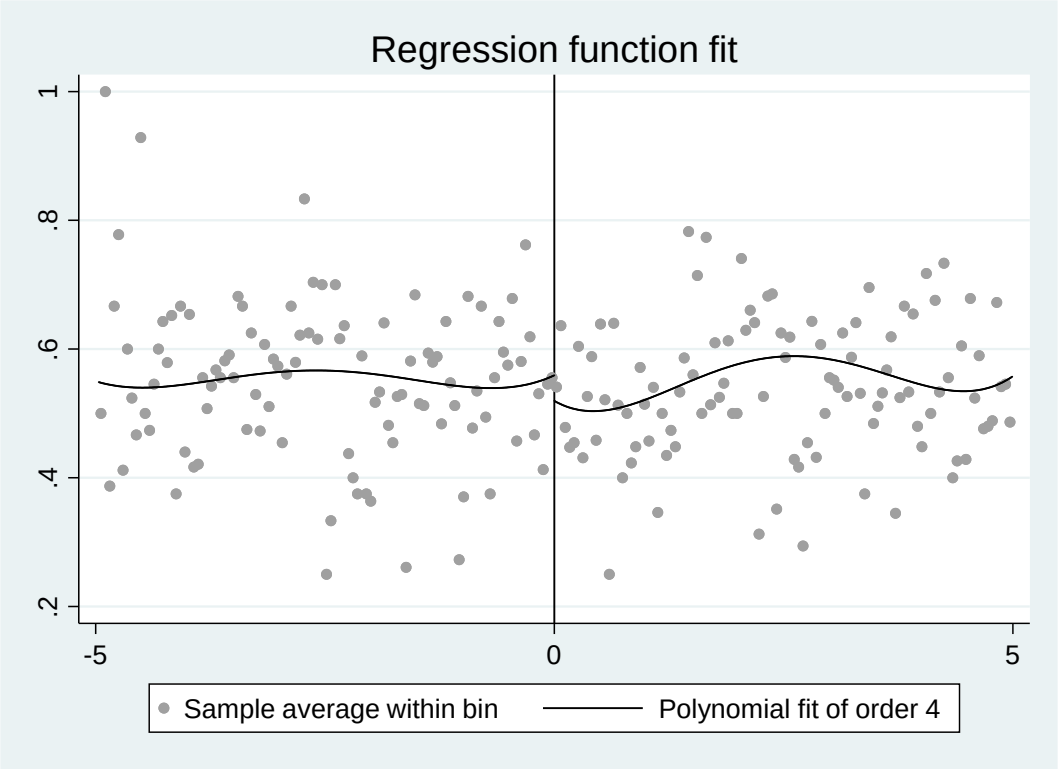
Figure 4.3.Exchangeability around cut-off



Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

To assess exchangeability around the threshold, we graph the distribution of basic characteristics as a product of the forcing variable (food security). Because there are several different categories of food security, each was assessed separately. However we plot first category of food security 'poor'. On the vertical axis cash transfer program eligibility and on horizontal axis the first category of food security 'poor' is mentioned as forcing variable. There is greater variability in the categories of food security i.e. poor but there is no discernible pattern other than cut-off .i.e. 16.17.

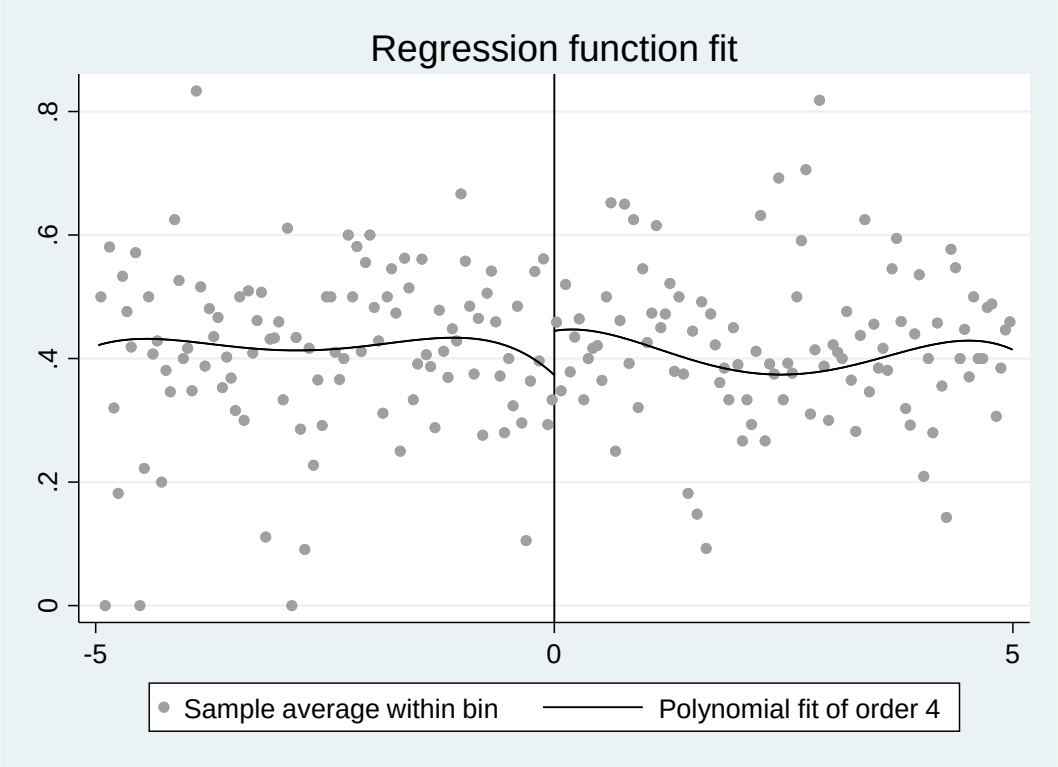
Figure 4.4.Exchangeability around cut-off



Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

We plot the baseline attribute distribution based on forcing variable (food security) to examine exchangeability around the cutoff. Because there are more than two types of food security, each one was evaluated separately. However, we map the second category of food security, which we call "acceptable." The assumption of exchangeability is used in the RDD for observations closest to the cut-off since these are the ones that have a causal influence. As a result, we assumed that people closest to the cut-off are interchangeable in terms of confounders, both measured and unmeasured. The degree of exchangeability is generally acknowledged to decrease as the distance from the cut-off increases. However we plot second category of food security 'acceptable '. On the vertical axis program eligibility criteria is shown and on horizontal axis second category of food security 'acceptable' is shown. There is greater variability in the categories of food security i.e. acceptable but there is also no discernible pattern other than cut-off .i.e. 16.17.

Figure 4.5.Exchangeability around cut-off



Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

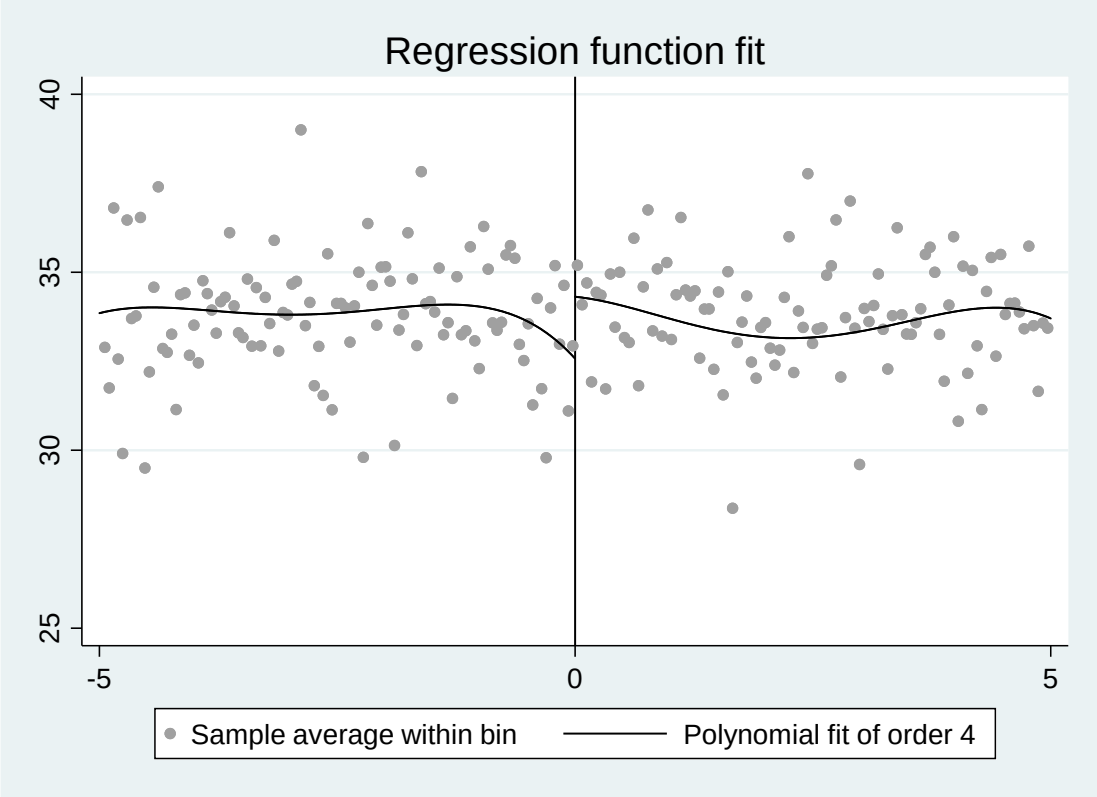
The baseline distribution is plotted as a function of the driving variable (food security) to examine exchangeability around the cutoff. Because food security comprises there were more than two categories, and each one was evaluated separately. However we plot third category of food security 'borderline'**.** On the vertical axis there is program eligibility is shown and on horizontal axis third category of food security is shown. There is greater variability in the categories of food security i.e. borderline but there is also no discernible pattern other than cut-off .i.e. 16.17.

Assumption 4: In the absence of the intervention, the outcome probability is continuous at the cut-off.

The fourth assumption is that the outcome's risk stayed unchanged in the absence of action at the threshold. This is a logical continuation of the principle of exchangeability. Which claims that any change in the probability of an outcome can only because of the exposure. To test the hypothesis,

looked at the counterfactual outcome: UCT beneficiary and non-beneficiary food security in the 2019 round of the BISP cash transfer programme. We used the strategy of displaying the outcome risk (treatment status) each time the forcing variable is set to a different value, with the risk remaining constant on either side of the cut-off, indicating that this condition was met. This constancy is especially important near the threshold point. This assumption has the advantage of enabling for the analysis of whether or not the outcome probability is discontinuous at the cut-off. This assumption allows us to determine if there are any discontinuities at locations other than the cut-off, which could indicate the presence of a trend, such as other policies or efforts it could have influenced the result.

Figure 4.6.Continuity at eligibility threshold



Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The chance of treatment deviates from zero to one at the cutoff with sharp designs. There are no no-shows or cross-overs. For example, if BISP assistance is offered to all households with PMT scores above a certain threshold, there is a clear rule that defines the treatment status deterministically with probabilities of 0 or 1. Thus, the design here indicates that it is the fuzzy

design distribution, the above graph also indicate the sharp RDD if the design is comprehended through straight line. The concentration of distribution around cut off changes significantly after treatment through the BISP.

Assumption 5: At the eligibility level, the unobservable must be a continuous function of the score on the assignment.

Above assumption cannot be tested directly but we have satisfied the previous assumption we assume this will also hold valid.

Analysis on Food Security and Nutrition

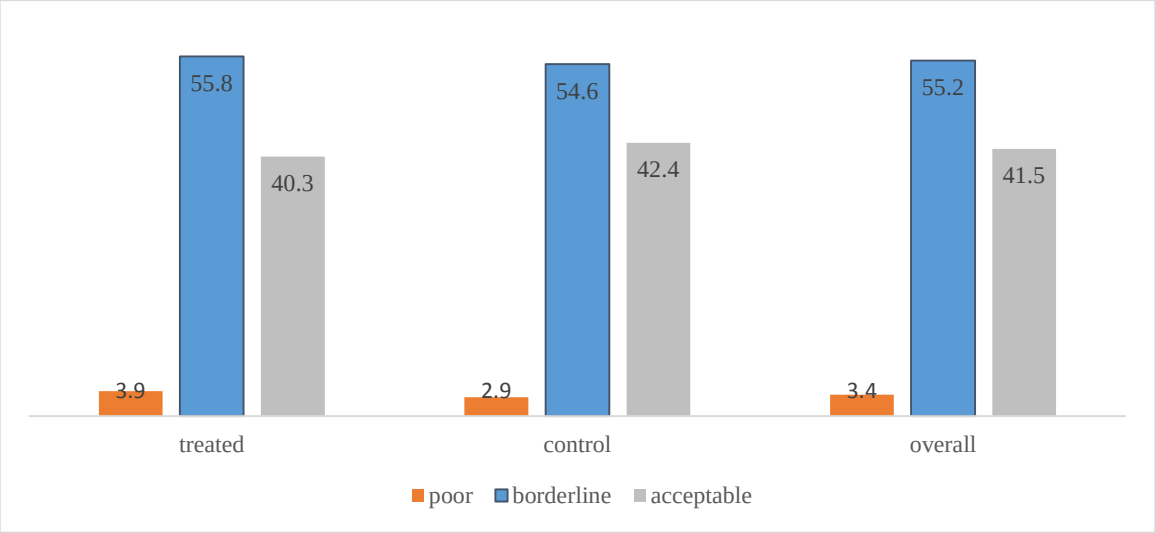
4.3 Descriptive analysis on Food Security

In the female questionnaire HH diet is questioned and ask whether you're household have eaten a range of food items in last seven days. The series of food items are Cereals Vegetables, Fruits, Tubers, Pulses and Nuts Dairy products, meat and fish Honey, sugar Oil-fat are listed in questionnaire.

4.3.2. The bi-Variate Analysis

The bi-variate analysis has covered the consumption pattern in the last seven days, which items of food is consumed in these seven days. Households with a score of above 11.17 and below 11.16 are classified as treated, while those with a score of above 16.17 and below 21.17 are classified as control.

Figure.4.7: Food Consumption Score among Beneficiaries and Non-beneficiaries (% distribution)



Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The results of the study show that treated group has the highest percentage of household on borderline in terms of food consumption while control group has the lowest percentage household on borderline. The percentage of poor food consumption is the lowest in the control group and highest in the treated group. Treated group has the lowest percentage of households with a score

of adequate food consumption and control group has highest percentage of household, which have the acceptable food consumption score.

Table 4. 1.HH consumption of Food items in last 7 days across treat and control group (in %)

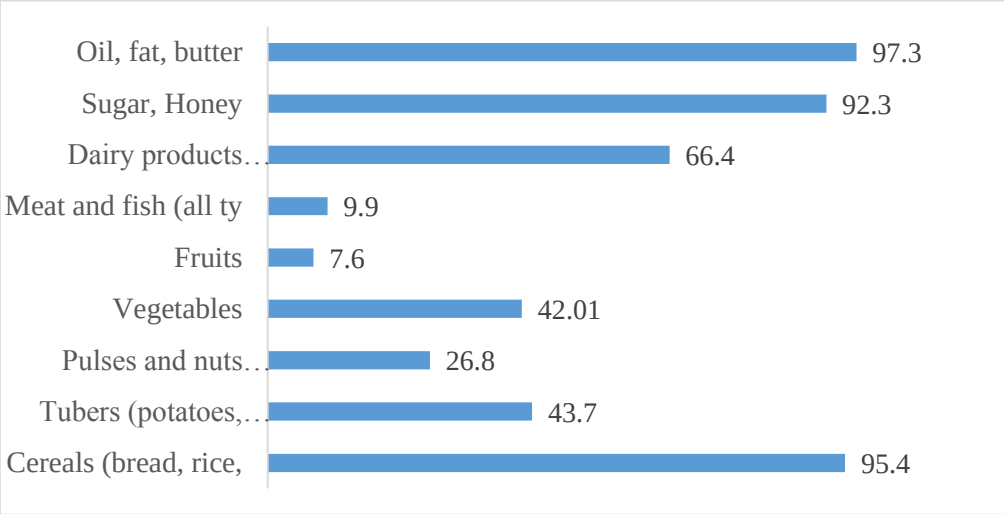
Food Items	Treated	Control	Overall
Cereals (bread, rice, maize, barley.	95.1	94.4	94.8
Tubers (potatoes, sweet potatoes, cassias	11.5	10.7	11.1
Pulses and nuts (beans, lentils, peas,	0.9	1.4	1.1
Vegetables	6.4	6.2	6.3
Fruits	1.2	1.4	1.3
Meat and fish (all types)	0.4	0.5	0.4
Dairy products (milk, yoghurt, cheese,	62.7	62.3	62.6
Sugar, Honey	90.2	89.0	89.6
Oil, fat, butter	96.0	95.8	95.9

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The results of the study shown in the table 1 indicates that oil fat and butter are the most consumed items across all the groups and within the treated group with 96 percentage of households, who consumed Oil, butter and fats in last seven days. It is quite interesting to see that control group has comparatively highest percentage of households, who consumed meat, fish, nuts, pulses and fruit in last seven days. Other food items consumption indicates that treated group's score is comparatively greater for each item of food for the record of last seven days. Treated group food items score for less expensive items is greater but for high priced goods the food consumption score of control group overtakes the treated group.

The qualitative research support these results as beneficiaries reported that spending a portion of their BISP cash transfer used to purchase basic food items only, not on highly protein food items according to the qualitative research. These findings are alien with previous evaluation (OPM, 2016). Most of the BISP beneficiaries consumed Cereals (bread, rice, maize, barley) in all last seven days because it is the basic need of the body and 1 % BISP beneficiaries consumed fruits in last seven days and 0.5% beneficiaries consumed meat ,pluses and nuts etc .

4. 7.HH consumption of food items in last seven days (in %)



Source: Estimated BISP's Impact Evaluation Survey (2019 round)

The graph shows that food consumption of different food items in last seven days. Almost every HH consume cereals (bread, rice), oil (fat, butter) sugar in last seven days that is between 90%-97% according to data. The consumption of meat, fish, fruit and nuts are very rare among HH in last seven days but vegetables are consumed up to 40% among HH in last seven days. These results are according to previous evaluation (OPM, 2016). This figure demonstrates that their essential food needs, whether staples or veggies, are met, despite the fact that higher-quality meals (meat or fish) are consumed in smaller quantities. Given that the average BISP household can already fulfil their consumption expectations for vital commodities like grains and vegetables, it's not unexpected that the BISP has an impact on meat and fish consumption but not on other foods.

Table 4. 2 Average number of days the items was consumed in last 7 days (% distribution)

Food Items	day 0	day 1	day 2	day 3	day 4	day 5	day 6	day 7	Total
Cereals (bread, rice,	2.6	0.83	0.48	0.27	0.27	0.24	0.51	94.7	100
Tubers (potatoes, sew	20.6	13.9	20.2	16.6	9.3	3.6	3.6	11.1	100
Pulses & nuts(bean	20.9	18.2	30.9	18.4	7.2	2.53	0.57	1.1	100
Vegetables	12.3	9.6	21.4	21.8	14.4	9.2	4.6	6.32	100
Fruits	75.9	10.7	6.8	3.5	1.4	0.6	0.2	1.2	100
Meat & fish (all ty	54.3	31.01	9.21	2.82	1.36	0.41	0.22	0.44	100
Dairy products (milk,	28.6	1.78	1.84	1.67	1.5	1.1	0.84	62.5	100
Sugar, Honey	4.9	0.59	0.9	1.2	1.32	0.85	0.5	89.64	100
Oil, fat, butter	1.9	0.09	0.14	0.18	0.45	0.71	0.54	95.9	100

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

As seen in the table that average no of food items was consumed by HH in last seven days. Table indicate that 2.6% HH not consumed cereal in last seven days whereas 94% HH consumed cereal in last seven days as it is the basic necessity of every HH. Similarly, only 2% HH do not consume oil, fat, butter and 95% HH consumed these food items in last seven days. As well as 20% HH not use tuber, pulses, nuts and 12% HH supposed to consume these items in last seven days. Although, 75% HH did not take fruits and 55% HH did not take meat in last seven days. Dairy products are consumed 62% and 80% sugar are consumed by HH in last seven days. Cereals bread and rice are those food items which are consumed for 7 days by 94.7 percent of households. Only 2.6 percent households did not consume Cereals bread and rice on day before the week starts. Which indicates that there exists a certain percentage of households which cannot afford to consume cereals bread and rice. Furthermore, fruits and meat are high expensive food items where 75.9 and 54.3 percentage household cannot afford to consume these items even for a single day. A significant of 20.9 percent household cannot afford pulses nuts and beans to consume even for a single day. Careful observation of the data shows that expensive food items are consumed less frequently across households but less expensive food items are more frequently consumed across the households. Only few food items are observable across the week, which are basic food items for a

household items. Beneficiaries reported spending a portion of their BISP payment transfer on basic food items only, rather than highly protein products, according to the qualitative research.

Table 4. 3. Consumption of Food in last seven days among provinces in (%)

No of days	Punjab	Sindh	KPK	Baluchistan	GB	FATA	Total
day 1	13.2	10.7	9.1	10.6	10.1	5.8	10.5
day2	14.6	11.5	12.3	12.9	9.2	7.8	11.9
day3	9.8	9.3	11.4	12.1	9.2	7.3	9.9
day4	6.8	5.3	7.9	5.9	6.9	8.4	6.6
day5	2.7	3.7	3.8	6.2	5.9	6.0	4.2
day6	1.4	1.4	2.1	2.5	2.5	2.1	1.8
day7	51.4	58.2	53.5	49.2	56.2	62.6	54.7
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The data shows that food consumption in Punjab declines from second day to third day and further declines on the six of the week. The food consumption in Punjab increases on second of the week but against decreases for the next four days and finally slightly increases on the last days of the week. The food consumption in Sindh is also quite variant but in a different way from Punjab. In Sindh food consumption is lower in percentage as compare to Punjab, the food consumption increase second day and continuously declined till six day of week. In KPK food consumption is low in first day, slightly increase in second day but decline next three days? Baluchistan has second last position in weak food consumption percentage in last seven days. In GB and Fata 50-60 % food consumption in last seven days reported. These results support to previous qualitative research (OPM, 2016) and also my qualitative research as we observe that the food security in rural areas is better as compare to urban because people use their own grains from land in rural areas and their highly protein food consumption is better as compare to urban areas HH.

4.2.1 Multi-Variate analysis

The regression discontinuity design (RDD) was employed in this study to look the effects of UCT on food security and nutrition on a cross-sectional basis of treated and control group, where the 2019 round is used for the analysis.

4.3. RDD on Food Security

Table 4.4.Impact of Unconditional Cash Transfers on HH Food Security –RDD analysis

Variables	Fcs poor	Fcs borderline	Fcs acceptable
RD Estimate	0.057	0.071	-0.129
	(0.046)	(0.105)	(0.105)
Observations	9,973	9,973	9,973
Sample on left side	3908	3908	3908
Sample on right side	4309	4309	4309

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

***p<0.01, **p<0.05, *p<0.1

This table depicts impact of unconditional cash transfers on HH food security. As the total number of observations are 9973. We observe that FCS poor (0-21) has an estimate 0.057 with a standard error 0.046. As we move above the cutoff point i.e. fcs_bordeline (21.5-35), there exists an increase in the estimated coefficient of HH food security. This is an evidence of treatment effect in our case unconditional cash transfer. However the scenario is adverse post exceeding another cutoff point, that is under fcs_acceptable (>35) has negative magnitude of a coefficient. It clearly demonstrates that the unconditional cash transfer after cutoff has adverse effect on HH food security. The total number of observations are 9973. In this table, we consider unconditional cash transfer as a regressors for HH food security and have not incorporated any control variable.

Table 4. 5.Impact of Unconditional Cash Transfers on HH Food Security- RDD analysis

Variables	Fcs poor	Fcs borderline	Fcs acceptable
RD Estimate	0.057	0.078	-0.135
	(0.045)	(0.104)	(0.104)
Observations	9,973	9,973	9,973
Sample on left side	3908	3908	3908
Sample on right side	4309	4309	4309
Control variable	yes	yes	Yes
Provincial dummies	No	No	No

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Now in Table 4.5 we have included some control variables along unconditional cash transfer in order to arrive an unbiased estimates. We can see that in presence of control variables, the estimates are changed sparingly for second and third category of HH food security.

This table show the effect of treatment on food security. Gender, HH size, marital status, and the age of the household head are among the factors used to regulate the socioeconomic profile of HH. The inclusion of covariates is intended to increase the precision of the RD treatment effect estimator. The inclusion of covariates in RD analysis is designed to restore identification of some RD parameter when researchers feel that probable outcomes are discontinuous at the cutoff; in these cases, the inclusion of covariates is intended to reinforce the plausibility of the design. Bias corrected estimates are presented in table. 'Rdrobust 'command is used to measure the RDD effect using STATA.

Table 4. 6. Impact of Unconditional Cash Transfers on Food Security: Provincial Analysis

Variables	Punjab	Sindh	KPK	Baluchistan	GB	FATA
Conventional	-1.309	0.758	-1.915	0.538	-2.749	-10.962
	(0.994)	(1.131)	(1.488)	(2.284)	(1.837)	(12.162)
Bias-corrected	4.935	1.770	-3.787	1.338	-4.078	-2.049
	(0.994)***	(1.131)	(1.488)**	(2.284)	(1.837)**	(12.162)
Robust	4.935	1.770	-3.787	1.338	-4.078	-2.049
	4.935	(5.033)	(7.000)	(10.787)	(13.429)	(45.171)
Observations	2,379	2,432	1,856	1,170	1,358	778
Sample on left side	976	974	664	527	403	364
Sample on right side	1063	962	855	404	781	244

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We can see the results in Table 4.6 three type of estimates like conventional, bias corrected and robust. The estimates provided by conventional are far away from the estimates given by bias corrected and robust. We cannot rely on conventional estimates to be used for policy because they are biased. The bias corrected and robust have yield same estimates. Hence, these findings are more fruitful and can be utilized in policymaking. In addition, we observed that in Punjab, Sindh and Baluchistan, the impact of unconditional transfer cash is positive on HH food security whereas there is adverse effect in KPK, GB and FATA.

This table show the effect of treatment on food security across provinces. Various covariates are used to control socio economic profile of HH including gender, HH size, marital status, and age of household head. Bias corrected estimates are presented in table. 'rdrobust' command is used to measure the RDD effect using STATA.

Table 4. 7. Impact of Unconditional Cash Transfers on Food Security with different Bandwidths: aggregate analysis

Variables	Fcs poor	Fcs borderline	Fcs acceptable
Bandwidth (4)	0.063	-0.059	-0.004
	-0.043	-0.095	-0.093
Bandwidth (3)	0.071	-0.172	0.101
	-0.047	-0.106	-0.105
Bandwidth (2)	0.136	-0.16	0.023
	(0.060)**	-0.123	-0.12

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parenthesis

***p<0.01, **p<0.05, *p<0.1

In table 4.7 with varying the bandwidth, the models are repeatedly run. We always like to work with a data close to cutoff. In contrast, less data illustrates less precision. Although, the bandwidth is a function sample size and therefore it is varying with sample size. The more information are available about the response variable near cutoff point. It means that setting bandwidth narrower leads to more precise output. In each row, by declining bandwidth size the standard errors are growing. To be more specific, as we reduce the size of bandwidth, the number of observations lying near cutoff also decreasing, which in turn enhance the standard error associated with

Variables	Punjab	Sindh	KPK	Baluchistan	GB	FATA
Bandwidth (4)	-1.831	0.710	-2.464	-0.882	-3.732	-16.098
	(1.163)	(1.227)	(1.688)	(2.611)	(2.205)*	(22.836)
Bandwidth(3)	-2.389	1.064	-2.298	-1.668	-5.760	-46.405
	(1.434)*	(1.385)	(1.947)	(3.076)	(2.314)**	(129.924)
Bandwidth(2)	-0.739	1.254	-3.412	-0.450	-3.663	161.603
	(1.587)	(1.783)	(2.460)	(2.999)	(2.283)	(1,105.200)

coefficients.

Table 4.8. Impact of Unconditional Cash Transfers on Food Security: Provincial Analysis

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In this table the impact of unconditional transfer cash on HH food security was determined provincial-wise with different bandwidth. In each row, by diminishing the size of bandwidth, as a result the standard errors are raising. In other words, we can say that as we lessen the size of bandwidth, the data lying near cutoff also decreasing, and consequently the standard error boost up associated with estimates.

4.2.3. Descriptive analysis on child Nutrition

The bi-variate analysis has covered the analysis on child health, child nutrition is measured through child anthropometric method, stunting, wasting, and underweight. Households with a score of above 11.17 and below 11.16 are classified as treated, while those with a score of above 16.17 and below 21.17 are classified as control. In the female questionnaire there are some question on child health. This study estimate child nutrition at individual level of aged (0-59) months. Child nutrition is measured through child anthropometric method .i.e. stunting, wasting, and underweight.

Table 4. 9.Classification of child aged 0-59 months among treated and control group in (%)

Months	**Treated**	**Control**	**Overall**
0-12 months	21.2	21.2	21.2
13-24 months	18.8	18.2	18.5
25-36 months	19.8	19.8	19.8
37-48 months	19.9	20.2	20.1
49-60 months	19.3	19.5	19.4

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

As in the female questionnaire child health/ anthropometry in which weight, height and age of the child (0-59) month aged children is recorded in data at individual level. Child nutrition is measured through child anthropometry method i.e. wasting, stunting, underweight. The results of the study indicates that percentage of children across all the groups for each of age range is indifferent but comparatively low in treated group.

Table 4.10.Malnutrition in child 0-59 months among treated and control group

Categories of malnutrition	**Treated group 11.17 to 16.17 Beneficiaries**			**Control group 16.17 to 21.17 Non beneficiaries**		
	stunting	wasting	under weight	stunting	wasting	under weight
Severe	45.6	0.1	37.1	45.7	0.2	37.9
Moderate	14.4	0.2	17.1	14.7	0.1	15.7
Normal	36.1	75.6	42.2	36.6	75.6	42.7
Over	3.7	24.3	3.5	2.9	24.3	3.5

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

The data shows that stunting is greater with greater intensity among the households from the treated group. Wasting is also greater in treated group but very insignificant in numbers and in ratio to the total observations. In addition, the treated group has a high number of underweight children aged 0 to 59 months. The results of the study indicate that 45.6 households have severely stunted kids in treated group and control group has comparatively less amount of sever stunted kids. Moderate stunted kids in treated group are 14.4 and in control group moderate stunted kids are 14.7. Treated group needed treatment because underweight kids are also comparatively more in treated group. The statistics above justify the treatment of treated group against control group because problems in treated groups are intensive as compared to control group. Malnutrition problem in treated groups is much more intensive and appealing for treatment. When a child has had adequate breastfeeding and weaning, was born to a healthy mother, lives in a sanitary environment, has access to adequate health services, and caregivers have the knowledge and ability to care for infants and toddlers in the home, infant and child nutrition is secured.

4.2.4. Multi-Variate analysis on child nutrition

The regression discontinuity design (RDD) was employed in this study to look at cross-sectional effects of UCT nutrition of treated and control group at individual level, where the 2019 round is used for the analysis. Total sample size is 6240 is used for analysis in this study. Nutrition is measured through child anthropometric method i.e. stunting, wasting, underweight.

Table 4.11: Effects of Unconditional Cash Transfers on Child Nutrition - RDD Analysis

Variables	Stunting	Wasting	Underweight
RD Estimate	0.103	-0.064	2.080
	(2.271)	(0.269)	(0.909)**
Observations	6,240	6,240	6,240
Sample on left side	2485	2485	2485
Sample on right side	2644	2644	2644

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

This table depicts the impact of unconditional cash transfers child nutrition at individual level. Child nutrition is measured through child anthropometric method, stunting wasting and

underweight. The total no of observations are 6240. The left side sample is 2485, whereas the right side sample is 2644.We observe that stunting has an estimate 0.260 with a standard error 0.274, for wasting we estimate 0.522 with standard error (0.269) and for underweight we estimate 2.082 with a standard error (0.909) **. This is an evidence of treatment effect in our case unconditional cash transfer. In this table, we consider unconditional cash transfer as a regressors for child nutrition and have not incorporated any control variable.

Table 4.12. Impact of Unconditional Cash Transfers on Child Nutrition- RDD Analysis

Variables	**Stunting**	**Wasting**	**Underweight**
RD Estimate	0.260	0.522	2.080
	(0.274)	(0.280)*	(0.909)**
Observations	6,240	6,240	6,240
Sample on left side	2485	2485	2485
Sample on right side	2644	2644	2644
Control variables	Yes	Yes	Yes

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

***p<0.01, **p<0.05, *p<0.1

Now in this table, we have included some control variables along unconditional cash transfer in order to arrive an unbiased estimates. We can see that in presence of control variables, the estimates are changed sparingly for stunting and wasting in the child nutrition at individual level.

Table 4.13. Impact of Unconditional Cash Transfers on Child Nutrition: provincial analysis

Variables	Punjab	Sindh	KPK	Baluchistan	GB	FATA
Conventional	-0.874	1.047	1.327	3.113	5.295	-9.080
	(1.073)	(1.161)	(1.633)	(2.428)	(7.296)	(8.967)
Bias-corrected	6.606	7.485	4.170	0.588	34.229	-6.694
	(1.073)***	(1.161)***	(1.633)**	(2.428)	(7.296)***	(8.967)
Robust	6.606	7.485	4.170	0.588	34.229	-6.694
	(5.437)	(5.832)	(8.877)	(11.092)	(38.849)	(46.528)
Observations	1,366	1,509	1,269	767	799	530
Sample on left side	536	596	450	346	284	273
Sample on right side	604	591	610	257	424	158

Source: Estimated from BISP's Impact Evaluation Survey (2019 round)

Standard errors in parentheses

***p<0.01, **p<0.05, *p<0.1

In this table, we observe the results. There are three type of estimates like conventional, bias corrected and robust. The estimates provided by conventional are far away from the estimates given by bias corrected and robust. We cannot rely on conventional estimates to be used for policy because they are biased. The bias corrected and robust have yield same estimates. Hence, these findings are more fruitful and can be utilized in policymaking. In addition, we observed that in Punjab Sindh KPK, GB and Baluchistan, the impact of unconditional transfer cash is positive on child nutrition whereas there is adverse effect in FATA.

Table 4.11.Impact of Unconditional Cash Transfer on Child Nutrition with different bandwidth: aggregate analysis

Variables	Stunting	Wasting	Underweight
Bandwidth (4)	0.896	0.169	5.179
	(1.458)	(0.170)	(0.927)***
Bandwidth (3)	0.159	0.120	2.708
	(1.710)	(0.207)	(0.806)***
Bandwidth (2)	0.757	0.070	2.746
	(2.310)	(0.259)	(0.981)***

Source: *Estimated from BISP's Impact Evaluation Survey (2019 round)*

Standard errors in parentheses

***p<0.01, **p<0.05, *p<0.1

The models are repeatedly run in the table above, with the bandwidth varying. We like to work with data that is close to cutoff. In contrast, less data illustrates less precision. Although, the bandwidth is a function sample size and therefore it is varying with sample size. The more information are available about the response variable near cutoff point. It means that setting bandwidth narrower leads to more precise output. In each row, by declining bandwidth size the standard errors are growing. To be more specific, as we reduce the size of bandwidth, the number of observations lying near cutoff also decreasing, which in turn enhance the standard error associated with coefficients.

CHAPTER 5

CONCLUSION AND POLICY RECOMMENDATIONS

5.1. Conclusion

This thesis gives a practical introduction to RDD for the purposes of impact evaluation. Furthermore, it presents four straightforward methods for assessing the RDD's assumptions and determining whether the design is appropriate for their goals and dataset that is used in the study. Using these methodologies to investigate the impact of unconditional cash transfers on food security and child nutrition on the Oxford Policy Management (OPM) performed a BISP effect evaluation panel survey in the 2019 round, our research question about the influence of unconditional cash transfers on food security and child nutrition was successfully answered. The four RDD testable assumptions were found to be satisfactorily satisfied for our data set.

Our study query was conceptually a good fit for the RDD because it had a variable that can be observed in a continuous assignment, accept treatment at the cut-off for your assignment. However, a thorough examination of the RDD assumption revealed a significant & unanticipated impact of cash transfers. Only those observations that were closest to the cut-off point were included in the RDD analysis. Additional statistical tests, such as McCrary's density test, were used to see if the forcing variable had been tampered with. Prior to performing the RDD analysis, this would be done. More information on the analytic approach we used to look at the impact of UCTs on nutritional status and child health our study re-estimates the model using various bandwidth (i.e. 4, 3, and 2 instead of 5) and includes an explanation of bandwidth selection.

The influence of UCT on food security at the HH level and child health at individual level was investigated in this study. This study used the data of Oxford Policy Management performed BISP's impact evaluation panel survey (OPM) 2019 round. RDD has been applied on cross-sectional data set to evaluate the testable assumption of RDD approach, and why there is variation in results of previous round of BISP evaluation reports.

According to the data, UCT have no effect on HH food security and child health at individual level in the 2019 round. However in the previous rounds there is negative impact on HH food security in 2016 round. For child nutrition no impact is observed in 2019 round but in 2011 child nutrition is improved, in 2013 round positive impact is found for girls only and in 2016 negative impact is

reported on child nutrition at individual level.

5.2. POLICY RECOMMENDATIONS

The findings draw some policy recommendations. The programme should focus on chronic challenges i.e. malnutrition. The amount must be increase that may help in achieving better nutritional status and upgrade the consumption pattern of BISP beneficiary which in turn help them to increase food items in their consumption basket. BISP should provide this cash amount on monthly basis to deserving families because rate of inflation increase, the amount that provided by BISP is not enough for month expenditure now a day. In the period of covid-19, people at daily wages lost their job and BISP beneficiaries do not received their amount from BISP for six month. In these circumstances this program should done some extra measures for BISP beneficiaries. The BISP must concentrate on conditional cash transfers that will aid in the production of assets and the development of skills which in turns leads to increase income of HH. According to finding the coping strategies are very poor that is adopted by people against shocks, the only cash transfers program may not helpful in these circumstances. It should implement comprehensive policies and work for the uplift of underprivileged and vulnerable people. For the low income groups make sure to receive of cash transfer from BISP. The government should expand BISP cash transfer program for poor families with the objective of increasing the effectiveness of the social protection interventions in terms of insuring the food security and child nutrition level.

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Appendix

*Table A-1.*Cross-sectional sample size of UCTs beneficiaries various rounds

Survey Round	Beneficiary Households	Non-Beneficiary Households	Total Sample Size
Baseline (2011)	4158	4517	8675
2013 round	2484	5337	8221
2014 round	2858	4901	7759
2016 round	4964	4175	9139
2019 round	5665	4310	9975

Table A-2 cross-section sample size of BISP beneficiaries at HH level

Provinces	Treated	Control	overall
Punjab	1648	1459	3107
Sindh	1946	1495	3441
KPK	1409	1125	2534
Baluchistan	688	598	1286
GB	740	671	1411
FATA	386	392	778
Total	5740	6817	12557

Table 4.3: Sample Size of Recipient and Non-Recipient in 2019 round at individual level

Province		PTM score	PTM score	Overall
		11.17 to 16.17	**16.17 to 21.17**	
Punjab		7124	9178	16302
Sindh		6673	10806	17479
Khyber Pakhtunkhwa		5915	8515	14430
Baluchistan		4279	5530	9809
GB		5189	6080	11269
FATA		2534	3044	5578
Total		**31714**	**43153**	**74867**

TABLE A-5.Food groups of FCS and corresponding weights

Food Group	Weight
Main staples	2
Pulses	3
Vegetables	1
Fruit	1
Meat/Fish	4
Milk	4
Sugar	0.5
Oil	0.5
Total	14.6

TABLE A-5.Question that asked to BISP beneficiary (Questionnaire)

Sr. no	Questions	
1	What financial issues are you facing currently? (Probe: Personal level, family level, etc.)	
2	How does you cope up after the shocks? How you tackle the change occur?	
3	Which type of food are given to ill person in your family? What are the common practices that you use to get rid of any disease?	
4	How many times in month you have to go hospital due to health issue and how you meet your expenses? (Probe: Personal level, family level, etc.)	
5	Please tell me about the monthly food consumption basket of your family and what you want that you should include in basket but you cannot afford?	
6	What challenges did you face in your life before becoming a BISP beneficiary?	
7	Do you think BISP should increase amount (rupee) or that is enough for you?	
8	Do you think Government should provide something else OR are you happy with this fixed amount that is given from BISP to you? (Probe: Why or why not?)	
9	How satisfied are you from BISP services?	
10	How do you think BISP can improve its services?	

The response record from Muzaffarabad is that

She said that from BISP cash transfers I bought main items of grocery such as pulses, rice, and floor for 2 months me and my children's at least never sleep without having dinner *(Female beneficiary, rural Muzaffarabad, AJK)*
In other cases women reported that they consider BISP amount as extra amount received , with this amount they buy children's cloths , schools bags, shoes or any other extra things rather than food expenses. Because their food requirements fulfill from their own land, they enjoy seasonal fruits and vegetables from their own garden *(group of female beneficiaries, rural Muzaffarabad, AJK)*
In some cases women reported that they invest money BISP money i.e. buy stitching machine, start stitching cloths in their area , or buy hens and sold its eggs or chickens in their village , this help their households monthly expenditures *(group of female beneficiaries, rural Muzaffarabad, AJK)*

The response record from Islamabad is that:
In some cases women's reported that from BISP cash transfers I bought main items of grocery such as pulses, rice, and floor, vegetables ,chicken once in month, these selected items can buy in this amount *(Female beneficiary, Islamabad)*
In some other cases women's reported that this amount is not enough for them because prices of everything rise after three month they received BISP amount , which is not enough even for a month (*Female beneficiary, Islamabad*).
Some women's reported that their husband work on daily wages sometime they found work and sometimes not, from march 2020 there is no work due to lockdown, they do not received BISP amount from six months , people suffered from very difficult situation in those days (*Female beneficiary, Islamabad*).
Most of the women's reported that they take their medicine from this amount mostly people are suffering from diseases (*Female beneficiary, Islamabad*).

Thank You