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Effect of Safety Net Program on Household Food Insecurity in Pakistan

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Abstract

Food insecurity concerns the limited or uncertain availability of food or individuals' access to nutritionally adequate and safe foods. Food insecurity is more concerned the access rather than availability. Regarding food availability, the growth of per capita food production is almost 1 per cent more than the growth of the population globally. Access to adequate and safe food always remain a heating socio-economic issue among local and global stakeholder because nearly 2.3 billion (1 in 3) people are severely or moderately food insecure. Pakistan is also effecting by food insecurity because almost 36% of the households are facing food insecurity. The social safety net programs are the most effective ways to alleviate food insecurity for at-risk families. This study attempts to analyse the effect of safety net program on food insecurity in Pakistan. The study's primary findings are that for a household, transition from food insecure to food secure required less resources than the transition from poor to non-poor. The findings of the regression analysis suggest that safety net recipient household is more likelihood of being food insecure than the non-recipient. Moreover, an increase in the amount of safety net lower the likelihood of being mild food insecurity. Finally, the study propounds some food security-oriented policy measures for effective policy implementation to ease the prevalence of food insecurity in Pakistan.

Keywords: Food Insecurity, Hunger, Social Safety Net Programs

1. Introduction

Food security means having enough secure, nutritious food to live a healthy, active life. On the other hand, food insecurity refers to a lack of or uncertainty about access to food that is both nutritionally sufficient and safe. Availability, access, usage, and stability are the four dimensions of food security, as stated by the Food and Agricultural Organization (FAO). Regarding the availability of food, since 1960, the average growth of food production has been nearly 1 percentage point more than the growth of the population, resulting in an upward trend in the per capita food output. The world's population increased by 1.9% over the past fifty years, while food production increased by 2.8%. (Byrnes & Bumb, 2017). However, the access to food is related to available resources which need to acquire the sufficient food intake in the short and long term. On the other hand, food stability is related to the ability to obtain food over time. The food instability may be due to natural disasters, drought, war, internal conflict, job loss, and disability, climate variability, and economic slowdowns (Van Woerden et al., 2019).

At the level of the household, the problem of food insecurity generally arises when members of the household are confronted with a shortage of getting appropriate food for social, physical, and economic purposes, and this circumstance may be encountered throughout the entirety of the year and for some portion of the day. In addition, this predicament may occur at any time of the day or night (Hadley et al., 2008). The fundamental requirement for human well-being is proper nutrition, and a deficiency in essential nutrients has a negative impact on one's capacity for productive work, particularly with regard to the growth of human capital (Ogundari and Aromolaran, 2017). One of the most major obstacles to eating well is the inability to buy food. This is linked to nutrient inadequacy, as a lack of nutrients can decrease food security. Because of this, food security and sufficiency become an essential gauge of the well-being of a society and, as a result, a dependable indicator economic adversity (Bauer, 2020). The lack of consistent access to adequate nutrition has been linked to a variety of adverse health effects, many of which are directly attributable to inadequate food quality (Seligman et al., 2010). Children living in industrialised countries are more likely to be overweight if they experience persistent food insecurity in their homes, despite the fact that this is rarely seen (Speirs, & Fiese, 2016).

The prevalence of food insecurity had an immediate and direct impact on both children and adults, and it diminished both groups' capacities to participate in economic activities. According to the findings of Leung et al. (2014), food insecurity has a negative impact on the health and nutrition of both adults and children. Children experiencing food insecurity, ages 3-8, have severely impaired physical and psychological functioning, whereas children experiencing food insecurity, ages 12-17, have reduced psychological functioning (Casey et al, 2005). These effects are most pronounced in infants, even in households with only a moderate degree of food insecurity, and they continue through early childhood and into middle life. If a child is raised in a household where there is a lack of food or food of poor quality, this might have a negative impact on the child's emotional and social development (Schmeer & Piperata, 2017; Khalil & Ali, 2016).

Adult food insecurity can cause nutritional deficiencies, diabetes, high blood pressure, and high cholesterol (Eicher-Miller et al. 2009). Lack of good food access is typically associated to poor self-reported health, poor diet, diabetes, obesity, and depression (De Araujo et al., 2018). Almeida et al. (2017) found that underweight is strongly

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connected to hunger in disadvantaged nations, but overweight is strongly linked to hunger in advanced nations (Cheung et al., 2015). Olders, refugees, and college students are also at risk of food insecurity, according to Costa et al. (2017). Food insecurity increases medical costs and harms people. Food insecurity is linked to poverty, lower education, lower productivity, lower income and consumption, and the presence of chronic diseases (Van Woerden et al., 2019).

The social safety net initiatives are the most effective strategy to decrease food insecurity for families that are at risk of experiencing it. Depending on the characteristics of the targets, the transfer of money could be either conditional or unconditional in its nature. The increase in financial transfers will lead to a rise in food intake, which in turn will lead to a diet that is of higher quality and more varied (Holmes & Bhuvanendra, 2013). Access to agricultural inputs that can boost both productivity and resource levels can also be provided through financial transfers (Tevera & Simelane, 2014). The cash transfer is also related with increasing the demand for food, which in turn increases the income of the local community by supporting the local market (HLPE, 2012). By maintaining a consistent level of income throughout the year, the cash transfers may make it easier for families to adjust to cyclical shifts and unexpected shocks (Bailey & Hedlund, 2012).

Pakistan is striving to progress towards SDGs amid challenges of ensuring quality education, gender equality, skill development, health & sanitation, infrastructure development, and job creation. Pakistan is committed to alleviating poverty in line with the SDGs target Goal-1, 'No Poverty', in all its manifestations by 2030. In this regard, SSNP, through redistribution of resources, can reduce poverty by reaching the poor and disadvantaged groups to maintain social harmony. Pakistan also takes advantage of SSNP and operates almost 30 SSNP (pg. 11, World Bank, 2018). The conditional and unconditional cash transfer (UCT) programs are the major SSNP of Pakistan. Amongst the UCT programs, BISP is a more comprehensive and well-organized unconditional cash transfer program (UCT) that commenced in 2009 with 15.85 billion PKR and 1.76 million beneficiaries (see figure 1a). Currently, the cash transfer rose from 15.32 to 187.5 billion PKR, (pg. 279, Economic Survey of Pakistan, 2022). Also, the number of people benefitting from it reached 9.11 million (5 percent of the population).

Even though cash transfers from BISP and its beneficiaries are increased. The question arises of whether these transfers reduce poverty or income inequality. Figure 1b depicts poverty going down from 50 per cent in 2006 to 21 per cent in 2019. However, inequality remains stagnant because Gini-coefficient stalled from 0.3 to 0.33 scale point. It implies that the share of cash transfer supports the consumption of the bottom quantile group but does not raise their income share. Though unconditional cash transfer is growing over time, whilst conditional cash transfers have remained inert over the last decade in the range of 1 to 7 billion PKR. The descriptive at the macro level suggests that poverty is decreasing with increased cash transfers and BISP beneficiaries. However, household-level analysis is required to determine the food insecurity level in the BISP-recipient and non-recipient households.

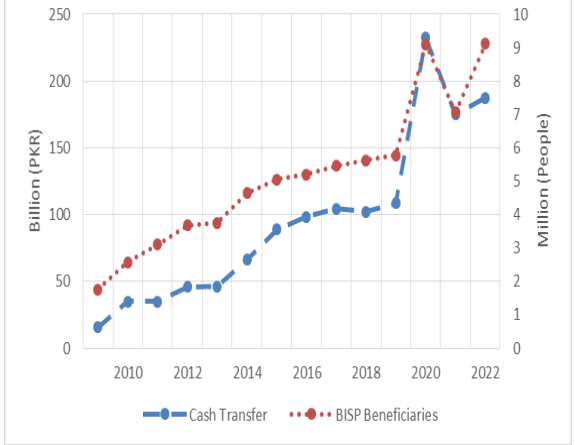

Figure 1a. BISP beneficiaries and cash transfer
Source: Economic Survey of Pakistan 2021-2022

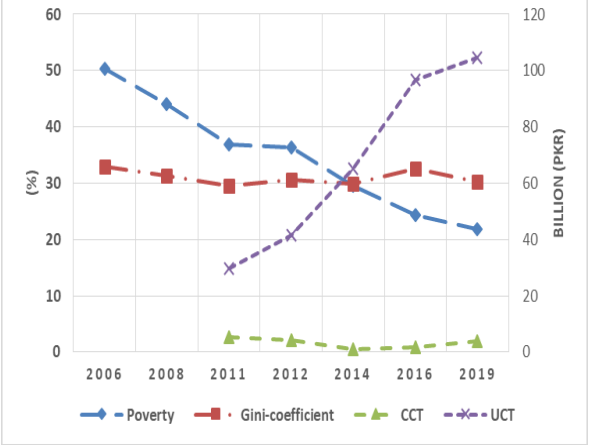

Figure 1b. poverty, inequality, conditional and unconditional cash transfer
Source: Economic Survey of Pakistan 2021-2022

Food insecurity, due to its globally recognized importance, the Pakistan Bureau of Statistics included a separate section on food insecurity in the Pakistan Social and Living Standards Measurements (PSLM) survey in the 2018-2019 round. This study is a preliminary study in the existing literature of food insecurity in Pakistan using Food Insecurity Experience Scale (FIES) methodology to estimate food insecurity and also the degree of food insecurity. The eight-item method was used to assess the degree (severe, moderate, and mild) of household food insecurity. The study is first to quantify the prevelance of food insecurity and also the severity of food insecurity in household of Pakistan. The objective of the study is to compare the state of food insecurity in the recipient of

BISP and non-recipient household by using the descriptive analysis. The study will also compare the level of food insecurity and its degree in the recipient and non-recipient household using the regression analysis. Moreover, the study will examine the effect of an increase in amount BISP on the food insecurity and degree of food insecurity using the regression analysis.

2. Methodology

2.1. Food insecurity framework

As a measure of indicator, food insecurity refers to limited access to food, at the level of individuals or households, due to a lack of money or other resources. The severity of food insecurity can measure using data collected with the food insecurity experience scale survey module (FIES-SM). The FIES-SM consists of eight questions[5] asking to self-report conditions and experiences typically associated with limited access to food. The severity of food insecurity can be quantified by assigning '1' for 'yes' and '0' for the case of 'No''. After converting eight qualitative questions into eight dichotomous variables comprising '0' and '1' coding. Subsequently, apply sophisticated statistical techniques based on the Rasch model to figure out difficulties associated with the items of the food secure, moderate, and severe food insecure households based on the FIES reference scale erected by FAO.

The FIES consider the individual/household mildly food insecure if they respond the compromising on food quality and quantity. Moderately food insecure concerns reducing food quantities or even skipping meals. Severely food insecure, for example, is experiencing hunger or going a day without eating. A household/individual is considered food secure if they respond 'no' to all eight questions. Mild food insecure for responding to 'yes' for any of Q1-Q3, moderate food insecure for responding to 'yes' for any of Q4-Q6, and severe food insecure for responding to 'yes' for any of Q7-Q8.

The global recognition of food insecurity by using the FIES-SM is an outcome of the inclusion of the eight questions in the living standard survey of economies worldwide. Following the global recognition of FIES-SM, the Pakistan Bureau of Statistics (PBS) preliminary included eight sets of FIES-SM in the nationally representative survey Pakistan Social and Living Standard Measurement (PSLM) in the 2018-2019 round.

Table 1: Food Insecurity Experiences Scale Questions

Question	Statements
Q 1	You or others in yours household worried about not having enough food to eat because of a lack of money or other resources?
Q 2	Still thinking about the last 12 MONTHS, was there a time when you or others in your household were unable to eat healthy and nutritious food because of a lack of money or other resources?
Q 3	Was there a time when you or others in your household ate only a few kinds of foods because of a lack of money or other resources?
Q 4	Was there a time when you or others in your household had to skip a meal because there was not enough money or other resources to get food?
Q 5	Still thinking about the last 12 MONTHS, was there a time when you or others in your household ate less than you thought you should because of a lack of money or other resources?
Q 6	Was there a time when your household ran out of food because of a lack of money or other resources?
Q 7	Was there a time when you or others in your household were hungry but did not eat because there was not enough money or other resources for food?
Q 8	Was there a time when you or others in your household went without eating for a whole day because of lack of money or other resources?

Source: Questionnaire of PSLM-HIES Survey (2018-2019)

2.2 Empirical Model

The second objective of the study is to estimates the effect of the receipt of BISP on food insecurity and it degree. The food insecurity level and it degree at household level assesses by Food Insecurity Experience Scale (FIES). The following regression model will be used to quantify the effect of BISP receipt along with socioeconomic and demographic factors on households' food insecurity status:

$$FI_i = \beta_0 + \beta_1 BISP_i + \beta_2 HHGNDR_i + \beta_3 HHAGE_i + \beta_4 HHMRTS_i + \beta_5 HHEDU_i + \beta_6 HHEMMPS_i + \beta_7 HHSIZE_i + \beta_8 INCOME_i + \beta_9 POOR_i + \beta_{10} DEP_i + \beta_{11} URBAN_i + \beta_{12} PUNJAB_i + \beta_{13} SINDH_i + \beta_{14} KPK_i + \varepsilon_i$$

[5] see for eight questions: https://www.fao.org/in-action/voices-of-the-hungry/fies/en/

Where FI_i the level of food insecurity is for i[th] household, coded 1 if the household is food insecure and 0 otherwise. While $BISP_i$ is a dummy variable coded 1 if the household receives BISP (a safety net program), 0 otherwise. The prior model will be run by using the Logit model. The Logit model is applied in the presence of dichotomous dummy dependant variable (Shair and Majeed, 2020; Shair et al., 2021; Shair et al., 2022). Here in the study we shall run four model comprises the likelihood of 1) food security, 2) mild food insecurity, 3) moderate food insecurity, and 4) severe food insecurity. Moreover, we shall also run four models on the effect of increase in the cash transfer on food insecurity and degree of food insecurity (mild, moderate, and severe).
The other variables related to the head of the household are gender, age, marital status, education, and employment status. The remaining control variables are household size, monthly household income, whether household is poor or not, and dependency ratio in the household, area, and province of residence. A detail description of the variable used in the analysis is given in table 2.

Table 2. Definition of the variables used in analysis

Variable	Description
FI	Status of food insecurity if Mild =3, Moderate = 2, and Severe level of food insecurity =1
BISP	It is a dummy variable coded 1 if the household received money from Benazir Income Support Program (BISP- a safety net program), 0 otherwise.
HHGENDER	It is a dummy variable, coded 1 if gender of the head of household is male, 0 otherwise.
HHAGE	It is the age of head of household and measure in number of years.
HHMRTS	If the household head is married coded 1, 0 otherwise.
HHEDUS	It is a dummy variable coded 1 if the household head is literate, 0 otherwise.
HHEMPS	It is a dummy variable coded 1 if the household head is employed, 0 otherwise.
HHSIZE	It is measure as the total number of person in the household.
INCOME	It is monthly household income.
POOR	It is a dummy variable coded 1 if the household is poor, 0 otherwise. By taking the poverty line as 1.9$ per day and considering the exchange rate 120PKR/USD in the time of survey (2018-2019). If households' per capita expenditure is less than 228PK/person/day, then the specific household is poor.
DEP	Dependency ratio is a ratio of total dependent person to household size. The total dependent person is measured as total number of person in household who are less than 15 and over 60 years old.
URBAN	It is a dummy variable coded 1 if the household is reside in urban area, 0 otherwise.
PUNJAB	If the household belongs to Punjab, then coded 1, otherwise 0.
SINDH	If the household belongs to Sindh, then coded 1, otherwise 0.
KPK	If the household belongs to KPK then coded 1, otherwise 0.
BISP-Amount	The amount of monthly receipt from Benazir Income Support program.

3. Data and descriptive analysis

3.1 Data source

The empirical analysis, the study used Pakistan Social and Living Standard Measurement (PSLM) 2018-2019 round. The data set is available at the website of the Pakistan Bureau of Statistics (PBS). The PSLM 2018-2019 round comprises a sample of 24,807 households.

3.2 Spatial distribution of food insecurity and expenditure

The spatial distribution in the map illustrating the food-insecure household across the administrative division of Pakistan is given in figure 2a. In the sample, almost 36 per cent of households reported a prevalence of food insecurity. However, only three admin-divisions are less than 15 per cent insecure households, while other admin-division have a higher level of food insecure households. The detailed assessment of food insecurity across the geographical distribution constitutes a powerful tool to help policymakers and program planners visualize which provinces or regions are most in need and, therefore, should be targeted for interventions aimed at guaranteeing the right to adequate food.
The greater disparities were observed in the expenditure per capita across the admin-divisions (see figure 2b). Although food insecurity concerns access to food, the spatial distribution of expenditure per capita depicts that admin-divisions with higher expenditure represent lower food insecure households. Notably, 8 out of 29 admin-division's per capita expenditures are lower than the monthly poverty threshold. Therefore, these admin-divisions should be targeted for policy intervention to uplift the living standard of dwellers.

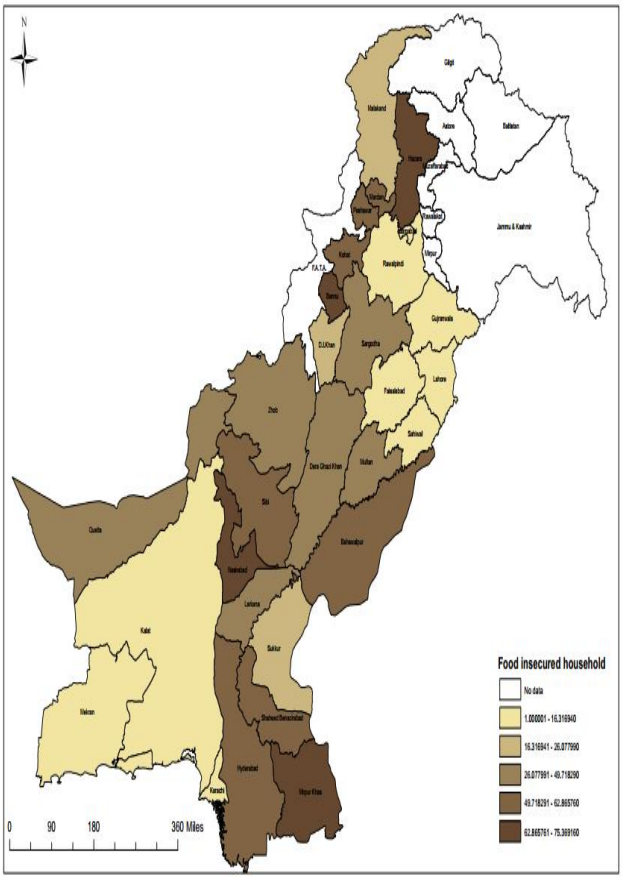

Figure 2a. Spatial pattern of food insecurity
Source: Authors' own estimation based on PSLM (2018-2019)

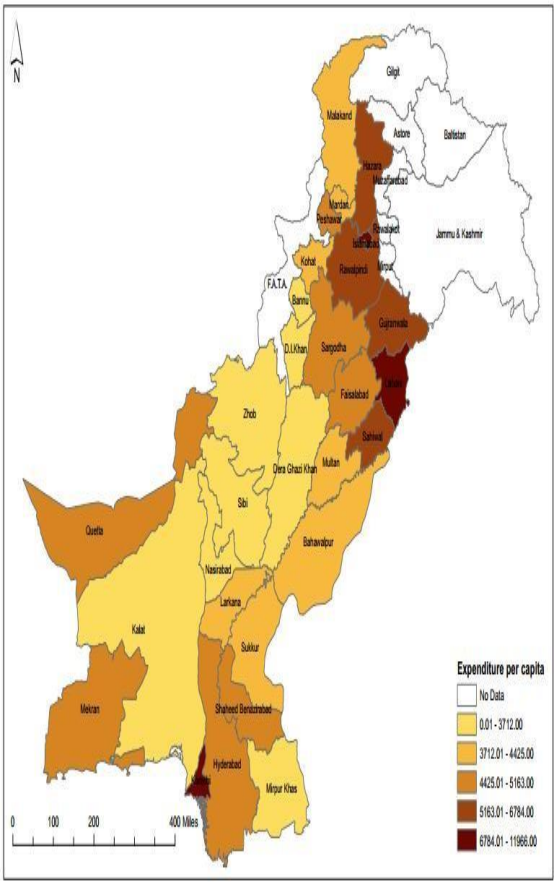

Figure 2b. Spatial pattern of Expenditure per capita
Source: Authors' own estimation based on PSLM (2018-2019)

3.3 Descriptive on Food Insecurity and UCT program in Pakistan

The estimates based on the nationally representative data of the PSLM 2018-2019 survey, comprising a sample of 24,807, suggest that 36 per cent of households are food insecure in Pakistan. Almost 17 per cent of households are mild or marginally food insecure, which is not subject to policy targets. However, moderate food insecure households are 12 per cent, and severe food insecure households are 7 per cent (see figure 3a). The severe or moderate were 26.6 per cent in the world and 22.7 per cent in Asia, while 19 per cent in Pakistan. Although severe or moderate food insecurity is relatively low in Pakistan, it is still higher than in other developing countries. After examining the food insecurity level in Pakistan, the food insecurity level in the BISP-recipient households will be examined.

Among Pakistan's different social safety net programs (SSNPs), the Benazir Income Support (BISP) - an unconditional cash transfer program (UCT) - is a comprehensive and extensive program aimed at alleviating poverty by empowering women. BISP is an unconditional cash transfer program that provides a stipend of 6000PKR quarterly to vulnerable families. The question arises of the level of food insecurity in the BISP-recipient households. The estimates of the PSLM survey suggest that almost 37 per cent BISP-recipients are food insecure, 23 per cent mildly, and 14 per cent severely food insecure (see figure 3a). It intimates that amongst BISP-recipients, the greater proportion of the households are food insecure.

In the sample, almost 80 per cent of non-poor households are food secured, while only 64 per cent of the households are food secured in the whole sample. In the analysis, the poverty line is defined based on the cost of basic need (CBN) approach, which was 3757.85PKR in 2019 (see economic survey of Pakistan, 2021-2022, page. 276). The greater proportion of food secure households in the non-poor sample, while the lower proportion in the poor indicates that poverty is a potential source of food insecurity. The absence of poverty increases the prevalence of food security by 14 percent. In the sample, almost one-third of the poor households are moderate or severe food insecure, which needs policy intervention because, in the sample, nearly 43.2 per cent of the households are poor (see figure 3b).

It is important to note that food insecurity is not limited to poor households but also affects non-poor households. For example, in the sample, almost 9 per cent of the non-poor households are severe or moderate food insecure. However, it implies that non-poor households are also subject to policy focus to uplift against the transitory or chronic income shock which causes food insecurity.

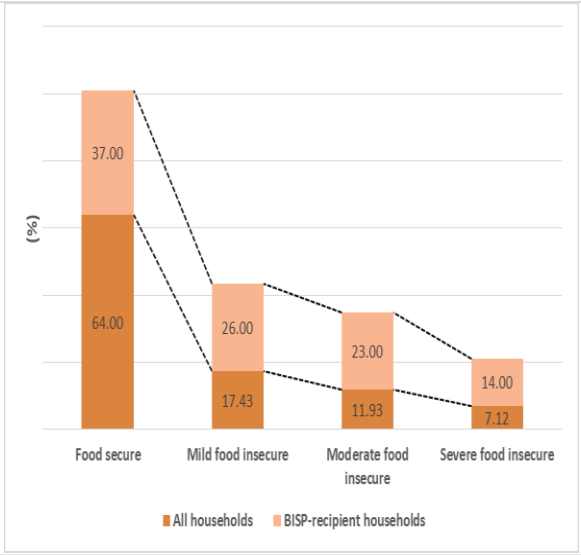

Figure 3a. Severity of food insecurity across the all households and BISP-recipient households
Source: Authors' own estimations based on PSLM (2018-2019)

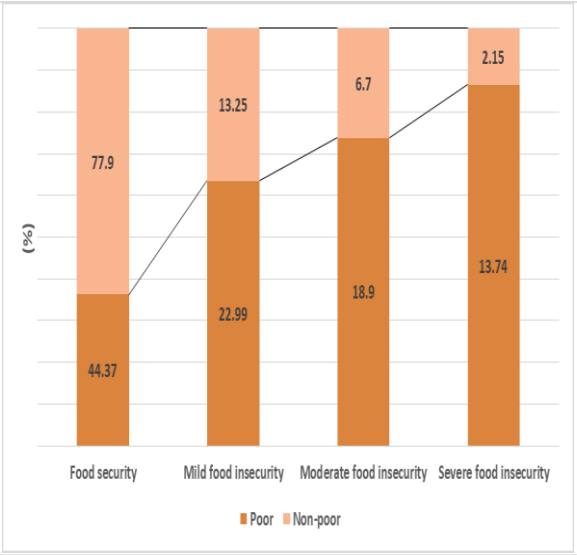

Figure 3b. Severity of food insecurity across the poor and non-poor households
Source: Authors' own estimations based on PSLM (2018-2019)

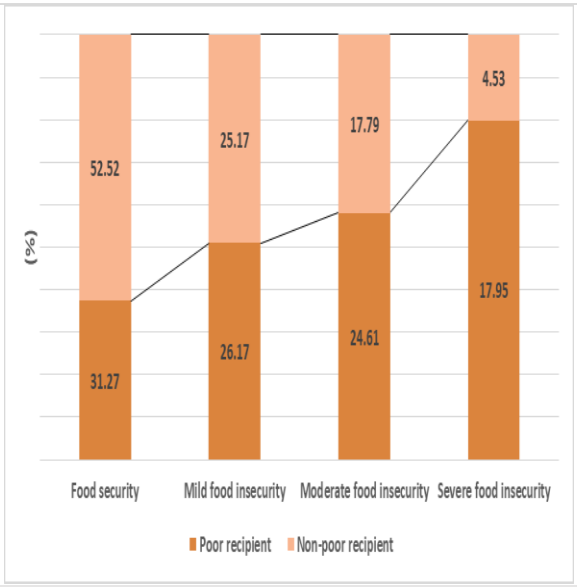

Figure 4a. Severity of food insecurity across poor and non-poor BISP-recipient households
Source: Authors' own estimations based on PSLM (2018-2019)

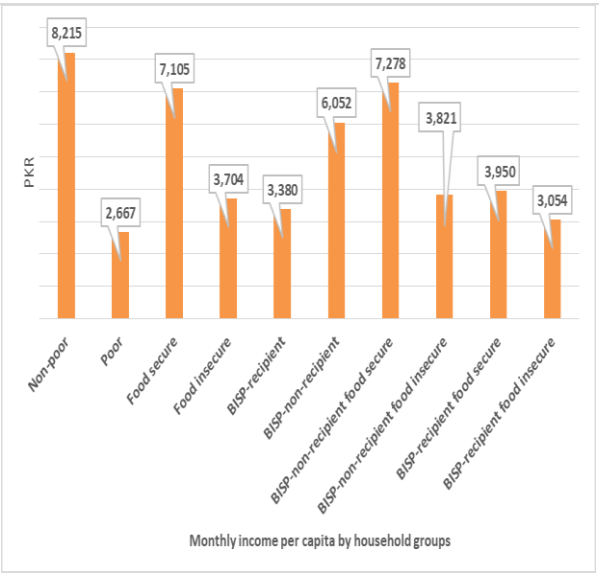

Figure 4b. Income per capita across household group
Source: Authors' own estimations based on PSLM (2018-2019)

Although BISP is a pro-poor SSN program, the non-poor household also reported receiving a stipend from the BISP program. The descriptive statistics suggest that 31 out of 100 poor recipients are food secure, while 52 out 100 non-poor recipient are food secure (see figure 4a). It is important to note that mild food insecurity is almost same in the poor recipient and non-poor recipient household. The potential source of mild food insecurity is the short term income shock and it may be homogenous in nature for the poor and non-poor household. However, the prevelance of moderate and severe food insecurity is higher in the poor recipient vis-à-vis non-poor recipient. 18 out of 100 poor recipients are severe food insecure while 4 out of 100 severe food insecure in the non-poor recipient household.

Regarding the income of the different household groups, the income per capita of the non-poor household is three-fold the income of the poor household (see figure 4b). The per capita income of food secured household is 7105PKR, which is almost two-fold the income of the food-insecure household. The average per capita income of the BISP recipient food secure household is almost 896PKR more than the BISP recipient food insecure household. It implies that adding 896PKR

per capita in the cash transfer to BISP recipient food insecure households can make the 63 per cent BISP recipient household food insecure to food secured given the identical endowment and characteristics across the household group.
The income differences in the food insecure and food secure household is higher than the income differences of the BISP-recipient food secure and BISP-recipient food insecure household. It implies that the food security of the BISP-recipient required less resource to make them food insecure than the other household groups. On the other hand, it required a lot of resources to uplift the income of the poor to make him non-poor. In a nutshell, to achieve the targets of 2nd SDG is more flexible than the 1st SDG target.

4. Regression Analysis

We presented the estimates of the binary logit model in the table 3. We run 4 model for the 4 categories of the food insecurity which are as follow. The column 1 is for food insecure, column 2 is for mild food insecure, column 3 is for moderate food insecure, and column 4 is for severe food insecure category. The marginal effects of logit model shows that BISP-recipient household is significantly 10% more likely to be food insecure than the non-recipient household. While in contrast, the results of the levels of food insecurity revealed that households were approximately 4.6%, 7.0% and 3.3% more likelihood of being mild, moderate, and severe food insecure when compare with the non-recipient household (see also figure 5).

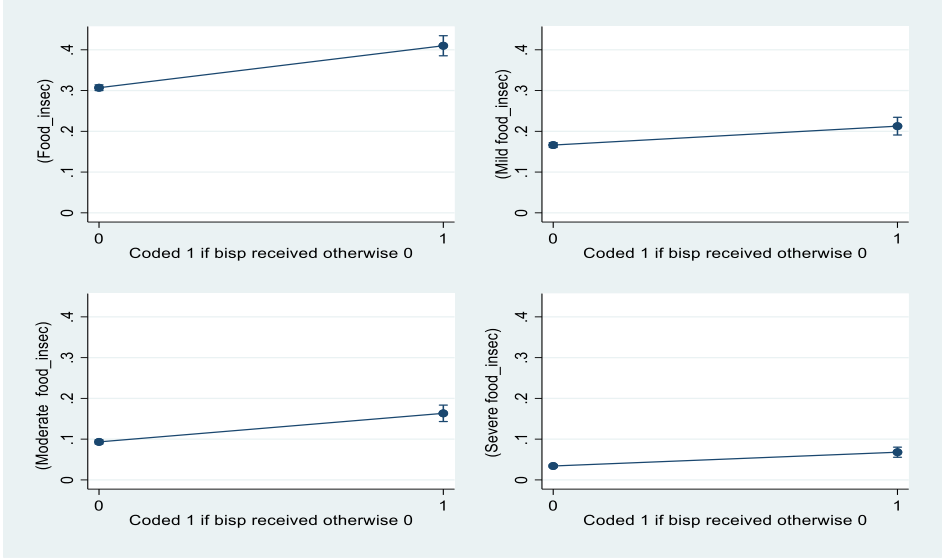

Figure 5. Marginal effect of remittance-receipt

The Benazir income support program primary is not the food aid program but also unconditional cash transfer program that empower the women and provide the monthly and quarterly income to those women who has been ever married. Overall, the BISP is just supportive unconditional cash transfer program, and it does not require the specific conditions to get the income like the conditional cash program. The federal Government in Pakistan run the BISP program and recipients of BISP mostly belong to the rural areas. According to the FAO's tool FIES-SM which consist of the eight questions and shows that people face the problem of food insecurity due to the shortage of food and financial resources in the last 12 months.
The share of cash transfer in the total household income also matter and also the share of food expenditure in the total household expenditure. The fact is that presence of multiple types of social safety nets in the household can change preferences toward future consumption than the present consumption. Moreover, the higher level of safety nets can also increase the household income which in turn lower the participation of labor and reduce the household income which is a source of food insecurity.
The findings of the study suggest that an increase in household head's age lower the likelihood of being food insecurity, mild, moderate and severely. The male headed household is more likelihood of severe, moderate, and mild food insecure than the household headed by female. Dependency ratio increase the likelihood of being severe food insecure, while this effect insignificant for the other type o food insecurity. If a household's head is married, than it has more likelihood of being food insecure and mild food insecure. The literate household's head is less likelihood of being food insecure. The likelihood of food insecurity is not different across the rural-urban household which implies that urban-rural disparities is not a source of food insecurity. A household from the developed province Punjab is less likelihood of being food insecure than the household from the less developed province Balochistan. The poor household is more likelihood of food insecure than the non-poor. It has 3.6%

more likelihood of mild food insecure, 4% more likelihood of moderate food insecure than the non-poor household. The coefficient of the household income suggest that likelihood of food insecurity is negatively associated with income. The effect of increase in income is more prominent in the mild and moderate food insecure household as compare to severe food insecure household.

Table 3 Binary logit regression for BISP receipt

Variables	Food insecure	Mild food insecure	Moderate food insecure	Severe food insecure
	dy/dx	dy/dx	dy/dx	dy/dx
BISP (1= if received)	0.1029***	0.0464***	0.0700***	0.0338***
	(0.01243)	(0.0107)	(0.0094)	(0.0055)
HHAGE	-0.0010***	-0.00033*	-0.0005***	-0.0003***
	(0.00025)	(0.0002)	(0.00015)	(0.0000)
HHGENDER (1= male)	0.1065***	0.0691***	0.03488***	0.0185***
	(0.01513)	(0.0111)	(0.00788)	(0.00322)
HHSIZE	0.0222***	0.0075***	0.0063***	0.0073***
	(0.0022)	(0.0017)	(0.0013)	(0.0007)
DEP	0.00246	-0.0014	0.0021	0.0033***
	(0.00258)	(0.0020)	(0.0015)	(0.0008)
HHMRTS(1= married)	0.0180*	0.0131	0.0140**	0.0028
	(0.0106)	(0.0084)	(0.0060)	(0.0031)
HHEDUS (1= literate)	-0.0973***	-0.0569***	-0.0359***	-0.0253***
	(0.0073)	(0.0063)	(0.0047)	(0.0028)
URBAN (=1)	-0.00164	0.00286	-0.0077	-0.00015
	(0.0076)	(0.0061)	(0.0046)	(0.0025)
KPK (=1)	0.2781***	0.2231***	0.1754***	0.0102**
	(0.0144)	(0.0153)	(0.0161)	(0.0049)
PUNJAB (=1)	-.0402***	-0.0608***	0.0091	0.0035
	(0.0118)	(0.0097)	(0.0077)	(0.0032)
SINDH (=1)	0.1096***	0.0742***	0.0903***	0.0063
	(0.0134)	(0.0118)	(0.0115)	(0.0039)
Ln(Monthly income)	-0.3509***	-0.1606***	-0.1412***	-0.0921***
	(0.0103)	(0.0079)	(0.0059)	(0.0039)
POOR(=1)	0.0467***	0.0361***	0.0404***	0.0021
	(0.0101)	(0.0083)	(0.0064)	(0.0035)
Observations	24,129	19,490	18,165	17,008
Log likelihood	-12763.283	-8670.0119	-6373.9081	-3999.6714
LR chi2(13)	6113.30	2963.94	3107.47	3116.57
Pseudo R2	0.1932	0.1460	0.1960	0.2804

* Significant at 10%; ** significant at 5%; *** significant at 1%) *** p<0.01, ** p<0.05, * p<0.10 Note: the figures in parenthesis are indicate Standard errors. Source; own computation based on PSLM survey (2018-19) data.

We presented the estimates of the binary logit model for recipient household in the table 4. We run 4 model for the 4 categories of the food insecurity which are as follow. The column 1 is for food insecure, column 2 is for mild food insecure, column 3 is for moderate food insecure, and column 4 is for severe food insecure category. The marginal effects of logit model shows that an increase in amount of BISP decrease the likelihood of food insecurity by 5.5%. However, an increase in the amount of BISP decrease the likelihood of mild food insecurity by 13%. The effect of increase in amount of BISP in insignificant on the likelihood of moderate and severe food insecurity. The likelihood of food insecurity, severe, moderate, and mild over the different amount of cash transfer presented in the figure 6.

The findings suggest that an increment in unconditional cash transfer can help in the transition of household from mild insecurity to food security. It implies that increment in cash transfer increase the purchasing power of the household and may also create economic opportunities to raise the level of living at marginalized household. On the other hand, for the severe and moderate food insecure household, the increment in cash transfer is unable to

reduce their food insecurity. It implies that purchasing power of the severe food insecure household is extremely low and increment will be unable to uplift them from food insecurity due to presence of multiple types of deprivations. Therefore, any measure related to increase the economic opportunities in the form of loan to create entrepreneurial activities can help them to come out of food insecurity.

In the BISP-receiving household, the age of household's head does not affect the likelihood of food insecurity. The male headed household is more likelihood of being food insecure in the remittance-receiving households. The increase in household size is associated with increase in likelihood of severe food insecurity. Similarly, an increase in dependency ratio is also associated with increase in likelihood of severe food insecurity. The marital status of the household's head does not affect the likelihood of food insecurity. We did not observed any effect of urban-rural disparities on the household food insecurity. The coefficient of the household income suggest that likelihood of food insecurity is negatively associated with income. The effect of increase in income is more prominent in the severe food insecure household as compare to mild and moderate food insecure household.

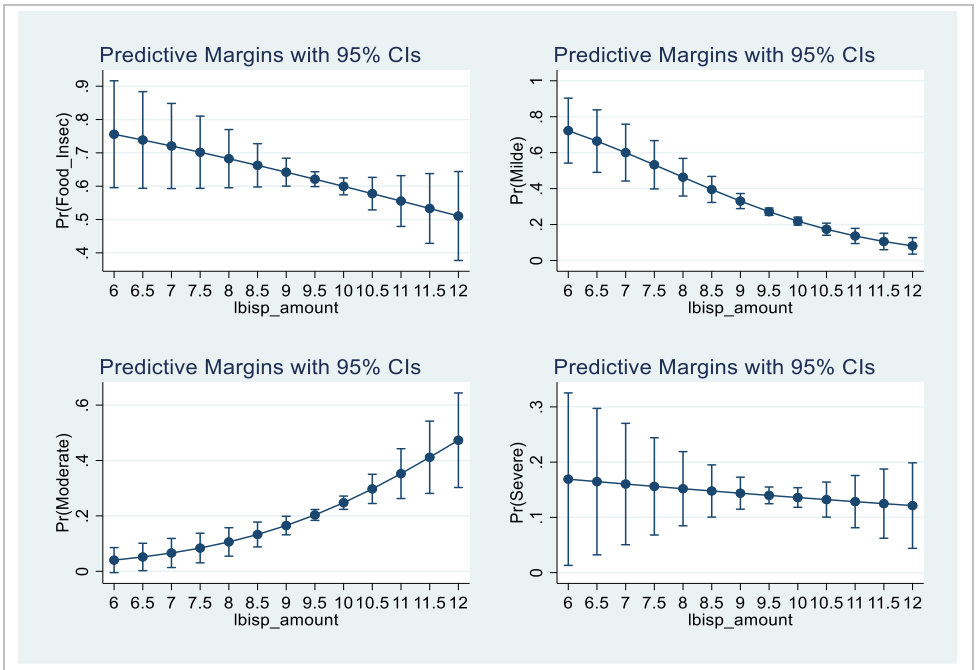

Figure 6. Marginal effect of amount of remittances

5. Conclusion

This study has analysed the social safety net program and the prevalence of food insecurity in Pakistan. The study's primary findings from descriptive analysis are that food insecurity's prevalence and severity varies across poor or non-poor household status, and BISP-recipient or non-recipient households. It is obvious that per capita income is a major determinant of the prevalence of food insecurity in the household. The per capita income shows greater disparities across the poor and non-poor households, food secure and insecure households, and BISP-recipient & non-recipient households. The descriptive analysis suggest that the income differences in the food insecure and food secure household is higher than the income differences of the BISP-recipient food secure and BISP-recipient food insecure household. It implies that the food security of the BISP-recipient required less resource to make them food insecure than the other household groups. On the other hand, it required a lot of resources to uplift the income of the poor to make him non-poor. In a nutshell, to achieve the targets of 2nd SDG is more flexible than the 1st SDG target.

The findings of the study suggest safety net receiving household is more likelihood of being food insecure, mild, moderate, and severe food insecurity. It implies that current level of purchasing power in BISP-receiving household is relatively lower than the non-receiving. The lower purchasing power is due to lack of resources and entrepreneurial activities which need to be undertake in designing the safety net policy. The BISP is an unconditional cash transfer program which is not aimed to reduce the food insecurity. However, a policy drafting is required with an aim to target the food insecurity.

Regarding the effect of increase in the amount of cash transfer suggest that an increase in cash transfer just reduce the likelihood of food insecurity just for the mild food insecure household. It implies that if government want to reduce the food insecurity then she may target the mild food insecure household by increasing the amount of cash transfer. BISP is an unconditional cash transfer program that gives liberty regarding spending. However, a conditional cash transfer program is required to implement access to food effectively. A successful example of

conditional cash transfer is the model of Latin America to track the reduction in poverty and food insecurity for MDGs.

Table 4 Binary logit regression for BISP-amount

Variables	Food Insecurity	Mild food insecurity	Moderate food insecurity	Severe food insecurity
	dy/dx	dy/dx	dy/dx	dy/dx
Ln(BISP Amount)	-0.05488*	-0.1283***	0.0581	-.01040
	(0.03104)	(0.03843)	(0.0449)	(0.0373)
HHAGE	-0.00008	0.0006	-0.00027	-0.00088
	(0.00089)	(0.0011)	(0.0011)	(0.001)
GGGENDER (1= male)	0.22220**	0.2132**	0.1425	0.1589***
	(0.09165)	(0.0738)	(0.0818)	(0.0352)
HHSIZE	-0.00027	-0.0105	-0.0082	0.0161**
	(0.00696)	(0.0091)	(0.0092)	(0.0075)
DEP	-0.00690	-0.0059	0.01079	0.0215**
	(0.00788)	(0.01018)	(0.0104)	(0.0094)
HHMERTS (1= Married)	-.01650	-0.0092	0.0865	-0.0430
	(0.04112)	(0.0509)	(0.0491)	(0.0504)
HHEDUS (1= literate)	-0.0547**	-0.0942***	-0.0026	-0.05978**
	(0.0241)	(0.2989)	(0.0308)	(0.02703)
URBAN (=1)	-0.00866	0.0300	-0.0229	0.01321
	(0.02857)	(0.0366)	(0.0384)	(0.0374)
KPK (=1)	-0.21654***	0.2117*	-0.2930***	-0.2857***
	(0.06221)	(0.1158)	(0.0554)	(0.03776)
PUNJAB (=1)	-0.32072***	0.0107	-0.3345***	-0.1896***
	(0.06378)	(0.121)	(0.0423)	(0.0367)
SINDH (=1)	-0.25810***	0.11646	-0.3221***	-0.2663***
	(0.05887)	(0.1171)	(0.0595)	(0.04749)
Ln(Monthly income)	-0.35169***	-0.2239***	-0.3132***	-0.4034***
	(0.03965)	(0.0495)	(0.0508)	(0.0441)
POOR(=1)	-0.01119	0.04823	0.06011	-0.0022
	(0.03935)	(0.0477)	(0.0496)	(0.0056)
Observations	2,128	1,343	1,275	1,094
LR chi2(13)	241.49	145.36	174.10	288.56
Pseudo R2	0.0829	0.0799	0.1029	0.2238

* Significant at 10%; ** significant at 5%; *** significant at 1%) *** p<0.01, ** p<0.05, * p<0.10 Note: the figures in parenthesis are indicate Standard errors Source; own computation based on PSLM survey (2018-19) data.

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