

THE POLITICAL ECONOMY OF WHEAT SUBSIDY AND FOOD SECURITY IN GILGIT-BALTISTAN

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ABSTRACT

Wheat subsidy has played a pivotal role in ensuring food security in the mountainous region of Gilgit-Baltistan (GB), Pakistan. However, despite receiving 1.6 million subsidized wheat bags annually from the federal government, GB continues to grapple with alarming rates of food insecurity and malnutrition. This raises critical questions about the efficiency and impact of the decades-old universal wheat subsidy program. Through a mixed-methods approach involving a household survey, focus group discussions, and key informant interviews, this study analyzes the wheat subsidy program's structure, implementation, and impact on the food security status of smallholding farmer households in GB. Preliminary analysis indicates that the uniform subsidy policy is inadequate in targeting vulnerabilities. The qualitative insights provide on-ground challenges around timely acquisition, quality, and quantity of the subsidized wheat allocations. The opaque public distribution system is conducive to pilferage, rent-seeking, and elite capture, resulting in inequities that undermine policy objectives. Considering the changing socioeconomic dynamics, a strong case emerges to re-examine traditional models of food security provisioning in remote mountain areas like GB. Policy recommendations include exploring alternative local production strategies and more inclusive and transparent targeting mechanisms for subsidized food delivery focusing on nutritional outcomes. This has far-reaching implications for sustainable food system transitions and resilience building of isolated mountain communities in the face of growing climate risks.

PREFACE

The mountainous region of Gilgit-Baltistan (GB) in northern Pakistan presents a unique case study for analyzing the effectiveness of a highly subsidized food support policy in ensuring long-term food and nutrition security in remote, isolated communities. Since the 1970s, the Government of Pakistan has provided 1.6 million wheat bags annually to GB at nearly one-fifth the national market price. This universal subsidy program was intended as a social safety net responding to the marginal agro-climatic and economic conditions of the area.

However, despite over four decades of discounted wheat allocations, GB continues to report alarming levels of food insecurity and malnutrition. This underscores the need to rigorously re-examine the structure, implementation, targeting, and impacts of the wheat subsidy policy amidst the region's changing socioeconomic dynamics. Tackling this complex sustainable development challenge requires adopting an interdisciplinary political economy lens encompassing dimensions of agriculture, food systems, climate resilience, livelihoods, and public policy.

This research thereby aims to open up a systematic investigation into the wheat subsidy program in GB by gathering empirical field data on reigning ground realities around subsidized food acquisition, availability, and access. The study analyzes beneficiary perspectives to reveal on-ground effectiveness alongside the influence of vested interests, rent-seeking behaviors, and elite capture that often plague the policy delivery process. Practical policy recommendations are proposed to realign subsidized wheat mechanisms with the evolving needs and vulnerabilities of mountain communities.

The insights generated can influence regional food system governance and provide learnings for the design and implementation of large-scale subsidized food security schemes in similarly marginalized mountain settings globally. By highlighting pathways linking economic policies with agriculture, climate risks, and nutritional outcomes, this research illustrates an integrated social-ecological approach to building equitable and resilient food systems worldwide.

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INTRODUCTION

1.1 Background

Food security is a global imperative, a basic human right (Hariyadi, 2009; Azwardi et al., 2016), and a vital indicator of a nation's socio-economic development. Providing sufficient, economical, healthful, and safe food for the expanding global population presents a formidable challenge for human society (Manikas et al., 2023). This challenge is compounded when governments are tasked with guaranteeing food security without contributing to climate change, impairing water and land resources, or diminishing biodiversity (Abu & Oldewage-Theron, 2019). Achieving food security and ending hunger has remained the core objective of the Sustainable Development Goals (SDGs) agenda and is also crucial for achieving other goals such as no poverty, good health and well-being, responsible consumption and production, clean water and sanitation, and climate action (Saccone & Vallino, 2022). In regions marked by geographical isolation and environmental challenges, such as mountain communities, achieving food security is an intricate puzzle. The dynamics of food security in these areas are quite different than those in the plain areas (Rasul & Hussain, 2015) as these areas are not suitable for conventional green revolution agricultural practices. Mountain environments face unique agricultural difficulties stemming from factors like extreme slopes, soil erosion risks, water scarcity threats, increasing weather extremes, seasonal production variability, and frequent natural disasters such as landslides and floods (Uprety et al., 2019; Karpouzoglou et al., 2020). Therefore, food self-sufficiency has been a significant problem in mountain regions, and they rely on plain areas to meet their food requirement.

The food security status in Gilgit Baltistan is quite similar to that of other mountain regions in the developing world. Specifically, the high altitude, temperature extremes, frequent natural disasters like floods and landslides, poor road connectivity, and limited arable land make farming and transporting food difficult in the region (Tuladhar et al., 2023). This results in low agricultural productivity, food scarcity during winter, and malnutrition. Owing to these marginal socioeconomic conditions and food vulnerability, the Federal Government of Pakistan implemented a highly subsidized rationing program to ensure per capita availability of wheat at a lower price, keeping the argument that rationing the commodity is a more effective way of distributing the scarce commodity in areas where the income distribution is relatively uniform (Weitzman, 1977) to ensure food security. The federal government subsidizes 1.6 million bags of wheat for 7–8 billion PKR per year, making wheat available at 6-7 times less than the national average per KG. Though the prime objective of the wheat subsidy is to secure the vulnerable regarding food and livelihood, the subsidy has also remained a source of legitimacy for the federal government, considering the constitutional limbo of the region. The political sensitivity of wheat subsidy in Gilgit Baltistan remains undeniable. The area has experienced large protests and sit-ins in the face of subsidy cuts from the federal government (Nagri, 2014; Rasul & Hussain, 2015), escalating the situation to discussion on the political legitimacy of the country in administering Gilgit Baltistan. Subsidy cuts trigger political unrest in regions with limited constitutional rights and civil liberties (Singerman, 1995; Gutner, 1999).

1.2 The Dynamics of Wheat Subsidy in Gilgit Baltistan and Food Security

Despite the highly subsidized wheat program, the statistical evidence paints a vivid picture of the food challenges (Hussain et al., 2022). More than half of the population in Gilgit Baltistan is food insecure (SDPI & WFP, 2009), against 37% of the national average (GOP, 2019). According to the National Nutrition Survey (NNS) 2018, the region grapples with alarming rates of malnutrition and stunting, with 46.6% of children affected by stunting, well above the national average of 40.2%. Wasting affects 9.4% of children, compared to the national average of 17.7%, and 21.3% of children under five are underweight, further highlighting the urgency of addressing food security (GOP, 2019). The prevalence of such statistics questions the nature, design, and implementation strategies associated with the food policy in general and the wheat subsidy program in particular. As there is no food policy other than subsidized wheat, we will discuss the issues about the wheat subsidy program as a food security policy. First, the problem lies in the implementation strategy and effectiveness of the wheat subsidy program as a social safety net. The universal wheat subsidy, irrespective of the socioeconomic profile of the households, is making the objective of the subsidy as a social safety net program inefficient -the accessibility and affordability dimension of food security. The program is not targeted at needy households as most of the households do not earn even a minimum wage, and they get the same subsidized amount as the rich. They cannot afford the unsubsidized flour as the rich, and the fixed wheat quantity is insufficient to meet their dietary needs. Moreover, the subsidy is also creating a threat to the country's escalating budget deficit. This questions the efficiency of the subsidy program in protecting the vulnerable and poor segment of the community and the country's macroeconomic stability in the long run. Secondly, land change issues in the plains of Pakistan have an alarming degradation trend due to soil and wind erosion, soil fertility loss, deforestation, water logging and salinity, and water shortages. The costs associated with these challenges are substantial. "The cost associated with loss of soil fertility alone is estimated to be Rs 70 billion per year in Pakistan" (GOP, 2014). Wheat-growing belts in the plains are transitioning to sugarcane belts due to large subsidy schemes in sugar production, processing, and export. Sugar is a parliamentary crop in Pakistan, and most parliamentarians are involved in sugarcane harvest and production. These factors result in declining wheat production in the country, making subsidized wheat available to GB in threat and food insecurity more visible in the future. Thirdly, wheat subsidies have changed people's dietary habits and raised the concern for food security. The import-driven nature of wheat is harming local production despite having land for wheat growing, as well as the availability and sustainability dimension of food security. Subsidies hurt local production. The subsidy has resulted in the decline of the local production and consumption of a variety of seeds and grains, such as buckwheat, barley, and Maize, which have been historically part of the diet of the local people in the Hindu Kush Himalayan region. Moreover, reliance on external wheat supplies can worsen food insecurity during price fluctuations or supply disruptions (Rasul & Hussain, 2015). Irrespective of their nutritional content and quality, they are being termed as food for the poor, and wheat and rice have become the routine diet. Though total calorie intake has increased due to changes in dietary habits, the nutritional status has deteriorated due to micronutrient deficiencies. This is depicted from the statistics provided by SDPI & WFP (2009), which indicate severe deficiencies of micronutrients among women of reproductive age: 96% deficiency of Vitamin D, 71% deficiency of Calcium, and Children below 5; 82% deficiency of Vitamin A, 70% deficiency of Iodine.

The loss of self-sufficiency in food has created several risks for the local community regarding market dependency and political and environmental concerns.

1.3 Distribution, Quality, and Price Control of Subsidized Wheat in Gilgit-Baltistan

The area of Gilgit Baltistan has a special status and has no job opportunities, industry, infrastructure, fund allocations, or other facilities that the rest of the country enjoys; therefore, the Government of Pakistan allocated 1.5 million metric tons of wheat quota on subsidized rates for the people of Gilgit-Baltistan to extend the benefit to the people (Zohri, 2022). The wheat is transported via M/S Northern Areas Transport Corporation (NATCO) carriage from Base Godown Islamabad to Gilgit-Baltistan and after that, it is supplied to Mills Owners for its grinding and converting it into flour. These Flour Mills provide the flour to consumers at different distribution Points via the dealership system. "The fixation of the price of flour and the minute examination transpires that the rate of 40 Kg bag of Flour is fixed at the rate of Rs. 620/ per 40 Kg Bag for the consumer, whereas the same is lifted by the Food Department from the Flour Mills at the rate of Rs. 548/- per Bag after that Rs. 18 per 40 Kg bag are added in the shape of transport charges and Rs. 23 per 40 Kg bag are further added on account of expenses incurred on salaries of employees including Salesmen and Supervisors. Then an amount of Rs. 11/ is added per 40 Kg bag on account of rent of shops taken on rent at Rs. 350/per shop per month" (SAC, 2013).

Initially, municipal committees/union councils/ members or public representatives distribute the subsidized wheat among the end users. After that, to cope with the general public demand for flour, the GB Food Department introduced the concept of wheat dealers distributing subsidized wheat in their respective localities. This dealership system has produced black marketing of subsidized wheat as they have supplied it to Tandoor Owners/hotel Owners, etc., at higher prices, and this process has continued up till now and is considered the leading cause of wheat shortage in the region. Along similar lines, most of the Flour Mill owners were also reportedly involved in black marketing by making fine Danedar flour, Maida and Sooji, etc. by using the subsidized wheat and by selling it to Tandoor owners and bakers at a higher price to make lucrative profits (SAC, 2013). Furthermore, these mill owners also produced chokers from the subsidized wheat smuggled to the country to make profits. This Dealer-Mill Owner nexus involved black marketing and produced low-quality flour for the general public.

The wisdom of providing subsidized wheat by the Government of Pakistan is to support the poor and marginalized mountainous people of Gilgit-Baltistan. It is not offered to benefit an individual or a group of individuals (Flour Dealers, Mill owners, Tandoor owners, etc.). Unfortunately, the current distribution mechanism of subsidized wheat has several flaws, due to which this advantage is not reaching the end users in its true letter and spirit, and blackmailers or mafias of the area are benefitting from it (SAC, 2013). Therefore, the core objective of this research is to identify the current pitfalls in the distribution policy of subsidized wheat and to devise a policy in consultation with the Government of Gilgit-Baltistan and other stakeholders to ensure the fair distribution of this privilege granted by the Federal Government of Pakistan keeping in the larger interest of the general public.

1.4 Scope and Significance of the Research

The scope of this research lies in the need for a more comprehensive economic analysis of the wheat subsidy program in terms of food security in Gilgit Baltistan, which focuses on consumers rather than

producers. Given the changing economic landscape of the region, reevaluating the subsidy program's efficiency in achieving food security goals becomes imperative. The economic profile of Gilgit Baltistan in the 1970s was, on average, uniform. Hence, the universal wheat subsidy program, a rationed, untargeted subsidy, had a strong base for its implementation. However, over the years, the population's economic profile and income distribution have substantially changed. Redesigning the policy and intervention can be formalized to achieve the aims and objectives that are economical to implement. This can be done by reallocating the wheat subsidy by using targeted subsidy programs and rationed subsidies based on the price and income level of the household, making the policy efficient in targeting the poor and vulnerable to achieve their food security. A targeted subsidy can raise the welfare of the vulnerable and lower the budget deficit (Swaminathan, 1998). Given a fixed budget, there can be a larger unit transfer if few people are included. It will increase the availability of wheat and its accessibility to the vulnerable household. Secondly, there are expected challenges to the sustainability of the wheat subsidy program due to its import-driven nature, opportunity cost, and production challenges in the plain areas. In agriculture, subsidy programs are provided to wheat producers, generally raising their productivity. Wheat imported to Gilgit Baltistan at a highly subsidized rate harms local subsistence production despite having land for wheat growing-availability and sustainability dimension of food security. The loss of self-sufficiency in food has created several risks for the local community in terms of market dependency, and political and environmental concerns (Cook & Butz, 2013). The recent interventions of IFAD in expanding arable land have increased the potential of agriculture and agriculture income in the region. GB has the potential for import substitution by incentivizing horticulture, dairy production, and food processing. This could enhance self-sufficiency and resilience (Rasul & Hussain, 2015). Moreover, If the amount of subsidized wheat is produced in GB it can maintain the availability, accessibility, and sustainability dimensions of food security as there is sufficient land for production compared to the population size. This can be done by redirecting subsidies towards research and development, providing sustainable agriculture solutions benefiting small farmers, and providing a more sustainable food supply in the future. As subsidies are rigorously used for environmental protection measures (Erickson et al., 2020), such initiatives can also help in fighting climate change and food insecurity with consideration of the quality of food production along with quantity enhancement (Chen et al., 2023) while designing food policies.

Moreover, the opacity of the public distribution system is eroding the purpose of subsidy because it fosters pilferage and rent-seeking. Due to the lack of clearly delineated quotas and poor compliance mechanisms laid out to intermediaries, a potential black market prevails, which is undermining the policy objectives of the wheat subsidy. This study will be the first to investigate and scale the black marketing associated with wheat subsidy, which will help the policy makers analyze it from a broader perspective.

1.5 Objectives

Keeping the above discussion in the background, this research aims to achieve the following objectives.

1. To comprehensively understand the wheat subsidy program's structure and implementation, including the subsidy's extent, distribution mechanisms, and target beneficiaries.
2. The impact of the wheat subsidy on the food security of the households in Gilgit Baltistan
3. To explore and scale the potential of black marketing associated with wheat subsidy.
4. Propose policy alternatives to redesign efficient policy for reallocation of the subsidy program economically to implementation.

LITERATURE REVIEW

2.1 Wheat Subsidy and Food Security

The issue of food security across the globe has remained the key concern among policy circles in recent decades. It encompasses the dimensions of food availability, access, and utilization (Rao & Casimir, 2003; Shetty, 2009). The World Food Summit on food security in 1996 defined it as: “It exists 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”.

Mountains cover 27% of the global earth's surface and are home to some 12% of the global population, about half of which live in the Asia Pacific region (FAO, 2015; Ullah et al., 2020). “Almost 245 million mountainous population living in the developing world are estimated to be vulnerable to food insecurity as a result of difficult conditions for agricultural production, social and political marginalization, low productivity, subsistence economies, the constraints of terrain and climate, poor infrastructure, limited access to markets, physical isolation, vulnerability to natural risks, and high cost of food production and transportation” (FAO, 2015; Rasul & Hussain, 2015; Spies, 2018). Food security and vulnerability in mountain communities are real, real-life issues due to erratic weather patterns, rugged terrains, low agricultural productivity, poverty, and environmental challenges (IPCC, 2014). The study of Pandey (2016) provides insight into some of the prominent factors attributed to the worsening of food security situations in mountain communities in the Trans-Himalayan belt of Nepal. These include short growing seasons, small land sizes, decreasing livestock holdings, and high transport costs for imported foods. The findings document that 50% of households are food insecure, with occasional (42%) or moderate (8%) deficiencies. This was an improvement from higher levels of deficiency 10 years prior, and such improvements were attributed to improved access to purchasing food from markets. Such findings demonstrate the severe challenges to attaining food security in remote, marginalized, mountainous regions with geophysical and climatic constraints on local agriculture. While Pandey (2016) focuses on geophysical and climatic limitations, others delve deeper into socio-economic factors like poverty, environmental degradation, climate change, and inadequate policy support. Both studies emphasize the unique vulnerability of mountain agriculture and food systems. Over 30% of the population suffers from food insecurity, and 50% have some form of malnutrition. Such results call for firm strategies to address food security and require integrated approaches encompassing production, income enhancement for purchased food access, resilient local food systems, environmental management, and infrastructure improvements tailored to distinct mountain zones based on agricultural potential and market access.

In recent years, the increased events of climate hazards such as floods, water scarcity, and droughts have further compounded the issue and are projected to raise more concerns. The subsistent farming historically practiced by these communities has been strongly challenged by environmental degradation and climate change and making these communities resilient is a global issue. Recent assessments show that the mountain communities in the Hindu Kush Himalaya have experienced approximately 40% decrease in their agricultural yield due to environmental and climatic hazards (ICIMOD). Poverty is evident from the nutritional statistics as 31% of the mountain communities in HKH live below the poverty line (Hunzai et al., 2011). The rate of malnutrition and stunting in remote

mountain areas is highly prevalent despite declining global trends. This limits their capacity for production and food acquisition.

The nature of Food and livelihood security in mountainous regions is quite different than what is in Plains (Ullah et al., 2020) because socioeconomic and environmental conditions in mountain areas are changing rapidly, which in turn has triggered the issue of food security in the Hindu Kush-Himalayan (HKH) region (Tiwari, 2000). The problem of food insecurity in the mountains of Pakistan is considerably more complex than the plain (Spies, 2018), as these areas are unsuitable for conventional green revolution agriculture practices. Mostly, in the Hindu Kush-Himalayan (HKH) region of Pakistan, the potential of niche products like "fruit, nuts, and livestock" along with the opportunities produced by globalization, has not been explored yet (Rasul et al., 2014; Hussain et al., 2022). Mountain areas are attributed to their suitability for producing nutritionally rich crops such as buckwheat, barley, beans, millet, etc. The production and consumption of these Neglected and Underutilized Food Crops (NUFCs) in mountain areas is attributed to factors such as agricultural intensification, changing food habits, and lack of policy support. This decline in NUFCs contributes to the prevalence of malnutrition in these regions as the balance of the food consumption basket is altered due to negligence to the production and, subsequently, consumption of these nutritional-rich crops. This is evident as half of the mountain's dietary energy supply is met through wheat, maize, and rice, which are not produced in these regions and are imported from the plain areas (Adhikari et al., 2017). Due to negligence and lack of mainstreaming in food policymaking, these crops have undergone consistent down-gradation and have disappeared from the local food basket.

In recent times, due to some socioeconomic factors and climate change, the natural resource base has been declining in mountainous areas particularly in the "Hindu-Kush Himalayan (HKH)" region (Ahmad et al., 2022) due to which an unbearable loss of natural resources, ecosystem services, in terms of "soil nutrients, water, and biomass" which in return has badly affected crop productivity and triggered food security issue and increased vulnerability of mountain community (Tiwari & Joshi, 2012). Now, the people living in this region heavily depend on the outside to meet their food requirements (Ahmad et al., 2022). The deterioration of the local food system has also contributed substantially to the food and nutritional security of mountain communities in northern Pakistan (Adhikari et al., 2017). The decline in subsistence agriculture and NUFCs has serious implications for climate change adaptation and mitigation strategies.

In Pakistan, approximately 61% of the geographical area is covered by mountains (GOP, 2018), and it accommodates about 50 million people, almost 24% of the country's total population (GOP, 2017). "Rangeland, conifer forest cover, and area under ice and snow- wasteland are the main features of the landscape of the Gilgit-Baltistan and Chitral (GBC) region and collectively cover 6.687 million hectares, 8.4% of the total geographical area of the country" (Hussain et al., 2022). Mostly, livelihoods and food security in mountainous regions depend heavily on local resources, including subsistence agriculture and livestock. In some areas, few people were also engaged in horticultural activities (Spies, 2018). The livelihood activities in Pakistan's mountains heavily depend on "subsistence agriculture, livestock, common pasture and rangeland, forest, and some non-farm activities". They are quite similar to other mountainous regions of the world (Hussain et al., 2022). Average land holdings, the size of cultivable land, and per acre yield from crop production are limited and insufficient to meet the food requirements of poor mountain communities (Ullah et al., 2020).

Livestock, being the largest source of household income, is the main source of livelihood and food security in mountainous areas of Northern Pakistan. However, livestock products in most parts of GB are mainly used to meet subsistence requirements. However, a few households in some localities also sell them into the market to earn cash income as a source of livelihood (Ahmad et al., 2012). Along with agricultural and livestock sources, income generated from non-agricultural sources like “small businesses, services, remittances, non-farm wages, forests, and social safety nets” also play an important role in achieving mountain food security (Israr & Khan, 2010).

Historically, wheat subsidies have played a pivotal role in ensuring food security in Gilgit Baltistan, aligning with the vulnerable socio-economic conditions of the region. Wheat has remained the major cereal of the local diet. Owing to its mountainous terrain, the region has limited arable land, low crop productivity, food deficits, and high reliance on wheat imports. Due to local cereal and pulse deficits, subsidized wheat is supplied in GB regions by the government of Pakistan, which is procured from plain areas of the country (Hussain et al., 2022).

Subsidy cuts also trigger political unrest in regions with limited constitutional rights and civil liberties (Singerman, 1995; Gutner, 1999). The withdrawal of the wheat subsidy in GB in 2014 and the resulting protests and sit-ins demanding constitutional status highlight the population’s dependence on subsidized wheat from Pakistan’s plains to meet food needs. This dependence also leaves them vulnerable to disruptions in external food supply, especially given frequent natural disasters and climate-induced hazards (Rasul & Hussain, 2015). While political unrest amidst the subsidy cuts signifies the importance of the wheat subsidy program in the region, the article does not evaluate whether the decades-long monthly ration program has effectively enhanced food security in GB. Key questions remain, including what proportion of households qualify for rations, whether the allotted wheat meets per capita caloric needs, how market fluctuations affect reliance on rations, and whether alternative nutrition programs may better serve remote mountain villages. The socioeconomic dynamics of the region in the 21st century have significantly transformed. The uniformity of income distribution at the time of the introduction of wheat subsidy in the early seventies has significantly altered. The exposure of the region to other areas of Pakistan and the global world such as China has significantly contributed to the emergence of new development opportunities and diverse livelihood options (Dame & Nüsser, 2011) in the region contributing to significant variations in the income distribution and local food system (Sökefeld, 2005; Spies, 2018). According to Spies (2018), traditional rural communities with high agroecological potential have enhanced their productivity regarding diverse farming options. However, low agroecological potential communities have shifted from subsistence agriculture to off-farm opportunities such as tourism and handicrafts (Tuladhar et al., 2023). Similarly, Remittances from abroad or down the country, small and micro enterprises, wage labour, mountain tourism, and collection of medicinal plants along with some other herbs are other livelihood and food security sources in such regions (Rasul & Hussain, 2015). Though the potential of off-farm opportunities is not fully explored, there is a need for national policies to be constituted to explore the potential and increase the purchasing power of the community to access food and develop a resilient local food system. Thus, a large part of off-farm income is directed toward addressing the food security issues in the region (Spies, 2018). The withdrawal of subsidies at any point might only cause a food crisis among the vulnerable income groups with no other non-farm income sources. Though these findings provide a pessimistic view of

the sustainability of the local food system to ensure food security, the study area and sampling are limited to one district of Gilgit Baltistan. The region has ten districts with a diversified landscape and land use patterns, so building a general argument on one locality might be misleading. Consequently, more exploration and investigation are required to expand the sampling and methodology. The dynamics of human development have also changed due to improved infrastructure (Hussain et al., 2022), education, and health facilities. Gilgit Baltistan has a recorded literacy rate in Pakistan, superseding all four provinces and AJK.

Though pivotal in the food security essence, food subsidies, especially those focused on staple grains like wheat, can pose threats to traditional subsistence agriculture in mountain areas. Subsidies that provide cheap, imported grains can create a dependence on these foods rather than local crops. This causes a decline in subsistence production of nutritious native grains and crops adapted to mountain conditions. The over-emphasis on subsidized food supply from plain areas in food and nutrition policies and programs has resulted in the distortion of the local subsistence agriculture system despite their high value, rich nutrient composition, and pivotal role in achieving food security of the mountain communities (Adhikari et al., 2017). The influx of cheap, subsidized grains can distort local cereal markets, depressing prices and incentives for mountain farmers to grow subsistence crops. This exacerbates the abandonment of marginal, terraced mountain fields. Moreover, the cheap uniform grains lack the micronutrients of traditional mountain crops like millets, buckwheat, barley, etc. Focusing subsidies exclusively on wheat/rice leads to a loss of crop diversity that supports nutritional security. The study documented a high prevalence of malnutrition in the mountain communities of Pakistan and Nepal, resulting in the decline in the production and utilization of the Neglected and Under-Utilized Food Crops (NUFCs) - millets, buckwheat, barley, beans, etc.- that are prominent in the mountain communities.

Food Security issues and its specifics in the remote mountainous areas have always been given limited importance in national and international development agendas (Dame & Nüsser, 2011). “At the same time, local food systems have undergone significant transitions over the past two decades (Spies, 2018). Whereas subsistence agriculture still forms the economic mainstay in these regions, current dynamics are generally characterized by livelihood diversification with increased off-farm income opportunities and an expansion of external development interventions” (Dame and Nüsser 2011).

Drawing on these insights, examining the specific role of wheat subsidy in Gilgit Baltistan is crucial. Moreover, it is crucial to investigate whether the wheat subsidy to consumers mitigates food insecurity by making wheat affordable or if it potentially contributes to subsistence agriculture's decline, further jeopardizing food security in the long run.

2.2 Opportunity Cost of Wheat Subsidy

The Government of Pakistan aims to ensure food security in Gilgit-Baltistan through a high subsidy on imported wheat. The federal government subsidizes 1.6 million bags of wheat for 7–8 billion PKR annually, making wheat available 6-7 times less than the national average per KG. The absence of an analysis of wheat subsidy's developmental and distributional aspects in GB is notable despite the abundant literature on this subject.

The basic objective of food subsidy programs is to ensure food security and poverty alleviation, owing to the greater proportion of income spent on food by the economically marginalized group. These safety net programs are short-run policy instruments having long-term consequences on fiscal conditions and the development of the economy. Despite its extensive use, policy analysts are not in agreement regarding the efficacy of food subsidy programs. The main criticism outlined in the literature revolves around economic inefficiency, high fiscal burden, and welfare loss.

Ender et al. (1992) presented one of the earliest studies concerning Pakistan in this area of study. A time series analysis of household income and expenditure surveys (HIES) shows that despite a decrease in the real price of wheat resulting from subsidies and other factors, there was no notable increase in per capita wheat consumption across all income levels. Thus, the cost of such intervention was deemed to be excessively high. Ashfaq et al. (2001) present concrete evidence of this societal cost. Simulation experiments using econometric models reveal the welfare loss incurred due to extensive government involvement in wheat pricing policy to be 14 billion rupees per annum from 1973 to 1996. Moreover, producers lose an average of \$25 billion annually, the government incurs a cost of \$6 billion, and consumers benefit by \$17 billion annually.

The cost-ineffectiveness and inefficiency of consumer subsidies are also being questioned in other developing countries. In one of IFPRI's studies, Calegar & Schuh (1988) and Silva & Grennes (1999) express reservations regarding the wheat subsidy of Brazil and argue that it significantly burdens society. In addition to welfare considerations, Calegar & Schuh (1988) underscore the impact of wheat subsidies on income distribution. The total estimated social cost of consumer subsidies during the entire period, using standard partial equilibrium and comparative static analysis, was Cr84 billion, of which only 19% is utilized by the impoverished population. This situation mirrors the case in Egypt, where poor households receive merely a third of the total value of food subsidies since 75% of the households in the subsidy system are not poor Breisinger et al. (2021).

Hence, the regressive nature of the food subsidy programs makes them extremely costly and incurs high opportunity costs. López & Galinato (2007) provide empirical evidence suggesting that underinvestment in public goods due to prioritizing subsidies on private goods has huge implications for economic development. Instead, directing resources from these subsidies (private goods) to the provision of public goods results in an increment in the per capita income of the rural population and contributes majorly to poverty reduction. This paper provides empirical evidence using GMM estimation, data is obtained from the rural sector in fifteen Latin American countries from 1985–to 2001.

The above result aligns with the findings of Fan et al. (2008) wherein a multi-equation system is applied to estimate the impact of government investments and subsidies on agricultural growth and poverty reduction. The evidence suggests that resource allocation towards agricultural R&D, education, and infrastructure has a far greater impact on long-term growth and poverty reduction in contrast to investments in private subsidies. However, proponents contend that the exit from these programs is not easy in the presence of their intricate political economy, as witnessed in many developing countries Gutner (1999). Instead of eliminating subsidies, enhancing their effectiveness by reforming the system and targeting the beneficiaries directly would be advantageous. Breisinger et al. (2021) explore the growth and distributional impact of food policy reforms in Egypt using a

computable general equilibrium (CGE) model. Three scenarios are under examination concerning the food subsidy called Tamweem, including reforms, targeted reforms, and complete reforms. The result displays that better targeting of food subsidies improves outcomes for poor households; however, eliminating subsidies without any compensation transfers would exacerbate poverty and inequality in Egypt. Tunisia also exhibits an impressive example of subsidy reforms wherein the universal food subsidies are replaced by targeted subsidies, which resulted in halving the cost of the program (Tuck & Lindert, 1996).

Hence, the success and efficacy of food subsidies can be strengthened through reforms that directly target needy beneficiaries. With improvement in targeting, the basic objective of food subsidy programs can be achieved with little budgetary exposure. However, to design future reforms, it is imperative to understand the distributional aspect of the subsidy program and the probable consequences that changes in the existing policies will have.

2.3 Black Marketing and Wheat Subsidy

The subsidies across various countries are distributed through either public distribution systems or private entities. Ascertaining these practices, The Government of Gilgit Baltistan has distributed subsidized wheat to its consumers since 1970. These distribution systems establish linkages between the subsidized commodity and beneficiaries; however, intermediaries and characteristics of these distribution systems have long been a concern for researchers and consumers. For example, researchers have always been sceptical about the opacity of the system (Reinikka & Svensson, 2004; Mehta & Jha, 2010).

The study by Mehta & Jha (2012) reveals that those programs in which quotas were clearly identified and regularly met, in which consumers were given due voice, had lower pilferage rates. Thus, it can be argued that the system's opacity hinders the beneficiaries from benefiting from stipulated subsidies. The issue is similarly encountered within the Food Department of the Government of Gilgit Baltistan, wherein the absence of publicly accessible data and the lack of clearly delineated quotas present a noteworthy challenge. These findings are ascertained by Jha & Ramaswami (2011), who showed that in India, the food department increased the amount of subsidy from 1.61 kg/(person-month) to 2.27 kg/(person-month) during 1999/2000 and 2004/2005 survey years, the consumption only increased from 1.01 to 1.03 Kg/(person-month). Similarly, Khera (2011b) establishes the findings that the pilferage of subsidized wheat and rice increased manifold during these times. Likewise, Reinikka & Svensson (2004) have shown that the association between the inputs and outputs will be weak in an opaque system, thus fostering irregularities. These findings are further augmented by Dreze & Khera (2010) and Himanshu (2011), who have attributed transparency and institutional design to the success of these programs.

In addition, System leakages coupled with poor targeting lead to most of the benefits accruing to the non-needy. Ahmed et al. (2002) studied the Egyptian food system and found that the subsidy program affects the rich and poor unequally, i.e., wealthy households benefit more than the poor. These distribution systems come into effect through political processes, leading to inclusion, exclusion, and uneven targeting errors. How wheat subsidies are applied in Gilgit Baltistan unfairly affects rich and poor people. Wealthier individuals do not get their fair share of the wheat quota, and there are reports that authorities are selling these unallocated portions on the black market.

Similarly, Gulati & Saini (2015), in their attempt to study public distribution systems in India, have revealed that these distribution systems deliver better services in better-off states while their performance has been questionable in relatively poor states, raising issues of equity. Moreover, they have identified the leakages associated with food delivery, where large amounts of food are diverted to open markets instead of delivered to the poor. Similarly, Fernandez (2010) has argued, based on his study to understand the poor practices associated with the identification of the poor in India, that identifying those below the poverty line is highly contested across political and bureaucratic circles, seriously affecting program efficiency. These findings are in alignment with Dreze & Khera (2015) where they have studied the leakages associated with Above Poverty Line (APL) and Below Poverty Line (BPL). The findings state that large amounts of food are pilfered for Above Poverty Line card holders.

The poor beneficiaries have hardly been covered through these programs. Their share of food is either pilfered or diverted to other areas. For example, the study Dhanaraj & Gade (2012) investigated in Tamil Nadu shows that for every 5 kg of rice, only 1 kg reached the poor. Similarly, in the case of sugar, 1 kg is received by the poor for every 8.52 kg. Thus, it validates that the poor's share of subsidized goods is more prone to pilferage and black marketing. These claims are further confirmed by Kumar & Ayyappan (2014), who, in an attempt to understand the distribution mechanism of 12 states of India, revealed that in some states, up to 100% of subsidized wheat is diverted to other states. Similarly, Khera, (2011a) shows that poor households cannot access their full entitlement to goods and, as a result, are forced to purchase them from the open market at higher rates.

METHODOLOGY

3.1 Study Area

The study is conducted in the mountain communities of Gilgit Baltistan, located in northern Pakistan. Gilgit Baltistan covers an area of over 72,971 sq km and is home to around 1.8 million inhabitants. The terrain is characterized by high peaks and valleys, with elevations ranging from 1,500 to 8,000 meters. The specific communities targeted for this study are small, remote villages in Gilgit, Skardu, Ghizer, and Nagar districts highly dependent on subsistence agriculture and wheat for their food supply. These communities were selected due to their reliance on wheat cultivation on terraced mountain fields as well their receipt of government wheat subsidies aimed at enhancing food security. Additionally, their isolation and marginalization make them appropriate case studies for examining the impacts of wheat policy decisions on vulnerable populations.

Primary data collection comprised surveys, interviews, and focus groups with village residents, farmers, and local leaders. Questions were addressed on topics like wheat yields, access to subsidized wheat, food security and scarcity experiences, the effectiveness of subsidy programs, and challenges to wheat cultivation and access in these terrain-challenged mountain settings. Where available, secondary district-level data on wheat production, government food aid allotments, and population demographics were also incorporated into the analysis. Results shed light on how consumer-based wheat subsidies succeed or fail in reaching and improving food security among remote mountain villages in this region.

3.2 Sampling Strategy

In the first stage, a purposive sampling technique was used to identify the sample districts in Gilgit Baltistan where wheat cultivation forms a major part of the subsistence agriculture and diet. Primarily 4 out of 10 districts were selected. The criteria for district selection included altitude, terrain, accessibility, level of marginalization, and receipt of government wheat subsidies. Additionally, sampled districts were required to have a majority population dependent on own-production wheat rather than purchase from markets. Input from local leaders, agricultural experts, and secondary census data guided the final site selection to choose information-rich cases reflecting the research questions. Secondly, one village from each district was selected for the study based on our earlier specification for district selection.

The third stage involved random household sampling within the selected villages to survey 90-100 households in each community. Households engaged in farming wheat on owned or rented land formed the primary sample population. The determined number of subjects was selected randomly from the list upon visiting each village. This eliminates the risk of bias that could result from the intentional exclusion of certain households over others.

Data sources at the household level included surveys on land holding, crop yields and income, costs, food consumption and expenditures, subsidy efficacy, etc.; semi-structured interviews on food security perspectives and experiences; and focus group discussions to capture community-level dynamics around wheat cultivation, distribution, and sufficiency.

3.3 Data Collection Process

A team of university graduates was hired and trained in data collection techniques, research ethics, and data quality. Before the final survey began, a pilot survey was conducted to ensure the survey tools were effective and reliable data could be gathered.

For the collection of qualitative data, three FGDs (one in each district) and 20 Key Informant Interviews (KIIs) are conducted. In group discussions, the representation of various stakeholders of Wheat will be ensured.

3.4 Wheat Subsidy and Food Security

A mixed research method approach is designed in this study given the exploratory nature of the research and the lack of consistent baseline data on socio-economic indicators in Gilgit-Baltistan. This approach allows the gathering of a variety of data and perspectives on the wheat subsidy and its linkages with food security and the perspective of various stakeholders about the wheat subsidy. The use of a questionnaire-based household survey provides quantitative data on the socio-economic status of the local population, their access to and consumption of food, and the impact of the wheat subsidy on food security. Group discussions, and in-depth interviews with agriculture experts, the government food and agriculture department, subsidized wheat dealers, and the local community are carried out to provide qualitative insights into the research problem. This data provides a deeper understanding of the impact of the wheat subsidy on the local community and identifies the challenges in the current subsidized wheat mechanism in the study area. Comparing the data obtained from these various methods will validate the findings and gain a more comprehensive understanding of the dynamics of wheat subsidy in the region.

3.5 Impact of Wheat Subsidy on Food Security

In this study, the definition of food security used is based on the definition provided by the Food and Agriculture Organization (FAO) which states that food security is achieved when all individuals have consistent access to sufficient, safe, and nutritious food to meet their dietary needs and preferences for a healthy life. Food security has four standard dimensions: (i) availability-having enough food available regularly); (ii) access resources or income to acquire suitable and healthy food; (iii) utilization- having a reasonable food use based on knowledge of essential nutrition and care; and (iv) stability of availability, access, and utilization of food. The production of staple crops measures availability, accessibility is measured by income, utilization is measured by food and nutrition knowledge, and stability of access and utilization is measured by a stable supply of staple crops, disaster risk reduction, and environmental sustainability. The first two dimensions are crucial in the context of wheat subsidy impact on food security because wheat subsidy has reduced the production of staple crops in the study area. Second, lack of jobs, an absence of industry, and a large amount of non-agricultural land to produce cash crops; the area's per capita income is also low compared to the rest of the country. Therefore, the study largely focuses on the first two dimensions of food security to analyze the impact of the wheat subsidy on it. As food security is a dichotomous variable, the conventional method used to measure it is through binary response, whether a household is considered food secure (value of 1) or not (value of 0). To model the relationship between food security and other variables, a linear probability model (LPM) can be used. However, LPMs can be problematic due to the heteroscedasticity of the error term and the possibility of the dependent

variable not being restricted to the range of 0 to 1. To overcome these issues, a more suitable method is to model the relationship so that the dependent variable is unobservable. This approach can provide results with more policy implications, as the relationship between the independent and dependent variables can be better understood, and the impact of different policies can be assessed.

The logistic regression technique is used to model the relationship between a dichotomous dependent variable, such as food security, and a set of independent variables that are believed to impact the outcome. The following model is proposed for estimation using the logistic regression technique.

$$FS_i = \beta_0 + \beta_1 WS_i + \beta_2 \sum_{i=0}^n Control_i + \varepsilon_i$$

Where:

FS_i is the household's food security (1= food secured, 0=otherwise)

WS_i is the frequency of utilization of subsidized wheat in the household. This variable will be measured using a scale of 1-3 (1 being no use of subsidized wheat in the household and 3 being the utilization of only subsidized wheat).

3.6 Black Marketing

We will employ an exploratory study to explore the prevalence of black marketing associated with wheat subsidies. The study will employ definitions of 'leakage' or 'pilferage' employed by Gulati & Saini (2015) defined as the difference between the amount of wheat supplied by the central government and the actual amount delivered to the consumers. Due to data limitations, our study will focus on Gilgit city only, where we will procure data from the food department for the last three years, and its subsequent supply to 6 mills down to individual beneficiaries will be studied. By doing so, we can exploit the amount supplied by the central government and the amount delivered.

Moreover, a qualitative section will be incorporated into this study where Key informant interviews, focused group discussion, and consumer perceptions will be considered to investigate the pitfalls of distribution infrastructure alongside compliance mechanisms. By doing so we can explore the institution of public distribution alongside policy analysis.

3.7 Questionnaire Development

A detailed questionnaire is developed with the help of experts and literature reviews for the household survey. The questionnaire has three sections. The first section contains questions on the demographic profile of the households. This includes household demographic and socioeconomic characteristics, livelihoods and income sources, land holdings, etc. Specifically, the questionnaire includes modules on household roster, occupation, income, and crop cultivation, including wheat and livestock rearing. The second section includes constructs related to food consumption and wheat subsidy and their implications for dietary requirements. The last section is attributed to food security.

Food security is a multifaceted and complex concept. Measuring food insecurity has presented an enduring challenge for researchers and practitioners due to its intricate and multifaceted nature. There exists no single tool that measures every dimension of food security. Various food and health-

oriented institutions and organizations have developed several instruments for capturing the food security indicators including the Food Consumption Score (FCS) of the World Food Program (WFP); Food Insecurity Experience Scale (FIES) of the Food and Agriculture Organization (FAO); Household Food Security Survey Module (HFSSM) by the United States Department of Agriculture (USDA) and Household Food Insecurity Access Scale (HFIAS) designed by United States Agency for International Development (USAID).

Household Food Insecurity Access Scale (HFIAS), designed by USAID's Food and Nutrition Technical Assistance (FANTA), was employed to collect data on food insecurity and assess the household food security status over the past four weeks. The HFIAS scale is comprised of an investigation of the occurrence of food insecurity and frequency of occurrence in the household at a time interval of the last four weeks. Nine questions are attributed to the occurrence, followed by nine questions about the frequency of food security at an increasing level to determine the degree of severity. The scale is preferred in this study due to the subjective nature of food security and the applicability of the scale in various cultural settings (Yohannes et al., 2023; Pandey, 2016) and in the context of developing countries (Webb et al., 2002). The scale is more sensitive to the changing household conditions over time thus making it a valid tool for monitoring and evaluating subsidy programs. Moreover, Experience-based measurements are more convenient for primary data collection and rapid food security assessments (Manikas et al., 2023). The scale is simple but methodologically more convenient in evaluating and monitoring food programs.

3.8 Focused Group Discussions (FGDs)

For the collection of qualitative data, one FGD in each of the sample districts is conducted and a total of four FGDs are conducted cumulatively. In each FGD, 10-15 local community members were invited to participate. For discussion, structured questions and pre-planned probes were administered in line with Krueger & Casey (2014). The two-way focus group discussion method was used. One group actively discussed the issues while the other observed and raised questions. The typical parts of the FGD included an introduction by the moderator, welcoming the participants, and requesting them to introduce themselves. This was followed by the opening questions, which were normally simple so the participants could feel comfortable. The participants were allowed to add topics for discussion if they wanted to.

3.9 Key Informant Interviews (KIIs)

This study proposed a total of 20 KIIs- 5 in each district. The key informants were village activists, tribal/traditional leaders or elders, office bearers of government departments, and authorized wheat dealers. For this purpose, open-ended questions were designed for the participants in the following way:

- a. The importance of wheat subsidies in ensuring food availability in their households.
- b. The challenges of subsidizing wheat distribution mechanisms in their valley.
- c. The frequency of subsidized wheat distribution and distribution criteria (including who gets more subsidized wheat, etc.).

d. Challenges to the local agriculture system and its inefficiency in providing food to the local people.

3.9 Data Analysis and Reporting

This study employed a mixed-methods approach to comprehensively investigate the impacts of the wheat subsidy program on food security in Gilgit-Baltistan. Both quantitative and qualitative data were collected and analyzed using appropriate techniques.

3.9.1 Quantitative Analysis

The quantitative data was obtained through a household questionnaire survey administered to a representative sample of households across the study area. The questionnaire captured information on socio-economic characteristics, agricultural practices, food consumption patterns, and perceptions regarding the wheat subsidy program.

The quantitative data analysis was performed using SPSS (Statistical Package for Social Sciences) software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated to summarize the sample characteristics and key variables of interest. Furthermore, inferential statistical analyses were conducted to explore relationships and identify significant factors associated with food security outcomes. Specifically, logistic regression models were employed to examine the influence of various socio-economic, demographic, and agricultural factors on household food security status.

3.9.2 Qualitative Analysis

Qualitative data was collected through focus group discussions (FGDs) and key informant interviews (KIIs) with diverse stakeholders, including community members, local farmers, agriculture officials, and civil society representatives. These methods allowed for an in-depth exploration of perceptions, experiences, and challenges related to the wheat subsidy program and its impacts on food security.

The qualitative data, consisting of transcripts from FGDs and KIIs, were analyzed using NVivo software, a powerful tool for qualitative data analysis. A thematic analysis approach was adopted, involving the following steps:

Data familiarization: Researchers immersed themselves in the data by reading and re-reading the transcripts.

Coding: Relevant segments of the data were assigned codes based on their meaning and content.

Theme Development: Codes were organized into broader themes that captured the overarching patterns and insights emerging from the data.

Theme Review and Refinement: The themes were reviewed, refined, and organized into a coherent thematic structure.

Interpretation and Reporting: The finalized themes were interpreted and synthesized into a narrative that addressed the research objectives.

The qualitative analysis provided rich insights into the lived experiences, perceptions, and challenges faced by various stakeholders regarding the wheat subsidy program and its impacts on food security.

FINDINGS

4.1 Descriptive Analysis

This section provides a brief discussion of the respondents' profiles, the household heads' profiles, and the respondents' household profiles in the study area. Details are given as follows.

4.1.1 Respondent Profile

Demographic characteristics of the respondents, including total population, male & female population, household size, gender, age, literacy level, marital status, relationship with the household head, and occupation, are presented in Table 1.

Table 1: Respondents Profile

No. of households	85	Material Status (%)	
Total population	578	Never married	8.5
Male population	250	Married	91.5
Female population	328	Divorced/separated	-
Household size	6.80	Widowed	-
Gender (%)		Relationship with HH Head (%)	
Male	100	Self	76.5
Female	-	Son	21.0
Age		Brothers	2.5
Average age	33.5	Occupation	
Age Group (%)		Own-farming	32.3
18-30	34.0	Off-farm skilled labor	33.5
31-55	66.0	Off-farm unskilled labor	15.6
Above 55	-	Govt. job	-
Literacy Level (%)		Private job	4.2
Not literate	5.0	Business	14.4
Primary	19.5	Other work	-
Middle	12.5	Unemployed	-
Secondary	27.5	Old/disable	-
Higher secondary	17.5	N = 424	
Graduation	9.5	Treatment = 212	
Masters	3.5	Control = 212	
Others	-		

Source: Authors' illustrations.

The total number of respondents was 85 with a 100 percent response rate. The survey results showed a relatively middle-aged population of respondents for both control and treatment groups. In our study all the respondents were male. The average age for the sample respondents was 33.5. For the overall sample, 34 percent of the respondents were in the age range of 18-30 years and 66 percent of respondents were aged between 31-55 years. No respondent was found above 55 years of age for the overall sample. The marital status of the respondents showed that 8.5 percent of respondents were never married while 91.5 percent of respondents were married. No respondent

was found in the divorced and widowed category of marital status for the overall sample. Literacy data presented in Table 1 showed that 5.0 percent of respondents were illiterate. Among the literate respondents, 19.5 percent completed the primary level of education, 12.5 percent respondents attended the middle level, 27.5 percent of the respondents completed matric level, 17.5 percent completed higher secondary, 9.5 percent completed graduation and the rest of them i.e. 3.5 percent respondents completed master level of education. The demographic structure for 85 households showed a population of 578 household members with 250 male and 328 female members. The mean household size for the sample was 6.80 members. Off-farm skilled labor is the major profession for treatment respondents as 33.5 percent were associated with this profession followed by off-farm unskilled labor 15.6 percent and business 14.4 percent respectively.

4.1.2 Profile of Household Head

Information regarding household profile is presented in table 2 as under:

Table 2: Profile of Household Head

Profile of the household Head	Sample Households	Profile of the household Head	Sample Households
Male	100.0	Middle	17.9
Female	-	Secondary	16
Age (%)		Higher secondary	22.2
Average age	34.43	Graduation	4.7
Percentage age group :		Masters	2.8
18-30	33.0	Others	-
31-55	67.0	Material Status (%)	
Above 55	-	Never married	-
Literacy Level (%)		Married	99.1
Not literate	11.3	Divorced/separated	-
Primary	25	Widowed	0.9

Source: Authors' illustrations.

The demographic composition of household heads is presented in Table 2. Results showed that all households were headed by males. The average age of household heads in the overall sample was 34.43 years. To check the working status of household heads among different age groups we classified household heads' age into three broad age categories i.e. 18-30 years, 31-55 years, and above 55 years. The survey results showed that almost all population of household heads fall under the working-age population. The literacy level statistics of the household head showed that the majority of the household heads are literate having some level of education. Only a few percent of household heads, i.e. 11.4 percent, were illiterate. The highest percentage of literate household heads (25 percent) for the overall sample have attained a primary level of education followed by 22.2 percent higher secondary, 17.9 percent middle, 16 percent secondary, 4.7 percent graduation, and 2.8 percent attained an education level up to masters. Almost all household heads (99.1 percent) were married. Few household heads 0.9 percent in the treatment group were felt in the widowed category of marital status.

4.1.3 Profile of the Sample Households in the CKNP Region of Gilgit-Baltistan, Pakistan

In this section of the study, we will present survey results of the sample households' profiles in the study area of Gilgit-Baltistan, Pakistan.

4.1.4 Demographic composition of households in the study area

In this sub-section of the household profile, the distribution of household population segregated by gender and age status for overall sample households has been presented. Details are given in Table 3 as follows.

Table 3: Demographic Composition of Households

Households Demography (%)	Sample Households	Households Demography (%)	Sample Households
Total households (no.)	85	Over 55-65 years (F)	1.88
Total population (no.)	578	Over 55-65 years (M)	2.36
Male population (no.)	250	Over 65 years (F)	1.11
Female population (no.)	328	Over 65 years (M)	0.90
Up to 1 years (F) (%)	2.43	Adult population	47.85
Up to 1 years (M)	1.88	Adult male population	24.45
Over 1-5 years (F)	5.00	Adult female population	23.4
Over 1- 5 years (M)	5.56	Total working age population (over 10 years)	72.64
Over 5-10 years (F)	6.46	Working age population (over 10-18 years)	24.79
Over 5-10 years (M)	6.04	Working age population (over 18-55 years)	41.6
Over 10-18 years (F)	12.15	Working age population (over 55 years)	6.25
Over 10-18 years (M)	12.64	Dependency ratio (up to 10 & over 55 years)	0.46
Over 18-24 years (F)	4.51	Dependency ratio (up to 10 years)	0.37
Over 18-24 years (M)	4.31	Dependency ratio (over 55 years)	0.08
Over 24-55 years (F)	15.90	Gender ratio	1.02
Over 24-55 years (M)	16.88	Female to male ratio	0.98

Source: Authors' illustrations.

The survey consisted of 85 households in the study area. According to the survey results reported in Table 3, the total population consisted of 578 persons, of which 250 were male and 328 were female. The segregation of population, based on gender and age status, showed that the average female children population (up to one year of age) consisted of 2.43 per cent female children population. Similarly, this age category's average male children population was 1.88 per cent. The sample's average female children population (over 1-5 years) was 5.00 per cent, while the average male children population under this age bracket was 5.56 per cent. The average female population of children (over 5-10 years) was 6.46 per cent. Likewise, this age group's average male children population was 6.04 per cent.

Data presented in Table 3 also showed an adult population of the sample households disaggregated by gender. In this survey, the total adult population (over 18 years of age) was 47.85 percent. It has been observed that the percentage of the male adult population in the sample households was 24.45 percent while 23.4 percent adult population in this group of households belonged to the female population. The working age population (over 10 years) has been divided into three sub-age categories i.e. over 10-18 years, over 18-55 years, and over 55 years. Usually (over 15-64 years) age interval has been used as the standard age interval for the working age population but mostly in rural areas of Gilgit-Baltistan, Pakistan, people over 10-15 years and above 64 years of age are also actively

engaged with agriculture and other income-generating activities. Therefore, to analyze household socioeconomic status in the study area of Gilgit-Baltistan Pakistan, this study used over 10 years of population as a threshold to represent the working-age population. Various impact evaluation studies in Pakistan (e.g., Khan & Saadi, 2008) have also used the same threshold to represent the working-age population. An overwhelming majority, i.e. 72.64 percent of the overall sample population fell into the working age population in the study area. Out of this working age population, 24.79 percent belong to the over 10-18 years age group, 41.6 percent go to the over 18-55 years age bracket and 6.25 percent belong to the over 55 years age group. The data for the active working-age population presented in Table 3 revealed that an overwhelming majority (41.6 percent) population fell under the bracket of active working-age population in the study area.

The average dependency ratio (up to 10 & over 55 years of population), for the overall sample was 0.46. Similarly, dependency ratios in both the sub-age categories i.e. dependency ratio (up to 10 years) were 0.37 and dependency ratio (over 55 years) was 0.08 for the sample households in the study area. Female to male ratio was (0.98) while the gender ratio (1.02) in the study area.

4.1.5 Household Income

In general, income can be defined as the earnings from productive activities and current transfers. Income permits people to obtain goods and services. The survey results related to household income, its distribution, and sources are presented in Table 4.

Table 4: Household Income

Average Annual household income	4991695.84	Labor	34.19
Average Annual household income	4991695.84	Labor	34.19
Average Monthly household income	415974.58	Services	2.00
Annual per-capita income	8636.15	Pension	1.61
Monthly per-capita income	719.67	Rental income	0.49
Contribution by different sectors (%)		Remittances	1.94
Crops	21.67	Cash/gifts	0.44
Livestock	12.11	Others	3.60
Business	21.94		

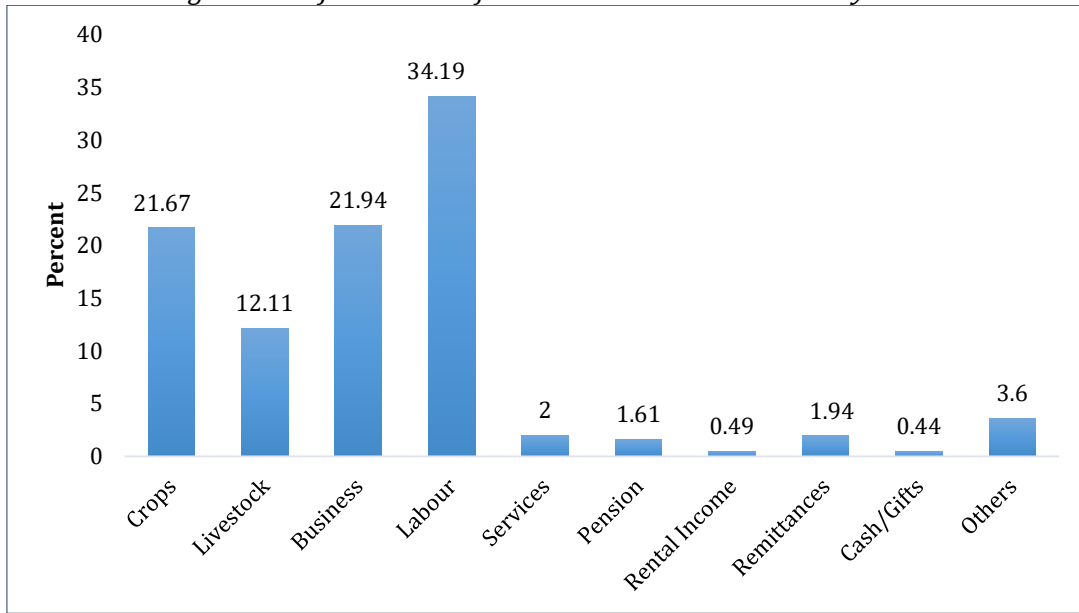
Source: Authors' illustrations.

The average annual household income and average monthly household income of the 85 sample households were PKR 4991695.84 and PKR 415974.58, respectively. Similarly, annual per-capita income and monthly per-capita income were PKR 8636.15 and PKR 719.67.

4.1.6 Major Sources of Household Income in the Study Area

Results of Figure 1 given below portrayed that labor is the major source of household income contributing (34.19 percent) followed by business (21.94 percent) and crops (21.67 percent) respectively. Other sources of household income were livestock (12.11 percent), services (2.00 percent), pension (1.61 percent), rental income (0.49 percent), remittances (1.94 percent) cash gifts (0.44 percent), etc.

Figure 1: Major Sources of Household Income in the Study Area



Source: Authors' calculations.

4.1.7. Household Expenditures

Household expenditures are the number of expenditures made by households to meet their everyday needs, such as food, clothing, housing (rent), energy, transport, health costs, leisure, and miscellaneous services.

Table 5: Household Expenditures

Household Expenditures	Sample Household Expenditures
Average annual household expenditures	4,754,700.55
Average monthly household expenditures	396,225.00
Annual per-capita expenditures	8,226.12
Monthly per-capita expenditures	685.51
Expenditures on Different Sectors (%)	
Food	39.19
Clothing	11.81
Housing	14.51
Health Care	7.95
Education	14.39
Social Functions	1.54
Transport	2.53
Remittances	1.57
Cash/Gifts	0.60
Fuel	4.47
Others	1.43

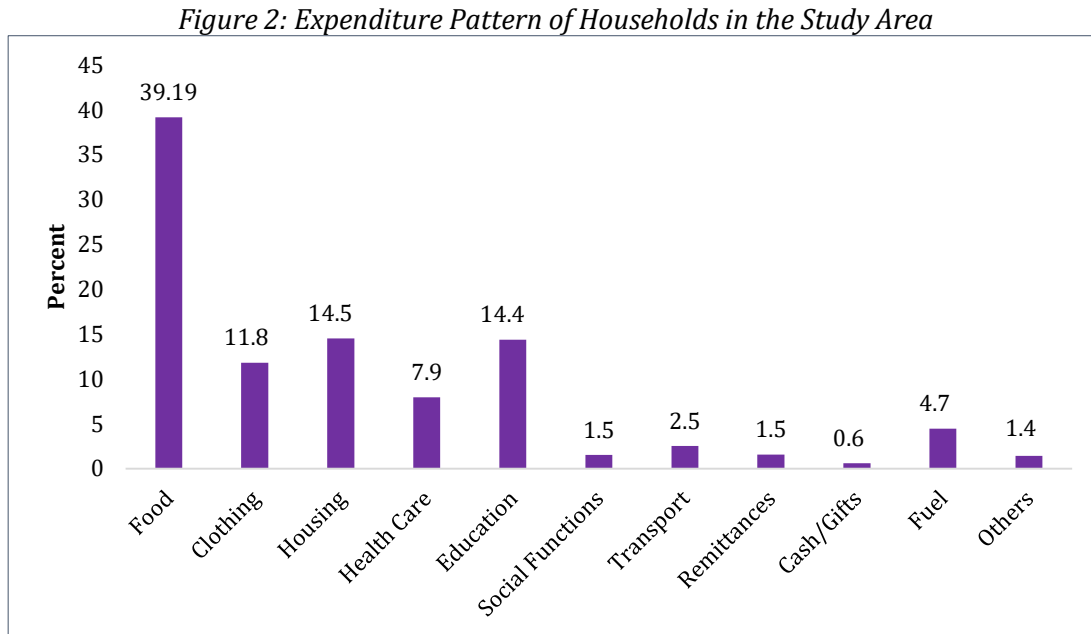
Source: Authors' calculations.

Results reported in Table 5 showed that average annual household expenditures, average monthly household expenditures, annual per-capita expenditures, and monthly per capita expenditures for

the sample households in the study area were PKR 4754700.55, PKR 396225.00, PKR 8226.12 and PKR 685.51 respectively.

4.1.8 Expenditures Pattern of Households

Figure 2 depicts the expenditure pattern of treatment and control group households in the study area. The expenditures pattern of households in the study area showed that (39.19 percent) of expenditures were made on food consumption, (14.51 percent) on housing, (14.39 percent) on education, (11.88 percent) on clothing, (7.95 percent) on health care, (4.47 percent) on fuel, (2.53 percent) on transport and remaining on other purposes.



Source: Authors' calculations.

4.2 Determinants of Food Security in Gilgit-Baltistan: The Logistic Regression Model

Like other regression analyses, the logistic regression technique is also used for predictive purposes in statistical and econometric analysis. The logistic regression technique models the probability of a discrete outcome variable concerning any predictor that may be categorical or continuous. This method predicts discrete dependent variables with two or more categories. In this model, a predictor can take any shape, it may be in the form of a discrete or continuous variable, or a mix of both. The logistic regression model with a dichotomous outcome variable is called the “Binary Logistic Regression Model” and the dependent variable with more than two categories is called the “Multinomial Logistic Regression Model”. In our study, the categorical dependent variable (Household Food Security) has two categories, i.e. Household Food Secure and Household Non-Food Secure; therefore, the present study used a binary logistic regression model for food security analysis. In logistic regression, the maximum likelihood method estimates the coefficients, standard errors, odd ratios, p-values, etc. The study used primary data collected from the four districts of Gilgit-Baltistan, Pakistan to analyze the impact of wheat subsidy on household food security.

4.2.1 Checking for Assumptions: The Binary Logistic Model

Although “Binary Logistic Regression” is exempted, some of the main assumptions of linear regression models are normality, linearity, homoscedasticity, and measurement level. This model can handle all interactions by applying a non-linear log transformation to the predicted odd ratios. However, for the validity and accuracy of the model, some basic assumptions are still required, which are given below.

4.2.2 Sample Size

Determination of representative sample size is the key for logistic regression analysis. This technique provides biased results with a relatively small sample size for many predictors particularly if we have categorical independent variables with limited cases in each category (Green, 1991). Different authors suggested different sample sizes for the logistic regression model. We can apply the 20:1 rule to collect a representative sample for logistic regression analysis i.e., there must be at least 20 observations for each independent variable in the model. The 20:1 rule is applicable for all regression models i.e. dichotomous logistic regression or linear regression models. For sample size determination, several categories of categorical variables in the regression model are also important. For example, a predictor in the model with two potential categories will be treated as two predictors, instead of one independent variable. In the case of (n) categories of a categorical variable, there must be (n-1) predictors to be included to determine sample size (Burmeister & Aitken, 2012). Green (1991) proposed a $(N > 50 + 8p)$ sample size determination formula for a multiple regression model, where p denotes the number of independent variables included in the model. There are multiple predictors in our study for the dependent variable Household Food Security.

Note: Since we are at the preliminary stage of research, our data set included only a sample size of 85 households. This sample size is too limited; therefore, we cannot apply logistic regression techniques to analyze the impact of wheat subsidy and other influential factors on food security in the study area. Doing so will produce biased and inconsistent results. Such a type of analysis will be carried out after the completion of the survey and with a reliable size.

4.3 Wheat Procurement and Distribution

Food department Gilgit Baltistan largely relies upon Pakistan Agricultural Storage & Services Ltd (PASSCO) for wheat procurement alongside the Punjab Department. These procurements account for 150 173 MT of wheat, on average, from 2017 to 2021. However, the actual allocation of wheat to Gilgit Baltistan is 16000 MT wheat. The difference between the actual allocation and procurement shows a considerable shortage.

Table 6: Procurement of Wheat by PASSCO and Food Department, GB(MT)

Year	Total	PASSCO	Punjab Food Department
2017	142,110	142,110	0
2018	145,960	145,960	0
2019	146,971	146,971	0
2020	159,992	159,992	0
2021	155,832	140,832	15,000
2022 upto 30th September, 2022	21,499	21,499	0

Source: Authors' computations based data from Food Department Government of GB.

The table below shows the difference between actual allocations and procurement data. It is witnessed that during these years the Food Department GB has observed a shortage of 36000 MT on average.

Table 7: Annual Allocation and Releases of Wheat (in MT)

Particulars	Wheat (in MT)
Annual Allocation	160,000
Monthly Consumption	13,333
Daily Consumption	444
Actual Releases Per Month	10,333
Monthly Short Fall/Less Releases	3,000
Annual Short Fall/Less Releases	36,000

Source: Authors' computations based data from Food Department Government of GB.

The Food Department Gilgit Baltistan is responsible for distributing these bags to all the districts based on population. The table below shows the detailed distribution of wheat among different districts from 2017 to 2022. The thorough exploration shows that Shigar is the largest recipient of subsidized wheat while the share of Nagar is low among all the districts.

Table 8: District Wise and Year Wise Wheat Distribution 2017-18 to 2021-22 (100 kg Bags)

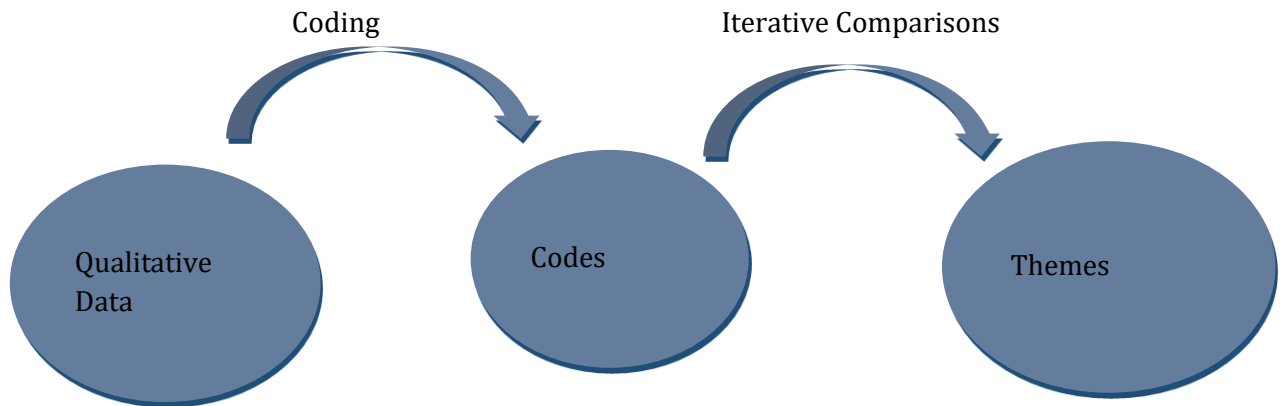
District	2017-18	2018-19	2019-20	2020-21	2021-22
Gilgit	279,616	280,942	314,568	316059	289,555
Hunza	167,979	168,775	188,977	189872	153,281
Nagar	58,545	58,823	65,863	66175	56,884
Ghizer	79,907	80,286	89,895	90321	62,720
Skardu	102286	102771	115072	115617	134373
Shiger	289,196	290,566	325,345	326886	254,871
Kharmang	185,130	186,008	208,271	209259	230,281
Ghanche	305,773	307,222	343,995	345625	439,310
Diamer	55,071	55,332	61,955	62248	82,443
Astore	76,912	77,276	86,526	86936	105,302
Total	1,600,415	1,608,001	1,800,467	1,808,998	1,809,000

Source: Authors' computations based data from Food Department Government of GB.

4.4 Qualitative Thematic Analysis

Thematic analysis stands as one of the most utilized qualitative analytic methods. It functions as a means for identifying, analyzing, and reporting patterns, commonly referred to as themes, within a dataset. This approach allows researchers to meticulously organize and describe the data set, offering a comprehensive view of its intricate details. Our approach involved a systematic step-by-step procedure. Initially, we generated initial codes to segment and label relevant data segments. Following this, we diligently searched for overarching themes within the coded segments. Once these themes were identified, we defined and named them, ensuring clarity and coherence. Finally, we synthesized our findings into a detailed report, providing valuable insights into the research topic.

Figure 3: Methodological Illustration



4.5. Thematic Analysis of the Current Study

The thematic analysis conducted based on the Key Informant Interviews (KIIs) and Focus Group Discussions (FGDs) reveals a nuanced understanding of the multifaceted challenges and dynamics surrounding the wheat subsidy program in Gilgit-Baltistan. Through in-depth conversations with key stakeholders, several major themes have emerged, shedding light on the complex interplay between policy interventions, agricultural practices, food security, and socio-economic factors within the region.

4.5.1 Impact of Subsidy on Local Agriculture System

4.5.1.1 Subsidy Discourages Local Farming

The analysis of transcripts shows that the wheat subsidy program, intended to enhance food security, has paradoxically disincentivized local farming practices in the region. The cost of farming has increased as compared to subsistent production. The availability of subsidized grain and flour in the market has abandoned local production. One of the key informants reported:

"The wheat subsidy has disincentivized the local farm holder on a greater scale. As the cost of farming is higher and high subsidized wheat is provided to households on a scale based, people have left farming and rely on the quota-based wheat provided by the government."

This highlights how the availability of subsidized wheat has led farmers to abandon their agricultural activities, as the perceived costs of farming outweigh the benefits when subsidized wheat is readily accessible.

4.5.1.2 Shift Towards Cash Crops and Away from Wheat

There has been a notable shift towards cash crops and away from traditional staple crops. A key reason behind such a shift is the reported population increase and land availability for wheat production. Moreover, there is a lack of policy from the public sector for land expansion for agriculture at the provincial level. A key informant from Shigar observed:

"People have taken agricultural spaces to build their houses... Moreover, there is little government intervention to make the barren lands cultivable."

Another responded:

"Our agricultural needs can be fulfilled by investing in barren lands. In addition, inflation has contributed to discouraging people from agriculture."

Such opinions of local people underscore the multifaceted factors contributing to the decline in local wheat farming, including population growth, lack of government support for cultivable land, and rising input costs due to inflation.

4.5.3.3 Reduced Dietary Diversity

In investigating the impact of wheat subsidy on food security in the region, respondents of the study reported a more significant impact on their dietary patterns. The shift away from diverse crop cultivation with no incentives to traditional farming of staple crops has had a direct impact on the nutritional habits of the community, reducing their intake of diverse food as the majority of their diet intake is met from wheat due to the availability at sufficient scale with low cost compared to other food crops. A Civil Society Representative lamented:

"Due to the availability of wheat, people's dietary intakes have almost become homogenous, and people are only taking in wheat and leaving the intake of all other staples."

This underscores the narrowing of dietary diversity, with an overreliance on wheat as the primary staple, potentially leading to nutritional deficiencies.

4.5.1.4 Increased Dependence on Market Fluctuations

Another consequence of the declining local agricultural production as reported is an increased dependence on market sources for food. As the ability to cultivate diverse crops diminishes, the community becomes more reliant on purchased wheat, making them vulnerable to market fluctuations and external shocks. A key informant observed:

"Earlier times we were easily growing multiple crops like wheat, barley, buckwheat but over the time the demographic shifts coupled with climatic conditions have made it hard to us grow multiple crops thus increasing our dependencies on wheat."

The subsidy designed to bolster food security inadvertently undermines local agricultural practices. This threatens the economic viability of farming and the dietary diversity crucial for community health and resilience.

4.5.2 Corruption and Inefficiencies in the Distribution System

4.5.2.1 Black Marketing by Dealers and Millers

As reported from the analysis of transcripts, the distribution system for the wheat subsidy is plagued by corrupt practices, including black marketing and nepotism. The intermediaries in the distribution process such as the dealership system and mill owners are heavily involved in corrupt practices, together making it difficult for the poor people to access their allocated quota.

A Civil Society Representative criticized:

"The system is rotten and corrupt which encourages black marketing. People who have better links with civil supply officials or dealers are at an advantage over those people who do not have access to these channels."

Another observed:

"We haven't requested the food department to distribute us flour via millers, but the millers have influence in the system and they are using it to gain unfair advantages."

This highlights how those with influential connections can exploit the system for personal gain while disadvantaging those without such access.

4.5.2.2 Opaque Quota System and Lack of Transparency

The lack of transparency in the quota system is another significant issue, allowing for manipulation and abuse. This opaque system enables dealers to engage in corrupt practices, such as diverting quotas intended for those not present or selling subsidized wheat on the open market at higher prices.

A respondent illustrated:

"People do not have any clear idea about their specific quota, but the dealer distributes among them based on arbitrary criteria... rich people and those people who are not living in Sherqilla are not availing their stipulated quota, but the dealer does receive their portion and sell it either in open market at higher prices or distribute among their acquaintances."

Moreover, there is no proper compliance mechanism for complaints and suggestions from consumers, which makes the system more susceptible to distribution irregularities, and people with no proper awareness of the system are most of the time excluded from the system. An informant illustrated:

"Majority of the people in this village are either poor or illiterate and most of the time both. They do not have access to the high officials."

4.5.2.3 Grain and Flour Quality Issues

Quality control is a major concern, with reports of adulteration and poor-quality grain and flour being distributed. Most of the time, the flour is of inferior quality and of no use for human needs. A Government Official from Sher Qila stated:

"The quality is poor. It gets mixed with a choker frequently, making it undesirable for domestic use... Sometimes, the choker gets mixed with flour, making it impossible to eat."

Another replied:

"Most of the time, we deliver poor quality food. For example, in the last year were grain which most people failed to use for cooking purposes because of poor quality."

The prevalence of corruption, inefficiencies in the distribution system, and quality challenges not only undermine the intended benefits of the subsidy but also exacerbates socio-economic disparities, hindering equitable access to essential food resources.

4.5.3 Changing Dietary Habits and Food Security

4.5.3.1 Increased Reliance on Subsidized Wheat

The availability of subsidized wheat has led to a growing reliance on this single staple, displacing traditional diverse dietary practices such as growing maize, barley, and wheat. A respondent reported:

"In our early ages, majority of the people were used to farming and poultry but over the course of time...people even have to buy milk from shops. There is immense business potential to local production..." This illustrates how the community has shifted away from self-sufficient practices, such as farming and poultry keeping, towards a greater dependence on purchased food items, including subsidized wheat.

4.5.3.2 Subsidy's Limitations

While the subsidy plays a role in fulfilling food requirements, it has inherent limitations in addressing the diverse nutritional needs of the community. A participant noted:

"Yes, it does play a great role in fulfilling people's food requirements. But it is not enough to cover the full nutritional needs..."

This emphasizes the need for a more comprehensive approach beyond providing a single staple crop.

4.5.3.3 Population Growth Land-Use Changes and Wheat Subsidy

Population growth and associated land-use changes have exacerbated food security and dietary diversity challenges. The encroachment on agricultural land due to population pressures has likely contributed to the decline in local agricultural production and the increasing reliance on external food sources and the wheat subsidy.

A respondent reported:

"The major factor contributing to this phenomenon is the increasing population. Due to population increase people have to forgo considerable agricultural land for their buildings..."

In such circumstances, subsidy is considered crucial to meet the dietary needs of the local population. A respondent stated:

“This subsidy is the need of the hour because almost 70% of the people in our village are solely reliant on wheat subsidy, they do not have an agricultural area of their own.”

The reliance on subsidized wheat underscores the need for a holistic approach to food security that addresses nutritional diversity and sustainable agricultural practices in the face of demographic shifts.

4.5.4 Challenges Faced by Local Farmers

4.5.4.1 Outmigration of Young People and Farm Labor

There is an interlinked system of farming in Gilgit Baltistan as young people are traditionally associated with farming after their school hours. The social transition has posed a substantial challenge to the inherent agriculture system. Respondents reported that more emphasis on education has contributed to the outmigration of young people to other cities, leaving the agriculture system with a lack of traditional labor. An individual reported:

“There are many reasons to this. The first thing is the lack of farm labor as I notice due to out migration of labor class for job opportunities to urban areas.”

Moreover, increase in crops losses due to natural calamities and climatic hazards has forced the farm labor to move to urban centers for off farm wage laboring creating shortages of farm labor.

This outmigration of young population and farm labor has likely contributed to the decline in local agricultural production and the increasing reliance on external food sources and the wheat subsidy.

4.5.4.2 Increased Natural Disasters

The analysis of transcripts highlights that environmental factors, such as natural disasters and climate change, pose a significant threat to local agriculture. The increased frequency of climatic events and natural disasters has raised concerns for local agriculture. A local farmer reported:

“After 2010, floods have been frequently observed, and Sherqilla experienced one of the major floods that caused damage to local agriculture.”

These events not only cause immediate losses but also have long-term impacts on the productivity and viability of agricultural lands.

4.5.4.3 Lack of Awareness about Subsistence Farming

Most participants in the study highlighted that the declining interest in subsistence farming practices is partly attributed to a lack of awareness about their importance. An Agriculture Officer highlighted:

“One most important thing I observed is the lack of awareness about the importance of subsistent farming in coping food issues...”

This knowledge gap may contribute to the community's over-reliance on external food sources and the neglect of self-sufficient farming practices.

4.5.4.4 High Input Costs

Rising input costs, exacerbated by inflation, have made it increasingly challenging for local farmers to sustain their agricultural activities. In GB, there is no subsidy for local farmers on farming inputs and no access to agriculture credits at the public policy level. A key informant noted: *"Inflation has contributed to discouraging people to agriculture. The cost of threshing, high costs of fertilizers and other ingredients has made it hard for people to invest seriously in agriculture..."*

These escalating costs have rendered farming a less viable option for many in the community, further contributing to the decline in local agricultural production.

Local farmers grapple with many challenges, from environmental pressures to economic constraints. Addressing these issues requires comprehensive support systems and strategies to sustainably enhance agricultural resilience.

4.5.5 Need for Improved Policy Interventions

4.5.5.1 Shift Subsidies Focus to Farm Inputs

In our analysis, participants highlighted the necessity for improved policy interventions to address the challenges stemming from the current subsidy program. Participants expressed the need to redirect subsidy efforts towards supporting local small-scale farmers with input subsidies such as access to quality seeds, subsidized tractors, and fertilizers. One of the farmers stated:

"Rather than providing consumer subsidies, I suggest this subsidy should be diverted to the local small farm holders in terms of input subsidies for quality seeds..."

Another stated:

"..the government should provide high-yielding seeds and subsidized fertilizers. This will lead to more local production of wheat."

This highlights the importance of prioritizing investments in agricultural inputs, such as high-quality seeds, to enhance productivity and sustainability at the grassroots level.

4.5.5.2 Improved Public Distribution Mechanism

Though respondents highlighted the direction of the current subsidy program to inputs-focused subsidy programs, a greater fraction of the community also highlighted the importance of the current subsidy in meeting the dietary requirements of the households and urged for improvement in the distribution system to make it more accessible and available. A key informant reported:

"..the low price of subsidized wheat is a gain for poor people which serves them better. The element of corruption is rampant, no doubt, but it has to be improved so that the poor can benefit from it."

Another highlighted:

"..its distribution to different depots must be passed through strict check and balances. Owing to this lack of checks, most of the wheat is pilfered."

Thus, transition to a more efficient distribution mechanism is crucial to meet the intended objectives of the subsidy program.

4.5.5.3 Promote Awareness Campaigns

Many participants emphasized the critical role of awareness campaigns in fostering a deeper understanding of local farming practices and promoting the importance of indigenous subsistence farming. A participant emphasized:

"First and foremost, the households need a greater awareness of local farming and the role of subsistent farming as a coping strategy in our areas..."

Thus, it is essential to empower communities with knowledge and skills to adopt sustainable farming practices and mitigate the adverse effects of the subsidy program.

4.6 Conclusion

The thematic analysis of the transcripts underscores the complexity of food security initiatives and their far-reaching implications for the wheat subsidy in Gilgit Baltistan. The wheat subsidy program was meant to be a lifeline for food security. However, like many well-intentioned policies, it has had some unintended and troubling consequences. For generations, the resilient people of this region practiced sustainable subsistence farming, growing diverse crops like wheat, barley, and buckwheat to meet their nutritional needs. However, the availability of subsidized wheat has paradoxically discouraged these traditional farming methods. As cultivation costs have risen, many found it easier to rely on subsidized grains than toil in their fields. This shift from self-sufficient practices has narrowed dietary diversity and increased market dependence, leaving communities vulnerable to price shocks. The rampant corruption plaguing the subsidy's distribution network has compounded the problem. Unscrupulous dealers and millers engage in black marketing, hoarding supplies to sell at higher rates. Personal connections rather than needs often determine who gets access to subsidized grains, and the lack of transparency around quotas enables further exploitation of the system. To make matters worse, the subsidized grain is frequently of poor quality, adulterated, and unfit for consumption.

As farmlands get sacrificed to construction due to population pressures, the younger generation migrates to cities for jobs and education, dealing another blow to the centuries-old farming traditions. Climate change has exacted its toll through increased natural disasters that destroy crops and agricultural lands. With high costs of inputs like fertilizers and equipment, farming is becoming financially unviable for many small landholders.

The wheat subsidy policy requires an urgent course correction rooted in the region's ground realities. Redirecting subsidies towards seeds, equipment, and inputs can re-incentivize sustainable local farming. Stringent monitoring can purge the distribution system of corrupt practices. Awareness campaigns on the benefits of indigenous farming methods can rekindle community interest. A holistic food security strategy must look beyond providing a single staple crop to meet diverse nutritional needs through locally grown, climate-resilient crops. Only by respecting and enhancing traditional self-sufficiency can the subsidies fortify food security? Policies must be anchored in community participation to regain the virtuous cycle of sustainable farming and healthy diets these mountain communities once prided themselves on.

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