THE ROLE OF REMITTANCE ON HOUSEHOLD WELFARE DURING COVID-19 IN NEPAL

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DECLARATION

I, KAPIL POKHREL, declare that this thesis entitled "**THE ROLE OF REMITTANCE ON HOUSEHOLD WELFARE DURING COVID-19 IN NEPAL**" submitted to Central Department of Economics is my own original work unless otherwise indicated or acknowledged in the thesis. The thesis does not contain materials which has been accepted or submitted for any other degree at the University or other institution. All sources of information have been specifically acknowledged by reference to the author(s) or institution(s).

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ABSTRACT

This study uses nationally representative household survey in Nepal using cross sectional data collected by Central Department of Economics between September 2021 and October 2021. The objective of the study is to examine the effect of COVID-19 on household welfare and to investigate whether remittance acted as an insurance strategy to mitigate the effect of COVID-19 on household welfare. Unlike previous studies, this study takes into account the endogeneity in remittance variable and employs two stage least square model (2SLS) to address the problem of endogeneity. The results show that the probability of reduction in monthly food and non-food consumption in highly affected area is 8.6 and 12.4 percentage points respectively as compared to the less affected area. However, if the household in a highly affected area is also a remittance recipient, the study shows that COVID-19 had no significant impact on food consumption. In other words, remittance insures the affected households against the COVID-19 induced fall in consumption standards. On the other hand, the study shows that remittance recipient households in a highly affected area experience increase in non-food consumption expenditure by 14.3 percentage points. This study also endorses up the theoretical consumption function assumption by Keynes that consumption is a positive function of income. Because the remittance recipient household has more income than the non-recipient and they tend to increase their spending on both food and non-food consumption expenditure.

Keywords: Household consumption, Remittance, endogeneity, insurance strategy

ACRONYMS AND ABBREVIATIONS

CEDECON: Central Department of Economics

COVID-19:   Corona Virus Diseases 2019

IV: Instrumental Variables

MPC: Marginal Propensity to Consume

UGC: University Grant Commission

TMC: Time taken to nearest Market Centre

2SLS: Two stage least square

RN: Remittance Network

HAA: Highly affected area

THF: Time taken to nearest Health Facility

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CHAPTER I

INTRODUCTION

1.1 Background of the Study

The recent economic crisis led by COVID-19 has prompted policymakers and economists to reconsider economic stabilization tools. One of the most harmful repercussions of output shocks is consumption volatility (Combes & Ebeke, 2011) which has a detrimental impact on the individual and household welfare as a whole. Remittances are a significant source of capital for underdeveloped countries. Sending remittances appears to be a globally widespread phenomenon that has helped to solve numerous problems in both home and host countries. The majority of international remittances was used by remittance-receiving families to achieve family well-being goals such as increased income, better health and nutrition, educational opportunities, improved housing and sanitation, and entrepreneurship, thereby contributing to the reduction of inequality (IFAD, 2017).

Remittance inflows decreased 4.9 percent to Rs.540.12 billion and in the US Dollar terms, inflows decreased 5.8 percent to 4.53 billion (NRB, 2022). In 2020, inward remittance flows to South Asia increased by roughly 5%, owing to a jump in remittances to Bangladesh and Pakistan. Bhutan and Sri Lanka also saw significant increases in remittances last year, while India and Nepal saw a slight decrease. Remittances to the area are likely to fall slightly to 3.5 percent in 2021, due to a slowing of growth in high-income nations and a further reduction in migration to GCC countries (World Bank, 2021).

Several variables influence migrants' willingness to send money home, including individual motivation, family arrangements, and macroeconomic situations. The migrant's ability, instinct, motivation, and relationship with family members left behind are the most direct determinants of migrant remittance flow. The readiness to remit is also impacted by the type of migration, such as the duration of the migration, the family circumstances of migrants, and network effects (Munshi, 2003). Among several micro and macro determinants of sending remittance to the home country

includes altruism, self-interest, co-insurance and loan, and economic performance of both home and host countries in general.

In the past years, the fluctuations in remittance inflow were seen time and again globally. Among several factors the COVID-19 pandemic is the major exogenous shock that cause fluctuation in remittance flow at present. Due to the economic crisis caused by the pandemic, the World Bank had forecasted a 20% drop in global remittances in 2020, the largest drop in recent times (Awode et al., 2021). While migrant workers have been the engine of the globalized economy, the inability of labour to move efficiently will undoubtedly have an impact on remittance economies such as Nepal, where societies rely heavily on migrant worker remittances. When Nepal faced a crisis in the past, remittances have proven to be a lifeline. Following the 2015 earthquake in Nepal, remittances aided disaster relief efforts (Bhattarai & Subedi, 2021).

In several literatures, the influence of remittance income on consumption is examined in three ways: assessment of the marginal propensity to consume (MPC), estimation of the marginal budget share, and estimation of the impact on poverty and/or inequality (Housen et al., 2013). According to the World Bank, income is an unreliable estimate of household wellbeing in low-income contexts due to the numerous issues connected with identifying and quantifying income for people self-employed in agriculture. Furthermore, the method of measuring consumption varies, with some research using aggregate consumption expenditure and others using per capita or per adult equivalent consumption expenditure.

Internal migration might potentially help in economic growth and development of recipient households, as remittances have been found to influence consumption patterns. Increased spending on education, housing, health, and basic necessities all contribute to increased human capital (Housen et al., 2013).

1.2 Statement of the Problems

During the COVID-19 crisis, remittance flows proved to be resilient. Remittances to low- and middle-income countries (LMICs) reached $540 billion in 2020, only 1.6 percent less than the $548 billion witnessed in 2019. The drop was less severe than predicted in April and October of 2020. It was significantly lower than the pace of fall seen during the global financial crisis of 2009. Furthermore, the fall in remittances is far lower than the 11% decline in FDI flows to LMICs expected in 2020

(World Bank, 2021). Though the statistics shows slight decrease in remittance inflow, its impact on both micro and macro level is an emerging area of study. In context of shrinking aggregate demand and stagnant economic activities due to the imposition of COVID-19 lockdown in most parts of the world including Nepal, the impact of remittance (one of the prominent source of household income in present days) on household consumption is necessary one among others.

There is no doubt that a growing body of research on remittances at macro and micro level are accessible in the literature, both from Nepal and from other countries' viewpoints. However, there are few studies in the literature that explore the spending behaviour of remittance receiving households in case of Nepal. The majority of existing studies approach the remittance issue from a macro viewpoint, taking into account country-level macro statistics. From the standpoint of Nepal, there is a scarcity of evidence of household level studies using primary level survey data. Furthermore, there is limited evidence in the literature addressing the influence of remittances on household consumption in Nepal during the period of COVID-19.

The COVID-19 pandemic and its negative economic effects due to disruptions in migration and remittances flow is an emerging area of study. Several anecdotes illustrate different nature and scope of remittances (domestic and international) during normal and abnormal periods. Remittances continued to provide an essential lifeline for poor and vulnerable groups as COVID-19 devastated lives and livelihoods around the world, helping to meet their increased need for livelihood support during the pandemic. During the COVID-19 period, both migration and remittances helped to mitigate negative economic outcomes at home country, implying that they served as a form of insurance (Shimizutani & Yamada, 2021). Hence, an issue can be raised whether remittance acts as an insurance to cover the damaging impact of COVID-19 on household consumption. As a result, the purpose of this research is to fill these emerging and uncovered issues to generate significant value addition to existing body of literature.

Due to the lack of a standardized methodology for remittance and consumption analysis, econometric and statistical approaches differ significantly between studies. Various approaches, such as the instrumental variable approach, reduced form equations, and the endogenous regime switching model, have been used by different

scholars (Adams & Cuecuecha, 2015; Manic, 2017; Zhu et al., 2014). The findings are also contradictory since different researchers used a variety of techniques to address the issue of endogeneity and heterogeneity. As a result, the occurrence of methodological differences and contradictions in researchers' conclusions leads to conflicting policy recommendations. As a result, additional research in this area is deemed important in Nepalese context.

1.3 Research Questions

   i.   Whether COVID-19 affected the household welfare?

  ii.   Whether remittance acted as an insurance strategy to mitigate the effects of COVID-19 on household welfare?

1.4 Objectives of the Study

The general objective of this study is to examine the effect of COVID-19 on household welfare in Nepal and the role of remittance as an insurance to mitigate the effects.

The specific objectives of study are as follows.

   i.   To examine the effect of COVID-19 on household welfare.

  ii.   To analyse the role of remittance as an insurance strategy to mitigate the effect of COVID-19 on household welfare.

1.5 Significance of the Study

The purpose of this research is to examine the impact of remittance inflows on household consumption. The study also seeks to identify the influence of COVID-19 on household's remittance income. The study addresses methodological shortcomings, discrepancies in findings, and inconsistencies in policy suggestions. This study makes use of a COVID-19 household survey dataset collected by CEDECON. As a result, the study provides a clearer understanding of the impact of remittance inflows on household consumption. Furthermore, the use of strong methodology makes the study's findings applicable to policymakers. As a result, the study's conclusions will be valuable to academics, researchers, and all stakeholders.

1.6 Scope and Limitations of the Study

Using cross-sectional COVID-19 survey data, the study intends to analyse the impact of remittances on household consumption in the setting of Nepal. However, this study acknowledges to significant shortcomings as presented below.

i. The analysis is partial as the study period acknowledges only initial wave of COVID infection and lockdown.
ii. The respondents may face recall-bias; hence the dataset may not depict true impact assessment.
iii. It is difficult to assess the share of home production in household consumption.

1.7 Outline of the Study

The study is divided into five chapters. Chapter I covers introduction of study. review of literature is included in Chapter II. Chapter III deals with research methodology. Finding and discussion is presented in Chapter IV. Finally, Chapter V presents summary and conclusions.

CHAPTER II

REVIEW OF LITERATURE

2.1 Introduction

The formal writings envisage a variety of literatures from several sources. Some of the anecdotes and concept related to area of research are of theoretical nature whereas others are empirical. Furthermore, the categorization of empirical literature may also be made as international and national literature. Hence, review of such literatures and proper citation is an appendix for writing research paper. This study also includes some of the theoretical and empirical review presented as follows.

2.2 Theoretical Review

Definition and Nature of Remittance flows

Migration results in remittances. As a result, gaining definitions and classifications of migration is necessary in order to comprehend the techniques of sending and utilizing remittance. Despite the fact that migration is an ancient human activity since ancient times, the function of migration in the development process was not considered until the late 1980s. The New Economics of Labour Migration, for example, is a theory that analyses migration as part of a household strategy to deal with financial constraints and other developing opportunities at home. It is no longer a personal/household matter, and the reasons influencing migration decisions are no longer limited to economic factors; non-economic elements such as knowledge and social capital also play a role in the importance of migration networks (Stark & Bloom, 1985).

Remittance is defined as money sent home by migrant and guest workers employed in foreign countries. It is being referred to as private income transfers that are countercyclical in nature, meaning that they flow from migrants into their source countries when they are experiencing a macroeconomic shock. They safeguard families at home against income shocks in a way, thereby maintaining and smoothing their spending. (Sayeh & Chami, 2020).

In 2020, inward remittance flows to South Asia increased by roughly 5%, owing to a jump in remittances to Bangladesh and Pakistan. Bhutan and Sri Lanka also saw significant increases in remittances in 2020, while India and Nepal saw a slight

decrease. Remittances to the South Asia region were expected to fall slightly to 3.5 percent in 2021, owing to a slowing in high-income countries and a further drop in migration to the GCC countries (World Bank, 2021).

Overview of Consumption and its Theories

In economics, consumption refers to the selection, acquisition, and use of commodities and services to satisfy desires. In the sense that it idealizes the concept of price theory, which assesses the usage of commodities and services, the concept of consumption expenditure is particularly important. When dividing their wealth between current and future consumption, consumers try to maximize their lifetime utility.

Consumption measures are limited in their scope, but are nevertheless a central component of any assessment of living standards in relation to other essential aspects of welfare, such as freedom, health, life expectancy, or educational attainment (Deaton, 2003). Some concepts of welfare measurement, such as money metric utility, which measures levels of living by the amount of money required to sustain them, and alternative approaches, such as welfare ratio approaches, which are measured as multiples of a poverty line, have both advantages and disadvantages; However, both begin with a nominal consumption aggregate but adjust it differently.

The intertemporal optimization criteria, along with the budget restriction, tell us how an optimizing household's consumption levels will vary across the life cycle. The evolution of consumption is shaped by preferences. According to the life-cycle theory, the evolution of consumption is shaped by tastes and life-cycle demands rather than the temporal pattern of lifecycle work income. Consumption is not expected to stay consistent throughout one's life (Deaton, 1992).

Some of the theories of consumption are presented as follows.

Keynesian Theory of Consumption

J. M. Keynes (1936) listed a number of subjective and objective aspects that influence a society's consumption. However, according to Keynes, the current level of income is the most important determinant in influencing an individual's and society's consumption. Keynes' theory of consumption is sometimes known as the "absolute income theory," since he emphasizes the absolute size of income as a predictor of

consumption. In addition, Keynes proposed a psychological law of consumption, according to which as income rises, consumption rises as well, but not as much as income rises. The marginal propensity to consume, in other words, is less than one.

Relative Income Theory of Consumption

J.S. Duesenberry (1949) an American economist, proposed a theory of consumer behaviour that emphasizes an individual's relative income rather than their absolute income as a predictor of their consumption. Another significant deviation from Keynes' consumption on theory made by Duesenberry is that he believes that a person's consumption is determined not by his current income but by a previously achieved income level.

Life cycle Theory of Consumption

Modigliani and Ando (1950s) proposed a key post-Keynesian consumption theory known as the life cycle theory. According to life cycle theory, consumption in any period is a function of lifetime expected income rather than present income in that period. As a result, the individual in the life cycle hypothesis is considered to plan a pattern of consumer expenditure based on expected income across their lifespan.

Permanent Income Theory of Consumption

Milton Friedman (1957) a well-known American economist, proposed the permanent income hypothesis for consumer behaviour. According to Friedman, consumption is driven by long-term expected income rather than the present amount of income, similar to the life cycle concept. He argues that a smooth consumption flow each day is preferable to a lot of consumption now and less consumption tomorrow. As a result, consumption on one day is not determined by the income received on that day. Instead, it is defined by the average daily income earned during a given time period. This is in line with the life cycle idea. Thus, people plan their consumption based on predicted average income over a lengthy period, which Friedman refers to as "permanent income."

2.3 Empirical Review

The review of literature is classified into two parts: a) review of international literature and b) review of national literature.

2.3.1 Review of International literature

Zhang et al. (2022) examine the impact of the COVID-19 pandemic on household spending in Ukraine. For this purpose, data series from the Ministry of Finance of Ukraine, the World Bank, and the State Statistics Service of Ukraine were compiled from 2010 to the second quarter of 2021. The ARIMA model and the Dickey–Fuller Test Unit Root were used in the research. According to the findings COVID-19 has changed the structure of household expenditure in Ukraine. It was discovered that as migrant remittances fluctuate, household expenditure in all categories tends to rise. According to the forecasted findings, due to changing migrant remittances, household transportation expenditure grew the most.

Chowdhury and Chakraborty (2021) investigated the impact of COVID-19 on migrant workers and remittances to Bangladesh. The data for this study were obtained online from the International Labor Organization (ILO), World Development Indicators (WDI), and BMET, and descriptive analysis was performed to estimate the impacts on migrant workers and remittance inflows. It was discovered that pandemic-related travel restrictions have already had a negative impact on the mobility of international migrants, including South Asian migrants, and are likely to keep the flow of remittances low in 2021.

Janssens et al. (2021) examines how low-income households in rural Kenya dealt with the COVID-19 pandemic's immediate economic consequences. It makes use of granular financial data from weekly household interviews that span six weeks before the first case was discovered in Kenya to five weeks after various containment measures were put in place. According to the results of household-level fixed-effects regressions, income from work decreased by nearly one-third and income from gifts and remittances decreased by more than one-third after the pandemic began. Despite this, household food spending remained at pre-COVID levels. There was no evidence that households coped with lower income by borrowing more, selling assets, or withdrawing savings. Instead, they distributed fewer gifts and remittances, lent less money to others, and delayed loan repayments. In addition, in response to school closures and travel

restrictions, they significantly reduced spending on education and transportation. Despite their affected livelihoods, households were able to maintain their food expenditures.

Murakami et al. (2021) investigate the potential effects of the COVID-19 pandemic on the welfare of remittance-dependent households. The study was conducted using a dataset collected in the Philippines prior to the outbreak by applying two-stage least squares (2SLS), with remittance income being instrumented by a macroeconomic variable that was exogenous to households. As a result of the pandemic, it was discovered that remittance inflows decreased by 14–20% and household spending per capita will decrease by 1–2% (food expenditure per capita by 2–3%) in one year.

Shimizutani and Yamada (2021) used a unique monthly household panel dataset that covers the period both before and after the outbreak to examine the effects of COVID-19 on a variety of household welfare outcomes in Tajikistan. Several findings were presented. Regression analysis is used to determine whether or not households sending migrant workers and receiving remittances are better off during the COVID-19 pandemic. First, after April 2020, the pandemic had a significant negative impact on household welfare, which was especially pronounced in the second quarter of 2020. Second, contrary to expectations, the pandemic had a significant but temporary impact on the stock of migrants working abroad in the spring. Third, regression analyses show that both migration and remittances helped to mitigate adverse economic outcomes at home during the "with-COVID-19" period, implying that they acted as insurance. Overall, the COVID-19 pandemic's negative effects were severe and temporary right after the outbreak, but households with migrants were more resilient to the pandemic.

Abdullahi (2020) examined the linkages between International migrant remittances and entrepreneurship development in Nigeria. The study then assesses the impact of COVID-19 on migrant remittance inflows into Nigeria. The study employs a Vector Autoregressive (VAR) approach, first using data from the World Bank's African Development Indicators. The impact of COVID-19 on migrant remittances and the implications for entrepreneurship development. According to the study, COVID-19 caused a decrease in migrant remittance inflows. The study further suggests that the

government relax inflow controls and lower the transaction fees on remittances in order to increase the impact of remittances in Nigeria.

Manic (2017) investigated the effects of international remittances on regional economic development using spatial data from an original household survey conducted in the Republic of Moldova. The researcher controls for any selectivity and endogeneity biases in remittances using the multinomial logit technique. The findings suggest that remittances increase marginal productive investments in urban areas at the expense of rural areas. The study's main finding is that remittances influence the movement of productive capital from rural to urban areas (a pattern similar to the crowding-out effect of the Dutch Disease).

Beuermann et al. (2016) determined whether remittances aid in consumption smoothing during health shocks in Jamaica. The use of household members' health shocks (accidents and illnesses) to demonstrate the value of remittances as social insurance for consumption smoothing, they assess the relevance and significance of remittances as a social insurance mechanism in Jamaica after demonstrating that these shocks are as good as randomly assigned. The main findings show that health shocks reduce total household expenditures by 19% on average. Remittances, on the other hand, completely offset these negative effects, indicating that in the face of idiosyncratic shocks, remittances serve as a social insurance mechanism that provides full protection. Furthermore, we find that remittances are ineffective as a safeguard against the availability of private health insurance.

Haider et al. (2016) through a survey of rural households in Bangladesh, examined the impact of remittances on consumption and savings behaviour. It compares consumption and savings behaviour using hypothesis testing and uses path model analysis to determine the impact of remittance on household consumption and savings behaviour. On average, remittance receiver households receive US $358 in monthly remittances. A remittance receiver household's average monthly food expenditure, aggregate expenditure, and savings are approximately $28, $32, and $10 greater than a non-receiver home. According to the results of the path model analysis, remittance has a statistically significant favourable impact on attributing food and aggregate consumption spending, in addition to savings.

Adams and Cuecuecha (2015) analysed the impact of international remittances on poverty and household consumption and investment using panel data (2000 and 2007) from the Indonesian Family Life Survey. The paper employed an instrumental variables approach to control for selection and endogeneity. It was found that households receiving remittances in 2007 spent more at the margin on one key consumption good—food—compared with what they would have spent on this good without the receipt of remittances.

Zhu et al. (2014) studied the impact of migrant remittances on Chinese consumption patterns. Large homogeneous sample of rural households surveyed by the National Bureau of Statistics (NBS) of China in the provinces of Jiangsu, Anhui, and Sichuan, representing the eastern (coastal), central, and western areas of China, respectively, as part of the RHS of China in 2001 and 2004 was used in the study. The researcher used the instrumental variables (IV) approach to identify remittances and local employment earnings endogenously, using the 2SLS method to assess consumption patterns. The findings showed that remittances are disproportionately spent on non-housing expenditures, virtually dollar for dollar, compared to local employed earnings and in particular to income from farming. Also, findings are robust to intra-household division of labour and to fixed-effect for the county in which the respondents are registered. These findings show that rural households rely heavily on remittances as a source of permanent income, which is consistent with the prevalence of circular and recurrent migration in China.

Housen et al. (2013) reviewed the current literature on the use and impact of internal remittances on low-income recipient households. A systematic review used six electronic and four informal databases. Narrative synthesis was applied to review 18 studies. The review's findings show that internal migration is a significant poverty-reduction strategy, with remittances having the largest impact on the poorest households. Internal migrant remittances not only improve livelihoods by reducing the depth and severity of poverty in households, but also raise household investment in education and housing.

Nguyen (2013) examined the impact of foreign and domestic remittances on the welfare of remittance-receiving households using data from the Vietnam Household Living Standard Surveys in 2002 and 2004. The study used an impact evaluation

approach based on the average treatment effect. It was discovered that receiving international and internal remittances increased the beneficiaries' income and consumer expenditures. Remittances had a greater impact on non-food spending than they did on food expenses. The impact of international remittances on income was substantially greater than the influence on consumption expenditures. The impact on income of receiving internal remittances was only marginally bigger than the impact on consumer expenditures.

Combes and Ebeke (2011) assessed the impact of remittances on household consumption instability in developing countries using large panel data from developing nations from 1975 to 2004. The adoption of a dynamic panel model concluded that remittances dramatically lower household consumption volatility. Second, remittances provide insurance by mitigating the effects of numerous causes of consumer insecurity in poor countries (natural disasters, agricultural shocks, discretionary fiscal policy, systemic financial and banking crises, and exchange rate instability). Third, remittances have a larger stabilizing effect in less economically developed countries. Fourth, when remittances exceed 6% of GDP, the overall stabilizing effect of remittances is diminished.

Some of the studies like (Zhang et al., 2022), (Murakami et al., 2021), (Haider et al., 2016), (Adams & Cuecuecha, 2015), (Zhu et al., 2014),(Combes & Ebeke, 2011), (Shimizutani & Yamada, 2021), and (Beuermann, Diether et al., 2016) had similar objectives to identify impact of remittance on household welfare. Regression approach was implied by most of the studies reviewed like (Haider et al., 2016), (Janssens et al., 2021), (Murakami et al., 2021), (Manic, 2017), (Adams & Cuecuecha, 2015), (Zhu et al., 2014), (Nguyen, 2013), (Combes & Ebeke, 2011), (Shimizutani & Yamada, 2021), and (Beuermann, Diether et al., 2016). Meanwhile, (Housen et al., 2013) used systematic review to glance the impact of internal remittances on low income recipient households. And, (Chowdhury & Chakraborty, 2021) adopted descriptive statistics to investigate the impact of COVID-19 on remittances. The literatures such as (Zhang et al., 2022) and (Murakami et al., 2021) discovered that COVID-19 had significant impact on household expenditure. However, (Janssens et al., 2021) showed no change in consumption due to behavioural changes in lending and spending patterns by household during COVID-19. (Shimizutani & Yamada, 2021) argued that though the consumption decreased in COVID-19, remittance proved to be an insurance strategy.

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In a similar prospect, the literatures like (Beuermann, Diether et al., 2016), and (Combes & Ebeke, 2011) discovered the role of remittance to mitigate the reduction in household expenditure that arise from several exogenous shocks.

2.3.2 Review of National literature

Dhakal and Oli (2020) investigated the impact of remittances on consumption and investment in Nepal's Province Five. With 570 observations, this study is based on primary sources of data. The primary survey was used to collect information from respondents about the remittance amount, consumption, and investment of individual households in Nepal's Rupandehi, Dang, and Rolpa districts whose family members are working outside the country. To examine the importance and influence of remittances on investment and consumption, regression models are estimated. The findings indicate a positive association between remittances and consumption, as well as between domestic income and consumption, household size and consumption, and level of education and consumption.

2.4 Research Gap

There is a scarcity of literature on remittance inflow and household consumption in national studies during the period of exogenous shocks such as COVID-19. Although a plethora of international literature has attempted to reveal the relationship between remittance inflow and household consumption, Nepalese literature remains backward. The link between COVID-19 pandemic and its impact on household welfare as well as the role of remittance as an insurance to mitigate the effect of fall in consumption has yet to be investigated. Hence, previous researches were unable to analyse the role of remittance as an insurance strategy during the period of external shocks such as COVID-19 on household welfare.

As a result, this study seeks to investigate whether remittance works as an insurance strategy for household welfare measured in terms of household consumption. during the period of pandemic.

2.5 Literature Review Matrix

Table 2. 1: Literature Review Matrix

S. N.	Author (s) and title of the articles, year	Objectives of the articles or research questions	Methodology used in the articles	Model specification/ Variables/issues	Strength/ innovation of the articles	Findings of the study
1	Zhang et al. (2022)	examine the impact of the COVID-19 pandemic on household spending in Ukraine	ARIMA model and the Dickey–Fuller Test Unit Root	migrants' remittances; expenditure of households by the types; pandemic	latest paper to diagnose the macro impact of COVID-19 pandemic on household consumption	COVID-19 has changed the structure of household expenditure in Ukraine
2	Janssens et al. (2021)	examines how low-income households in rural Kenya dealt with the COVID-19 pandemic's immediate economic consequences	household-level fixed-effects regressions	COVID-19 pandemic; Economic effects; Risk-coping; East Africa;	Covers wide spectrum of micro level analysis of COVID-19 pandemic	Households food spending remained at pre-COVID level, despite affected livelihood.
3	Murakami et al. (2021)	investigate the potential effects of the COVID-19 pandemic on the welfare	two-stage least squares (2SLS)	COVID-19; Remittance; Migration; Household Welfare	Micro level analysis with enriched methodolog y and	It showed remittance inflows decreased by 14-20% and household

		of remittance-dependent households			addresses emerging issues	spending per capita will decrease by 1-2%.
4	Dhakal and Oli (2020)	investigated the impact of remittances on consumption and investment	regression models are estimated	Remittance; Consumption; Investment	study can be useful to concerned authorities for further planning of proper investment of remittance.	It shows positive association between remittance and consumption
5	Manic (2017)	investigated the effects of international remittances on regional economic development	multinomial logit technique	Remittance; Consumption Expenditure; Investment Expenditure	Spatial data; Original household survey; Alternative approach	Remittance increases marginal productive investments in urban areas at the expense of rural areas
6	Haider et al. (2016)	examined the impact of remittances on consumption and savings behavior	hypothesis testing and path model analysis	Remittance; Household consumption; Household Saving; Food consumption	Primary source of data;	Remittance receiver household's average monthly expenditure is greater than a non-receiver household

7	Adams and Cuecuecha (2015)	analyzed the impact of international remittances on poverty and household consumption and investment	instrumental variables approach	International remittance; Poverty; Household consumption and investment	Control for selection and endogeneity bias	Remittance recipient household spent more at the margin on one key consumption good.
8	Zhu et al. (2014)	studied the impact of migrant remittances on Chinese consumption patterns	2SLS method	Remittance; Consumption; local employed earnings; Net farm income	Large homogeneous sample; local employed earnings	Remittances are disproportionately spent on housing expenditures.
9	Housen et al. (2013)	reviewed the current literature on the use and impact of internal remittances on low-income recipient households	Narrative synthesis and systematic review	remittances, migration, poverty, consumption, development, poverty reduction, policy	Use of qualitative review; Incorporate wide number of studies	Internal migration is a significant poverty-reduction strategy

10	Nguyen (2013)	examined the impact of foreign and domestic remittances on the welfare of remittance-receiving households	impact evaluation approach based on the average treatment effect	International remittances, internal remittances, household welfare, income, expenditures	Use of survey data; Enriched methodology;	Receiving remittances increased the beneficiaries' income and consumer expenditures
11	Combes and Ebeke (2011)	assessed the impact of remittances on household consumption instability in developing countries	Dynamic Panel Model	remittances, consumption instability, financial development, shocks, threshold effects	large cross-section panel of developing countries is built	Remittance provide insurance by mitigating the effects of numerous causes of consumer insecurity in poor countries
12	Shimizutani and Yamada (2021)	examined the effects of COVID-19 on a variety of household welfare outcomes in Tajikistan	Regression analysis	Remittance, Consumption, Migration, Household,	Large survey data, authorised sources of data, adds value to the research in contemporary economic issues	Pandemic had a significant negative impact on household welfare and remittance helped to mitigate adverse effect.

13	Abdullahi (2020)	assessed the impact of Covid 19 on migrant remittance inflows into Nigeria	Vector Autoregressive approach (VAR) approach	Remittances, Entrepreneurship Development, Covid-19	This study is an exploratory study and attempted to contribute to the literature	COVID-19 caused a decreased in migrant remittance inflows.
14	Chowdhury and Chakraborty (2021)	investigated the impact of COVID-19 on migrant workers and remittances to Bangladesh	Descriptive statistics	Globalisation, migrant workers, remittances inflow	This study can be considered a key contribution to the literature as there are no or very limited comprehensive studies	COVID-19 had a negative impact on the mobility of international migrants and are likely to keep the flow of remittances low in 2021
15	(Beuermann et al., 2016)	determined whether remittances aid in consumption smoothing during health shocks in Jamaica	Two stage least square method	Consumption smoothing, Remittance, Health shocks	This study addresses the problem of endogeneity introducing the instrumental variables	Remittances completely offset the negative effects of health shocks on household expenditure

CHAPTER III

RESEARCH METHODOLOGY

3.1 Introduction

In this section, a comprehensive research design with detail conceptual framework is being presented. It covers the methodological elements like sources of data which are going to be used in this study and data analysis tools and techniques (descriptive statistics and econometric tools etc.). For the generalization of data analysis techniques, a simple model specification is given along with operational definition of the variables.

3.2 Research design

The study is based on cross-sectional and explanatory research design. It attempts to examine the impact assessment between household welfare of Nepalese household and the role of remittance as an insurance strategy to mitigate the adverse effect on household consumption at the time of COVID-19. The specification used for the impact analysis also controls other socio economic and demographic household characteristics. The study uses nationally representative household survey in Nepal collected by Central Department of Economics between September 2021 and October 2021.

3.3 Conceptual Framework

In empirical research, conceptual frameworks are especially effective as organizing instruments. It is a set of abstract representations that guide data gathering and analysis and are linked to the purpose of the research. The relationships between the different variables (dependent, independent, control, moderator, mediator, etc.) under research and their relationship to each other are clearly specified in it. A brief conceptual framework demonstrating the effect of COVID-19 on household consumption a proxy for household welfare is being provided along with the role of remittance as an insurance strategy to insure the household consumption during the period of COVID-19 addressing the issue of endogeneity is presented as follows.
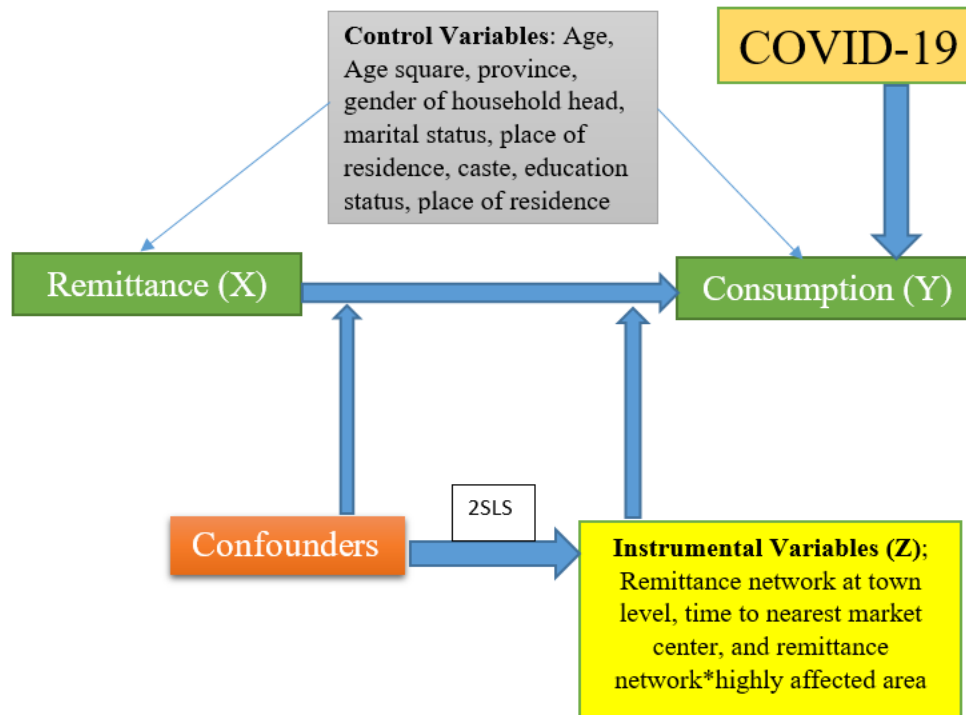
Figure 3. 1: Conceptual Framework of the study

3.4 Sources of data

The study primarily uses nationally representative household survey in Nepal employing cross sectional data collected by Central Department of Economics between September 2021 and October 2021. The survey sampled 3391 households from both village council and municipalities of 59 districts of all the seven provinces. However, information of only 3378 households are used in the analysis due to missing observations of some variables. Being a cross-sectional study, the data were collected in one shot or one contact with respondents. The village council and municipalities were selected using stratified random sampling.

In terms of strengths of this survey firstly, it captures the essential elements of the household characteristics which are nationally representatives. The dataset has been supplemented with detailed information on consumption expenditure, labor market outcomes, and other demographic characteristics, individual characteristics, and household characteristics such as age, place of residence, marital status, ethnicity, education, employment status, international migration status, remittance inflow (before

and after COVID) and so on. Secondly, it covers in-depth data related to COVID-19 and its arenas. Lastly, the data were collected using scientific tools and techniques such as probability sampling i.e., stratified random sampling which helps to reduce the biasness. In a similar fashion, some of the data such as district level COVID-19 infection rate data was collected from secondary sources like Ministry of Health as well as other academic reports and literatures.

3.5 Tools of analysis

3.5.1 Descriptive Analysis

The study performs the descriptive analysis using statistical tools such as mean, standard deviation etc. to demonstrate households' demographic characteristics such as religion, caste, education, age, gender of household head, etc. The descriptive analysis of variables of interest such as consumption expenditure, remittance inflow is being performed.

3.5.2 Econometric analysis

The examination of cause and effect relation between household consumption expenditure and remittance during the period of COVID-19 will be made. Carrying out a simple liner regression between consumption expenditure and remittance inflow will be riskier as remittance is correlated with other omitted variables or error term. Since, predictor variable i.e. remittance is endogenous problem it should be corrected using two stage least square method with an introduction of Instrumental Variable (IV). IV should be random and has a strong correlation with the predictor variable (remittance) (relevance criteria) and uncorrelated with the omitted variable or the error term (exogeneity criteria) (Wooldridge, 2002).

3.6 Model Specification

The study follows the two stage least square regression model applied by several scholars to solve the endogeneity problem. Endogeneity (or selection) bias is a significant issue in the study of the impact of remittances. In other words, there may be a fundamental unobserved factor that affects the respective activity patterns of households with international or national migrants differently than those without migrants, implying that the remittance variable may be correlated with the regression equations' error term. It is therefore critical to account for this selection bias in both observed and unobserved factors (Manic, 2017).

Depending on the type of data and the scope of the study, economists highlight various forms of dealing with selection bias, mainly: difference-in-difference (with panel data), instrumental variables (IVs), or a matching technique. Hence, we use instrumental variables (IVs) techniques to solve the biases in this study.

3.6.2 Two-stage Least Square

The main purpose of this study is to analyse the casual effect of COVID-19 on household welfare and investigate whether remittances acted as an insurance strategy to mitigate the effect of COVID-19 on household welfare using econometric modelling. The empirical model comprises both ordinary least square (OLS) and two stage least square (2SLS), which are shown in equations (1) and (2). Equation (1) represent impact of COVID-19 on household food consumption and the role of remittance as an insurance strategy. Equation (2) represents impact of COVID-19 on household non-food consumption and the role of remittance as an insurance strategy. F-test is calculated to evaluate the validity of instruments.

The first equation of this model is expressed as;

$$\Delta FC^j{}_i = \alpha + \beta_1 rem\_receipt_i + \beta_2 highly\ affected\ area_i + \beta_3 rem\_receipt * highly\_affected\_area + \beta_4 X_i + \varepsilon_i \dots\dots\dots (1) \quad \text{Where, I} = 1\dots N$$

Equation (1) represents consumption function; change in both monthly food consumption and self-reported decreased in food consumption by the household is used as a dependent variable. $\Delta FC^j{}_i$ is the change in actual monthly food consumption which represents the jth outcome of ith household which is dummy in nature and takes the value 1 for decrease in food consumption and 0 otherwise. For self-reported data we take the label 'Yes' as decrease in food consumption and 'No' for not decreasing in food consumption. Regarding our major explanatory variable, rem_receipt is the remittance receipet which is binary in nature and takes the value 1 for remittance recipient household and 0 otherwise. Similarly, remittance receipt*highly affected area is the interaction of remittance recipient in highly affected area in ith household. Highly affected area is the explanatory variable which is dummy for the areas highly affected by COVID-19. X_i is the vector of household characteristics. ε_i is the error term.

The second equation of this model is expressed as;

$$\Delta NFC^j{}_i = \alpha + \beta_1 rem\_receipt_i + \beta_2 highly\ affected\ area_i + \beta_3 rem\_receipt *$$
$$highly\_affected\_area + \beta_4 X_i + \varepsilon_i \dots\dots\dots (1) \quad \text{Where, I = 1.... N}$$

Equation (1) represents consumption function; change in both monthly non-food consumption and self-reported decreased in non-food consumption by the household is used as a dependent variable. $\Delta NFC^j{}_i$ is the change in non-food consumption which represents the jth outcome of ith household which is dummy in nature and takes the value 1 for decrease in non-food consumption and 0 otherwise. For self-reported data we take the label 'Yes' as decrease in non-food consumption and 'No' for not decreasing in non-food consumption. Regarding our major explanatory variable, rem_receipt is the remittance receipt which is binary in nature and takes the value 1 for remittance recipient household and 0 otherwise. Highly affected area is the explanatory variable which is dummy for the areas highly affected by COVID-19. Similarly, remittance receipt*highly affected area is the interaction of remittance recipient in highly affected area in ith household. X_i is the vector of household characteristics. ε_i is the error term.

Disentangling causality between remittances and household consumption is problematic as a result of reverse causation. Therefore, identifying whether remittances serve as an insurance mechanism toward mitigating the adverse effect in consumption would require the existence of an exogenous and unexpected shock suffered by non-receivers and receivers. In this study, we exploit remittance network, remittance network*Highly affected area and Time to nearest market center as instrumental variable to identify the relevance of remittances as an insurance strategy toward consumption smoothing. After showing that these variables are as good as randomly assigned since they pass both the weak identification and over identification test, we assess the relevance and significance of remittances as an insurance mechanism in to COVID affected household in Nepal. In our study we define remittance network as an average remittance amount at the community level. A better community-level banking network may minimize the cost of remitting to migrant-sending groups, increasing the likelihood of receiving greater remittances (Raut & Tanaka, 2018).

The first stage regression is expressed for both equation (1) and (2) as follows.

$remittance\_receipt_i = \lambda_1 time\_to\_neareast\_market\_centers_i + \lambda_2 remittance\_network_i +$
$\lambda_3\ remittance\_network*highly\_affected\_area_i + \gamma X_i + e_i \dots\dots (3)$

Or, $remittance\_receipt_i = \lambda Z_i + \gamma X_i + v_i$

Where, Z_i = instrumental variable

X_i is a set of households' control variables and other observed characteristics that have impact on both remittance and consumption which includes age, age squared, place of residence of household head, gender of household head, marital status, and level of education

v_i = error term, which should be uncorrelated with the independent variables

3.7 Operational Definitions of Variables

The study takes in consideration the following variables to achieve the given objectives.

Dependent Variable:

Reduction in consumption: It is a household consumption both (food and non-food) which is taken as a dummy variable with value 1 for increase in consumption and 0 otherwise for the actual decrease in both food and non-food consumption. It also takes into account the self-reported data of the household for decrease in both food and non-food consumption or not.

Explanatory Variable:

Remittance recipient: The status of remittance recipient in i^{th} household at a point of time is taken which is as a binary in nature and takes the value 1 for remittance recipient household or 0 otherwise.

Highly affected areas: Dummy variables for the areas highly affected by COVID-19. High and low affected areas are categorized based on the median value of the COVID-19 infected population (per 1000 inhabitants) at district level from January 23, 2020 to August 31, 2021.

Instrumental Variables: Remittance network, time to nearest market centre, and remittance network*highly affected area is used as the instrumental variable (Z_i).

Control Variables: It is the vector of household socio-cultural and demographic characteristics.

Table 3. 1: Operationalization and measurement of variables (2SLS model)

Variables	Definition and measurement	Expected Sign
Dependent Variable		
Reduction in Consumption	dummy variable change in consumption 1=decrease in both food and non-food consumption and 0 otherwise	
Independent variable		
Remittance receipt	dummy variable 1=remittance recipient household and 0 otherwise	Negative
Age	Continuous variable Current age of the individuals during the survey	Positive
Age squared	Continuous variable Square of current age of the individuals during the survey	Negative
Place of residence	Binary variable 1=if the household live in rural area, or 0 otherwise	Positive/Negative
Sex of household head	Binary variable 1=if the household is male head , or 0 otherwise	Positive/Negative
Marital status	Binary variable 1=if the household head is married, or 0 othrwise	Positive/Negative
Caste	category variable 1= if the individual's caste falls into the following category hill Brahmin, Chhetri 2= Hill Adhibasi/Janajati 3=Hill Dalit 4=Terai Brahmin 5=Terai Dalit 6=Terai Adhibasi 7=Terai Madhesh others 8=Muslim 9= Others	Positive/Negative
Level of education	Category variable	Positive/Negative

	1= less than primary level completed household head 2= primary level completed household head 3= high school completed household head 4= some college degree or higher education completed household head	
Highly affected areas	Binary dummy variable 1=if the infection rate is greater than median infection calculted, or 0 otherwise	Positive

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Introduction

This chapter is the main body of research which contains descriptive analysis and econometric analysis. The descriptive analysis includes a measures of central tendency and dispersion for the individual and household characteristics of remittance recipient household and their consumption expenditure. Along with descriptive analysis, we have portrayed the graph and figures for the features of survey data, econometric analysis has been carried out in order to examine the impact of remittance inflow on household consumption.

4.2 Description of the study Area and descriptive statistics

The nationally representative cross-sectional household level survey data related to COVID-19 collected by CEDECON between September 2021 and October 2021 is used for the econometric as well as descriptive analysis of this study. The dataset is enriched with the detail information about consumption expenditure, labor market outcomes, and other demographic characteristics, individual characteristics and household characteristics such as age, place of residence, marital status, ethnicity, education, employment status, international migration status, remittance inflow (before and after COVID) etc. which allows our empirical model for better understand on the casual relationship between consumption and remittance inflow. The question on the change in consumption expenditure before and after COVID is presented as "Did the household reduce its consumption or expenditure on foods and non-food items during Baisakh-Poush2077?" with dichotomous response "yes" or "No". In our analysis, change in consumption expenditure after COVID is taken as dependent variable which means decrease in both food and non-food consumption =1 or zero otherwise. Similarly, for the independent variable; the question of remittance recipient is taken as "How much remittance do you receive during a normal year (2019) and during Baishak-Poush (2077)?" with continuous response "amount of remittance in rupees". Time taken to reach the nearest market center (TMC), remittance network, and remittance network*highly affected area is taken as instrumental variable where the remittance network is exogenous for remittance recipient. The data consist of 59 district level data, 3391 household level data and 17808 individual level data respectively. We have

categorized the total households into two categories i.e., highly affected households and less affected households. The division of highly affected areas and least affected areas are made with the help of administrative data. An index was built for COVID-19 infected population (per 1000 inhabitants) at district level after taking into consideration for number of infection from 23rd January 2020 to 30th August 2020. 59 total districts were surveyed, then the median of all the 59 districts infection rate were calculated. If the actual number of infection is greater than median then the respective town falls under high infected area similarly, if the number of infection is less than median then it falls on the category of least infected area and so on. Out of total 3383 households 2004 household lies in highly affected areas and 1379 households lies in less affected areas.

Table 4.1 represents the descriptive statistics on monthly food and non-food consumption of both the highly affected area and less affected area by at normal times and during COVID-19 period. Both the actual and self-reported reduction in food and non-food consumption were demonstrated. Along with this, the statistics on household level socio-cultural and demographic characteristics were provided for both highly affected and less affected areas. From the table we can see that monthly food consumption at highly affected area at normal time period is less than non-food consumption whereas opposite applies in case of less affected areas. However, the monthly food consumption and non-food consumption of affected household decreases from that of normal times in both highly affected and less affected areas where non-food consumption decreases sharply than food consumption in both the areas. The data shows 19.8% and 15.4% reduction in food consumption in highly affected and less affected area respectively which is less than decrease in non-food consumption of 24.1% for highly affected and 16.4% for less affected areas. The average age of household head in highly affected area is 51.14 years which is more than that of less affected area accounted as 49.68 years. With regards to the gender of the household head, 77.2% are male headed in highly affected area and 79.3% in less affected area. Also, the household size is less in highly affected area than that of less affected area. 21.1% household head are illiterate in highly affected area which is less than 33.5% to that of less affected area. Most of the household in both areas belongs to Brahmin and Chhetri of hilly area i.e., 46.6% in highly affected area and 32.5% in less affected area. Also, 25.5% of household received remittance from highly affected area and 20.4% of household received remittance from low affected area. Similarly, the time taken to

reach the nearest market center is less in highly affected area to that of low affected area by 13 minutes on an average. Among the households residing in highly affected area 32.7% lies in rural municipality and 45.8% of households from less affected area lies in rural municipality. The categorical variable such as education status of household head, ethnicity of household head, and marital status are excluded from descriptive analysis, however is presented in figures.

Table 4. 1: Descriptive Statistics of household's demographic and sociocultural characteristics

VARIABLES	Highly-Affected Areas		Less-affected Areas	
	N	mean	N	mean
Monthly food consumption during normal times (in Nepalese Rs.)	2,004	14,545	1,379	11,885
Monthly food consumption during normal times (affected HHDs only) (in Nepalese Rs.)	416	14304	238	12401
Monthly food consumption during COVID-19 (affected HHDs only) (in Nepalese Rs.)	416	9,526	238	8,809
Monthly non-food consumption during normal times (in Nepalese Rs.)	2,004	16,086	1,379	11,245
Monthly non-food consumption during normal times (affected HHDs only) (in Nepalese Rs.)	492	18036	231	12034
Monthly non-food consumption during COVID-19 (affected HHDs only) (in Nepalese Rs.)	492	10,536	231	7,252
Actual reduction in food consumption (=1)	2,004	0.198	1,379	0.154
Actual reduction in non-food consumption (=1)	2,004	0.241	1,379	0.164
Self-reported reduction in food consumption (=1)	2,004	0.208	1,379	0.173
Self-reported reduction in non-food consumption (=1)	2,004	0.246	1,379	0.168
Self-reported reduction in food	2,004	0.208	1,379	0.173

consumption (=1)

Self-reported reduction in non-food consumption (=1)	2,004	0.246	1,379	0.168
Age of HHD head	2,004	51.14	1,374	49.68
Age of HHD head squared	2,004	2,823	1,374	2,684
HHD head male (=1)	2,004	0.772	1,379	0.793
HHD size	2,004	5.001	1,379	5.616
HHD head married (=1)	2,004	0.857	1,379	0.864
Illiterate HHD head	2,004	0.211	1,379	0.335
Less than primary level completed HHD head	2,004	0.221	1,379	0.192
Primary level completed HHD head	2,004	0.0634	1,379	0.0602
High school completed HHD head (Up to class 12)	2,004	0.434	1,379	0.371
Some College degree or higher education completed HHD head	2,004	0.0709	1,379	0.0413
Hill high caste	2,004	0.466	1,379	0.325
Hill *Adibasi Janajati*	2,004	0.246	1,379	0.138
Hill Dalits	2,004	0.0773	1,379	0.110
Terai High caste	2,004	0.0294	1,379	0.0341
Terai Dalits	2,004	0.0399	1,379	0.0747
Terai Adibasi Janajati	2,004	0.0988	1,379	0.0761
Terai Madhesh Others	2,004	0.0195	1,379	0.189
Muslims	2,004	0.0185	1,379	0.0384
Others	2,004	0.00449	1,379	0.0152
Remittance receipt (=1)	2,004	0.255	1,379	0.204
Time to nearest health facility in mins	2,004	22.13	1,379	23.21

Time to nearest Market center in mins	2,004	49.08	1,379	62.27
Rural municipality (=1)	2,004	0.327	1,379	0.458
Province 1	2,004	0.150	1,379	0.152
Madhesh Province	2,004	0	1,379	0.369
Bagmati Province	2,004	0.285	1,379	0.0218
Gandaki Province	2,004	0.224	1,379	0
Lumbini Province	2,004	0.192	1,379	0.0885
Karnali Province	2,004	0.0599	1,379	0.196
Sudurpaschim Province	2,004	0.0893	1,379	0.173

Source: Author's own calculation using survey data

Note: For the categorization of infected affected area,
value of particular area >median value =highly affected area
value of particular area<median value= less affected area

4.3 Socioeconomic and demographic characteristics of household head

Figure 4. 1: Education status of household head
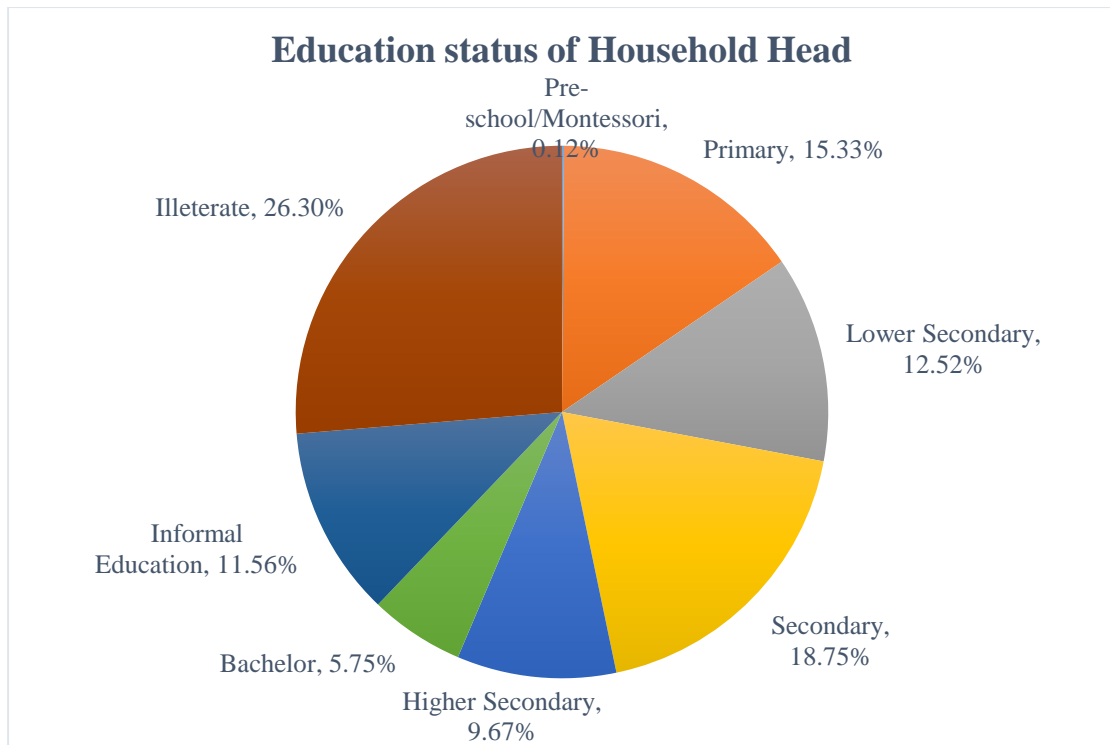
Source: Author's own Calculation using Survey dataset

Figure 4.1 represents the educational status of household head. In our sample the educational status of household head is categorized by maximum level of education attained by head of the family. The figure depicts, among the total observations of 3391 households; minimum level i.e., 0.12 % of household head attained pre-school, 15.33 % attained primary education, 12.52 % attained lower secondary education, 18.75 % attained secondary education, 9.67 % has made up to higher secondary level, 5.75 % has attained bachelor level. Out of total household, 11.56% of household head has gained informal education and most number of household head i.e., 26.3% are illiterate.

Figure 4. 2: Ethnicity status of household head

Ethnicity status of Household head

Source: Author's own Calculation using Survey dataset

Figure 4.5 displays the percentage of household head by ethnicity. The ethnicity background gives the features of caste status of household head. Ethnicity status is categorized under 9 categories in our sample. The category includes; Other caste (other Terai caste, Newar and remaining caste in Nepal) , Hill Brahmin/Chettri , Terai Brahmin Chettri, Hill Dalit , Terai Dalit , Hill Janajati, Terai Janajati, Terai Madesh otehrs and Muslim . About 40.88 % of household head belong to Hill Brahmin and Chettri ethnic group followed by Hill Adhibasi janajatis (20.31 %), Hill Dalits (9.10 %), Terai Madhesh others (8.89 %), Terai Adhibasi Janajatis (8.86 %), Terai Dalits (5.42 %), Terai Brahmin (2.96 %), Muslim (2.67%) and other casts (0.90 %).

Figure 4. 3: Marital status of household head

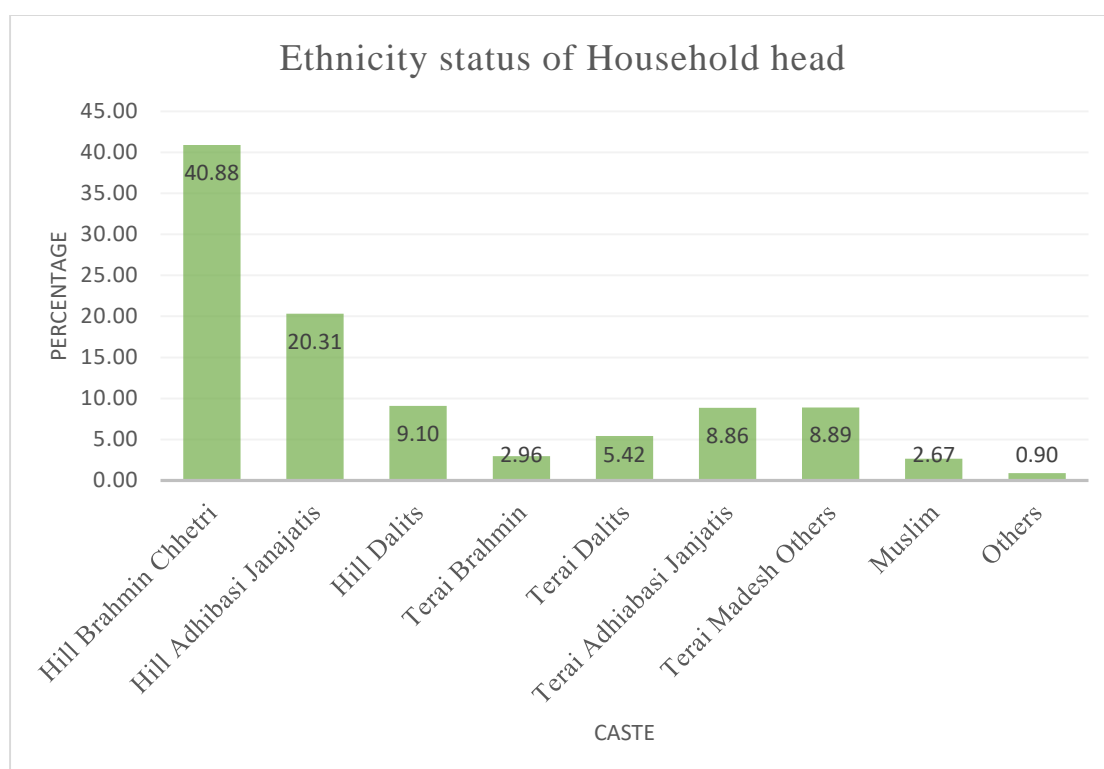**Marital status of household head**
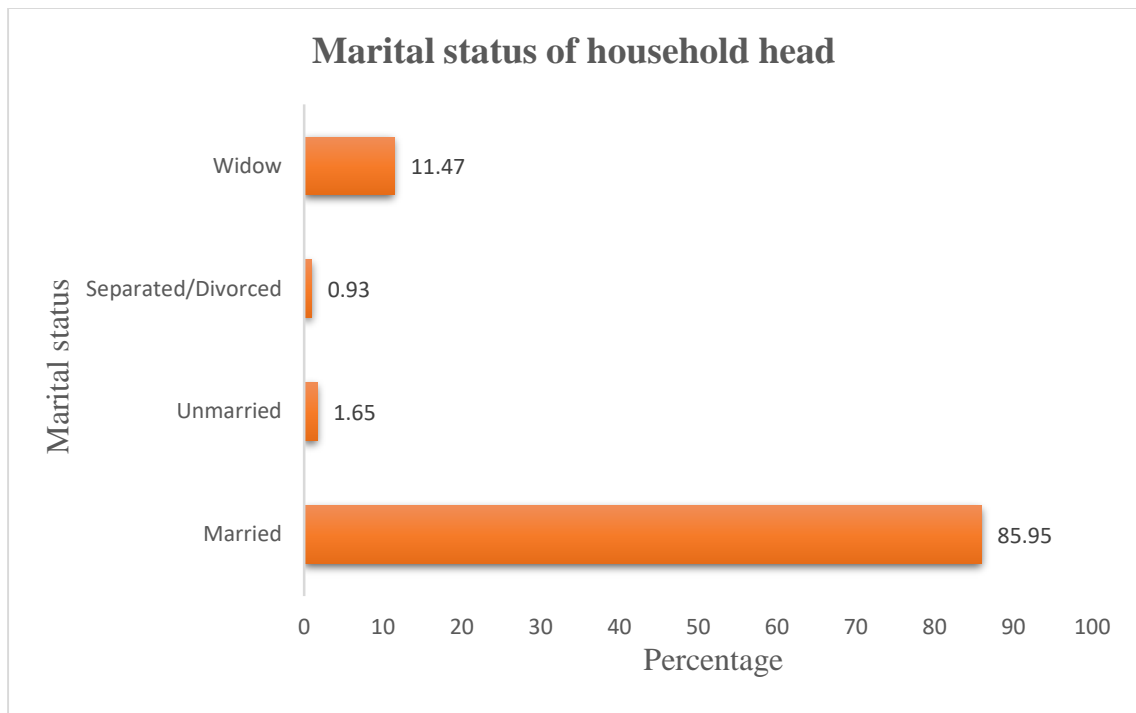
Source: Author's own Calculation using Survey dataset

Figure 4.1 represents the marital status of the household head. In our sample the marital status of woman is categorized by household head who is currently married, household head who is unmarried, who is currently widowed, household head who is separated/divorced. The figure depicts, among the total observations of 3391 households; 85.95 % of household head are married, 1.65 % are unmarried/never in any relationship, 11.47 % are widowed, 0.93 % has already left their partner or currently separated.

Figure 4. 4: International migration destination of members of household

Country of Migration

- India — 43.89%
- Middle East — 26.94%
- Malaysia — 7.50%
- Japan — 3.43%
- Korea — 1.67%
- America — 3.33%
- Australia — 5.65%
- Others — 7.59%
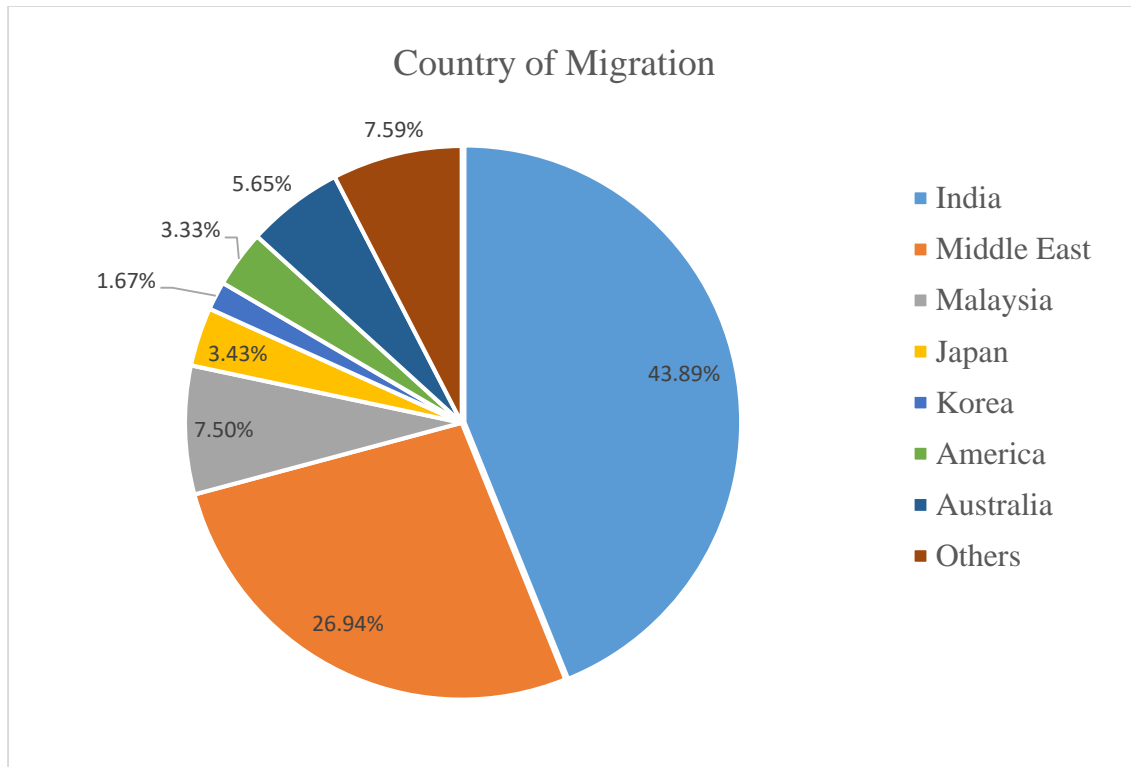
Source: Author's own Calculation using Survey dataset

Figure 4.4 displays the country of migration of the members from the surveyed household. The country of migration gives the features of international educational and foreign employment destination of the members of household head. Migration destination is being categorized under 8 categories in our sample. The category includes; India, Middle East, Malaysia, Japan, Korea, America, Australia, and other countries. About 43.89 % member has gone to India for foreign employment which is the highest followed by Middle East (26.94 %), Malaysia (7.50 %), Australia (5.65 %), Japan (3.43 %), America (3.33 %), Korea (1.67 %), and other countries (7.59 %).

4.3 Results from Regression Analysis

This section includes the estimated results from equation (1) and equation (2 respectively. The OLS model along with 2SLS for food consumption both actual and self-reported data are presented in table 4.2. Whereas, table 4.3 presents the OLS model along with 2SLS for both actual and self-reported in case of non-food consumption.

Table 4. 2: Regression Results for the impact of remittance on household food consumption during COVID-19 incidence (Both OLS and 2SLS)

VARIABLES	Reduction in Monthly food consumption expenditure (=1)		Food consumption reduced, Yes (=1) (Self-reported)	
	OLS	2SLS	OLS	2SLS
Remittance receipt (=1)	0.0269	0.0803	**0.0611***	**0.127****
	(0.0335)	(0.0534)	(0.0368)	(0.0592)
Highly affected area (=1)	**0.0714****	**0.0860*****	**0.0668***	**0.0826****
	(0.0321)	(0.0326)	(0.0343)	(0.0343)
Remittance receipt*Highly affected area	**-0.0140**	**-0.0908**	**-0.0289**	**-0.114**
	(0.0458)	(0.0691)	(0.0487)	(0.0743)
Age of HHD head	0.00221	0.00229	0.00273	0.00281
	(0.00251)	(0.00250)	(0.00264)	(0.00264)
Age of HHD head squared	-2.70e-05	-2.78e-05	-3.07e-05	-3.16e-05
	(2.28e-05)	(2.28e-05)	(2.37e-05)	(2.37e-05)
Less than primary level completed HHD head [a]	-0.00658	-0.00505	-0.00693	-0.00501
	(0.0214)	(0.0214)	(0.0224)	(0.0224)
Primary level completed HHD head	0.00393	0.00426	-0.00542	-0.00505
	(0.0322)	(0.0317)	(0.0317)	(0.0314)
High school completed HHD head (Up to class 12)	0.00595	0.00676	0.00847	0.00937
	(0.0212)	(0.0212)	(0.0221)	(0.0220)
Some College degree or higher education completed HHD head	-0.0380	-0.0388	-0.0550	-0.0560
	(0.0360)	(0.0355)	(0.0369)	(0.0365)
Hill *Adibasi Janajati* [b]	0.00813	0.00834	-0.00317	-0.00294
	(0.0246)	(0.0248)	(0.0248)	(0.0250)
Hill Dalits	0.0151	0.0178	0.0178	0.0205
	(0.0297)	(0.0290)	(0.0313)	(0.0305)
Terai High caste	**0.150****	**0.142****	**0.148****	**0.137****
	(0.0586)	(0.0576)	(0.0590)	(0.0576)

Terai Dalits	**0.274*****	**0.271*****	**0.275*****	**0.270*****
	(0.0606)	(0.0591)	(0.0592)	(0.0575)
Terai Adibasi Janajati	**0.0754****	**0.0742****	**0.0660***	**0.0646***
	(0.0371)	(0.0367)	(0.0392)	(0.0388)
Terai Madhesh Others	**0.158*****	**0.158*****	**0.161*****	**0.161*****
	(0.0455)	(0.0445)	(0.0486)	(0.0477)
Muslims	**0.201*****	**0.195*****	**0.210*****	**0.203*****
	(0.0455)	(0.0453)	(0.0482)	(0.0474)
Others	**0.186****	**0.173****	**0.192*****	**0.174****
	(0.0890)	(0.0851)	(0.0728)	(0.0691)
HHD head male (=1)	**-0.0327***	**-0.0321***	-0.0279	-0.0271
	(0.0187)	(0.0186)	(0.0197)	(0.0195)
HHD size	0.00155	0.00151	0.00136	0.00128
	(0.00301)	(0.00297)	(0.00309)	(0.00305)
HHD head married (=1)	0.00922	0.00855	0.00953	0.00864
	(0.0225)	(0.0223)	(0.0227)	(0.0225)
Time to nearest health facility in mins	-7.16e-05	-7.04e-05	-7.73e-05	-7.66e-05
	(5.12e-05)	(5.11e-05)	(5.37e-05)	(5.36e-05)
Madhesh Province [c]	-0.0877	**-0.0888***	**-0.102***	**-0.103***
	(0.0533)	(0.0521)	(0.0559)	(0.0548)
Bagmati Province	-0.0306	-0.0253	-0.0388	-0.0341
	(0.0411)	(0.0412)	(0.0416)	(0.0418)
Gandaki Province	-0.0315	-0.0305	-0.0449	-0.0431
	(0.0475)	(0.0473)	(0.0487)	(0.0486)
Lumbini Province	-0.00692	-0.000357	-0.00951	-0.00199
	(0.0434)	(0.0445)	(0.0456)	(0.0468)
Karnali Province	0.0238	0.0257	0.0125	0.0154
	(0.0414)	(0.0420)	(0.0418)	(0.0427)
Sudurpaschim Province	0.0210	0.0274	0.0429	0.0504
	(0.0450)	(0.0452)	(0.0495)	(0.0498)
Rural municipality (=1)	-0.0323	-0.0320	**-0.0423***	**-0.0421***
	(0.0222)	(0.0218)	(0.0231)	(0.0227)
Constant	0.0891	0.0750	0.0921	0.0756
	(0.0835)	(0.0841)	(0.0871)	(0.0883)
Observations	3,378	3,378	3,378	3,378
R-squared	0.041	0.040	0.046	0.044

Robust standard errors in parentheses

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

Note: Standard errors clustered at town level. Reference category: a. Illiterate HHD head; b. Hill high caste; c. Province 1.

Source: Author's own calculation using STATA 14.2

The results of ordinary least square and two stage least squares is presented in Table 4.2. Here, remittance receipt and remittance receipt*highly affected area are the endogenous regressors and remittance network at town level, remittance network* highly affected area and time to nearest market centre used as instrumental variables. The result reveals that the probability of reduction in monthly food consumption in highly affected area is 8.6 percentage points as compared to the less affected area. However, if the highly affected household is also a remittance recipient, then the study shows that the COVID-19 had no significant impact on food consumption. Similarly, probability of decreasing food consumption is 8.26 percentage points in self-reported response from the household.

In addition to the effect of other explanatory variable, the data reveals no significant impact of education status of household head on actual and self-reported food consumption. Similarly, the age and age squared of household head is not significant in reduction of actual and self-reported food consumption. Other variables with no significant effect on food consumption are marital status of household head, and household size.

Regarding ethnicity of the household head the coefficient of Terai Brahmin, Chhetri reveals significant and positive relation with reduction in monthly food consumption. The probability of decreasing the actual food consumption and self-reported food consumption of Terai Brahmin, Chhetri is 14.2 and 13.7 percentage points respectively than Hill Brahmin, Chhetri. Terai Dalits has also significant probability to in actual and self-reported food consumption by 27.1 and 27 percentage points respectively. If the ethnicity of the household head is Terai Adhibasi/Janajti, Terai Madhesh others, Muslims, and Others then the relation is positive and significant meaning probability of reducing actual and self-reported food consumption is 7.42 and 64.6, 15.8 and 16.1, 19.5 and 20.3, and 17.3 and 17.4 percentage points respectively than Hill Brahmin, Chhetri.

In terms of self-reported data, the probability of increasing food consumption during COVID-19 is 4.21 percentage points if the household is located in rural municipality of Nepal. In terms of provincial level analysis, the coefficient of Madhesh province is negative and significant meaning that the household residing in Madhesh province has a probability to increase both actual and self-reported food consumption

by 8.88 and 10.3 percentage points respectively than Province 1. However, the data reveals no significant impact of other provinces on decrease in actual and self-reported0 food consumption.

Table 4. 3: Regression Results for the impact of remittance on household non-food consumption during COVID-19 incidence

VARIABLES	Reduction in Monthly non-food consumption expenditure (=1)		Non-food consumption reduced, Yes (=1) (Self-reported)	
	OLS	2SLS	OLS	2SLS
Remittance receipt (=1)	0.0586	**0.112***	0.0599	**0.125***
	(0.0404)	(0.0647)	(0.0413)	(0.0679)
Highly affected area (=1)	**0.116***	**0.124***	**0.116***	**0.124***
	(0.0411)	(0.0409)	(0.0418)	(0.0413)
Remittance receipt*Highly affected area	**-0.0956***	**-0.143***	**-0.0907***	**-0.140***
	(0.0498)	(0.0793)	(0.0508)	(0.0824)
Age of HHD head	0.000900	0.000929	0.00128	0.00130
	(0.00275)	(0.00270)	(0.00270)	(0.00265)
Age of HHD head squared	-1.42e-05	-1.45e-05	-1.83e-05	-1.86e-05
	(2.56e-05)	(2.52e-05)	(2.52e-05)	(2.47e-05)
Less than primary level completed HHD head [a]	0.0333	0.0350	0.0362	0.0382
	(0.0239)	(0.0239)	(0.0239)	(0.0239)
Primary level completed HHD head	**0.0586***	**0.0588***	**0.0551***	**0.0554***
	(0.0327)	(0.0324)	(0.0323)	(0.0320)
High school completed HHD head (Up to class 12)	**0.0573***	**0.0578***	**0.0587***	**0.0593***
	(0.0221)	(0.0220)	(0.0218)	(0.0217)
Some College degree or higher education completed HHD head	0.0125	0.0118	0.00625	0.00538
	(0.0406)	(0.0403)	(0.0407)	(0.0403)
Hill *Adibasi Janajati* [b]	0.0118	0.0119	0.00905	0.00917
	(0.0255)	(0.0255)	(0.0260)	(0.0261)
Hill Dalits	0.0111	0.0119	0.00894	0.00930
	(0.0334)	(0.0331)	(0.0339)	(0.0337)
Terai High caste	0.0686	0.0579	0.0615	0.0477
	(0.0507)	(0.0488)	(0.0530)	(0.0509)
Terai Dalits	**0.224***	**0.220***	**0.234***	**0.229***
	(0.0582)	(0.0570)	(0.0614)	(0.0596)

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Terai Adibasi Janajati	**0.0810****	**0.0801****	**0.0793****	**0.0783****
	(0.0369)	(0.0363)	(0.0379)	(0.0373)
Terai Madhesh Others	**0.150*****	**0.149*****	**0.161*****	**0.160*****
	(0.0533)	(0.0524)	(0.0552)	(0.0541)
Muslims	**0.184*****	**0.180*****	**0.187*****	**0.182*****
	(0.0513)	(0.0506)	(0.0528)	(0.0517)
Others	**0.163***	0.146	**0.196****	**0.174****
	(0.0941)	(0.0936)	(0.0818)	(0.0823)
HHD head male (=1)	**-0.0690*****	**-0.0681*****	**-0.0711*****	**-0.0699*****
	(0.0229)	(0.0228)	(0.0231)	(0.0230)
HHD size	**0.00525***	**0.00515***	**0.00498***	**0.00483***
	(0.00268)	(0.00267)	(0.00280)	(0.00278)
HHD head married (=1)	0.0130	0.0122	0.0161	0.0150
	(0.0254)	(0.0252)	(0.0248)	(0.0246)
Time to nearest health facility in mins	0.000125	0.000124	0.000126	0.000123
	(0.000143)	(0.000141)	(0.000141)	(0.000139)
Madhesh Province [c]	**-0.177*****	**-0.178*****	**-0.184*****	**-0.185*****
	(0.0568)	(0.0560)	(0.0586)	(0.0578)
Bagmati Province	-0.0407	-0.0403	-0.0369	-0.0379
	(0.0486)	(0.0479)	(0.0490)	(0.0481)
Gandaki Province	-0.0499	-0.0477	-0.0497	-0.0466
	(0.0551)	(0.0549)	(0.0553)	(0.0551)
Lumbini Province	0.0381	0.0430	0.0407	0.0462
	(0.0475)	(0.0474)	(0.0481)	(0.0479)
Karnali Province	**0.233*****	**0.236*****	**0.236*****	**0.241*****
	(0.0634)	(0.0636)	(0.0630)	(0.0633)
Sudurpaschim Province	0.0454	0.0509	0.0647	0.0711
	(0.0564)	(0.0559)	(0.0579)	(0.0573)
Rural municipality (=1)	-0.0350	-0.0350	-0.0423	-0.0424
	(0.0275)	(0.0271)	(0.0280)	(0.0276)
Constant	0.0840	0.0724	0.0785	0.0651
	(0.0871)	(0.0850)	(0.0863)	(0.0845)
Observations	3,378	3,378	3,378	3,378
R-squared	0.079	0.078	0.082	0.080

Robust standard errors in parentheses

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

Note: Standard errors clustered at town level. Reference category: a. Illiterate HHD

head; b. Hill high caste; c. Province 1.

Source: Author's own calculation using STATA 14.2

Table 4.2 displays the results of ordinary least squares and two stage least squares. Endogenous regressors are remittance receipt and remittance receipt*highly affected area, and instrumental variables are remittance network at town level, remittance network*highly affected area, and time to nearest market centre. The result reveals that the probability of reduction in monthly non-food consumption in highly affected area is 12.4 percentage points as compared to the less affected area. However, the study shows remittance recipient but affected households experience increase in non-food consumption expenditure by 14.3 percentage points. Similarly, probability of increasing non-food consumption is 14 percentage points in self-reported response from the household.

In addition to the effect of other explanatory variable, the data reveals no significant impact of age and age squared of household head on reduction of actual and self-reported non-food consumption. Similarly, marital status of household head and current place of residence of household head has no any significant relation with the decrease in actual and self-reported non-food consumption during COVID-19. However, if the house is male headed that there is the probability to increase in actual and self-reported non-food consumption by 6.81 and 6.99 percentage points respectively. Also, the size of the household increases the probability of decreasing actual non-food expenditure by 0.51 percentage points and by 0.48 percentage points in self-reported response.

Education status of the household head has both the significant and non-significant relation with non-food expenditure. If the education status of household head is less than primary education or having some college degree or higher education, then the relation is not significant. However, the coefficient of household head completing primary level is positive and significant meaning that the probability of decreasing actual and self-reported non-food consumption is 5.88 and 5.54 percentage points respectively. Also, if the household head has completed high school then the probability of reducing actual non-food consumption is 5.78 percentage points and self-reported non-food consumption is 5.93 percentage points respectively.

In terms of province, the coefficient of Madhesh province is negative and highly significant meaning that the household residing in Madhesh province has a probability to increase actual and self-reported non-food consumption by 17.8 and 18.5 percentage

points respectively than Province 1. Similar reduction can be seen in Karnali province by 23.6 percentage points in actual non-food consumption and 24.1 percentage points in self-reported non-food consumption than Province 1. However, the data reveals no significant impact of other provinces on decrease in both actual and self-reported non-food consumption.

Regarding ethnicity of the household head the coefficient of Terai Brahmin, Chhetri, Hill Adhibasi/Janajati, Hill Dalits reveals no significant relation with reduction in both actual and self-reported non-food consumption. The probability of decreasing the actual and self-reported non-food consumption of Terai Dalits is 22 and 22.9 percentage points respectively than Hill Brahmin, Chhetri. Also, the probability of decreasing consumption of non-food expenditure of Terai Adhiabsi/Janajati, Terai Madhesh Others is 8.01 and 14.9 percentage points in comparison to self-reported decrease in non-food consumption which is 7.83 and 16 percentage points respectively.

4.4 Discussions

COVID-19 has been confirmed to cause changes in migrant remittances. It is noted that remittances from migrants are critical factors in improving the well-being of households in developing countries. The majority of the money received from migrants was spent by households to meet their daily needs. As a result of COVID-19's restrictions on labour force movement, migrant remittances may decline (Zhang et al., 2022).

Our findings are similar to the findings of Adams and Cuecuecha (2015) which states that remittance receipent households tends to spent more on food consumption than they used to spent before receiving remittane. Similarly, Combes and Ebeke (2011) argued that remittances provide insurance by mitigating the effects of a variety of factors that contribute to consumer insecurity in developing countries (natural disasters, agricultural shocks, discretionary fiscal policy, systemic financial and banking crises, and exchange rate instability) which is similar to the findings of our study. Haider et al. (2016) shows that the monthly food and aggregate expenditure of remittance recipient household is greater than the non-recipient household. In a similar manner, Nguyen (2013) finds that remittances had a greater impact on non-food spending than they did on food expenses which is similar to our findings that shows that the probability of increasing food consumption by 9.08% and non-food consumption by 14.3%

respectively. Since all these studies are conducted before the pandemic so they are unable to addresses the impact of COVID-19 pandemic on household welfare along with remittance flow. However, our findings contradicts with the results of Janssens et al. (2021) which states that though remittances decreased by more than one-third after the pandemic began households were able to maintain their food expenditures.

Most of the empirical studies such as (Chowdhury & Chakraborty, 2021) focuses only on the impact of COVID-19 pandemic on fluctuation in remittance flow to the developing countries. This study shows probability of increment in non-food expenditure of remittance recipient household located at highly affected area this may be due to the rise in health cost of the household i.e., the expenditure on medicine, personal protective equipment such as mask, sanitizer and other sanitary measures adopted by the households. In a similar manner, due to government restriction in the movement of people the culture of work from home is common during COVID-19 and educational institutions itself started online classes as a result household expenditure on electronic devices and services such as mobile, laptop, internet etc. increases which push the household demand for non-food consumption during the period of COVID-19 in Nepal. Hence, the strength of this study is it supports the statement of theoretical consumption function which states that consumption is the positive function of the income. As the remittance recipient household has more income than that of non-receiving household and they tend to increase their spending on both food and non-food consumption respectively.

CHAPTER V

SUMMARY AND CONCLUSIONS

5.1 Introduction

This chapter aimed to present a summary of the study's major findings and conclusions. This study tries to estimate how the remittance inflow helps in improving the household welfare measured in terms of consumption expenditure during the period of COVID-19 in Nepal using nationally representative cross-sectional household level survey data from COVID-19 conducted between September 2021 and October 2021 and controlling for remittance endogeneity, two stage least square methods have been used, introducing three instrumental variables remittance network, remittance network*highly affected areas, and time to nearest market centres. Town level clustering is being made to estimate both the equations (1) and (2).

5.2 Summary

International migration induced remittance flow has played a pivotal role in the growth and development of developing economics like Nepal. Nepal has experienced unprecedented rise in remittance flow as thousands of labor force left the country for foreign employment. Various literatures such as (Housen et al., 2013) argues the importance of remittance to reduce poverty and others focuses the role of remittance on enhancing consumer welfare mostly in under developed and developing economies. To gain a better understanding of the relationship between remittance and household welfare and if remittance can have proved to be a safeguard measures to stabilize consumption in Nepalese society in the context of COVID-19 period this study focuses on the issue whether remittance can have insured the household consumption or not. The study employs nationally representative cross-sectional household level survey data from COVID-19 conducted between September 2021 and October 2021.

The dependent variable of the study is household consumption expenditure whereas, major explanatory variable is remittance recipient status of the household in highly affected area by COVID-19 pandemic and other control variables includes, age of household head, age squared, education status of household head, caste of household head, Sex of household head, place of residence of household head, house hold size etc.

We have examined the effect of household remittance status on their consumption spending addressing the endogeneity arises from remittance. To address the endogeneity arise from fertility this study applied instrumental variable approach in similar to (Raut & Tanaka, 2018). Likewise, for the additional contribution on previous literature, this study analysed the effect of remittance on household consumption during the period of COVID-19 rather than normal times and focuses mostly on highly affected areas. From the 2SLS model employed in this study the presence of both significant and non-significant estimated coefficient, it can be argued that the positive relationship between remittance and increase in both food and non-food consumption expenditure at highly affected area by COVID-19 is being established. The findings of the study states that the remittance acts as an insurance to maintain consumption as that of normal time or pre-pandemic level or even increase than before. Separate estimation is made for both food and non-food consumption expenditure. The result concludes that, the inflow of remittance at highly affected area is likely to increase both the food and non-food expenditure. Our findings are similar to Adams and Cuecuecha (2015), Nguyen (2013), Combes and Ebeke (2011).

Regarding other control variables, age of household head, age squared, marital status of household head has no significant impact on both food and non-food consumption expenditure. Similarly, education status of household head has no significant impact on food consumption but if the household head has completed primary level education or high school level education then the probability of decreasing non-food consumption exists. In terms of ethnicity of household head, all the cast of household head tends to decrease in food and non-food consumption except Hill Adhibasi/Janajati, Hill Dalits and Terai High caste whose reduction in non-food consumption is insignificant. Similarly, if the household is male headed then there is a probability to increase both food and non-food consumption. However, the size of the household does not affect expenditure on food consumption but is more likely to decrease the expenditure on non-food consumption.

5.3 Conclusion

This study uses instrumental variable approach for examining the effect of remittance as an insurance mechanism for household welfare measured in terms of expenditure made by household on both food and non-food consumption during the period of COVID-19 in Nepal to address the endogeneity problem of remittance variable. The result of two stage least square shows positive effect of remittance on increase in household non-food consumption stating that remittance acts as an insurance for household non-food consumption during the period of external shocks like COVID-19 pandemic. However, if the highly affected household is a remittance recipient, then the COVID-19 had no significant impact on food consumption. This study works as an important value addition to the existing literature of remittance and household welfare or in general the study on microeconomic issues. In addition, the study focus on the impact of COVID-19 pandemic along with the effect of remittance and finds significant impact of COVID-19 on household consumption in highly affected area tends to decrease in both food and non-food consumption. However, if the affected area household receives remittance then it is likely to increase both food and non-food consumption by same household. Hence, remittance acts as an insurance for the household consumption which supports the findings of (Combes & Ebeke, 2011).

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