NATIONAL UNIVERSITY OF SCIENCES & TECHNOLOGY (NUST)
SCHOOL OF SOCIAL SCIENCES AND HUMANITIES (S^3H)
DEPARTMENT OF DEVELOPMENT STUDIES

FINAL THESIS REPORT:

"IMPACT OF COVID-19 ON THE GENDERED DIVISION OF UNPAID WORK IN ISLAMABAD: A CASE OF G-10 SECTOR AND TARNOL HOUSEHOLDS"

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DATED: SEPTEMBER 13TH, 2021

A thesis submitted in partial fulfillment of the requirement for the degree of Masters of Science

In

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ACRONYMS

PBS	Pakistan Bureau of Statistics
UNGA	United Nations General Assembly
ICATUS	International Classification of Activities for Time Use Surveys
UNSD	United Nations Statistics Division
ILO	International Labor Organization
WEF	World Economic Forum
TUS	Time Use Survey
SNA	System of National Accounts
ESNA	Extended System of National Accounts
SDGs	Sustainable Development Goals
CEDAW	Committee on The Elimination of Discrimination Against Women
ICLS	International Conference of Labor Statisticians
ICT	Islamabad Capital Territory
NHDR	National Human Development Report
UNDP	United Nations Development Program
UNRISD	United Nations Research Institute for Social Development

ACKNOWLEDGEMENTS

I would like to express my gratitude to my supervisor Miss Sheeba Farooq, and official discussant Dr. Ammad Ahmad Khan for their supervision, continued suggestions, and insightful comments. I am deeply grateful to Suleman Shah, Director National Commission for the Status of Women (NCSW) Pakistan, for his professional assistance. My special thanks to my brother Numan Ahmad for his encouragement and contribution to the hectic part of data analysis. I would like to thank Mr. Maurice for his invaluable advice in this research initial phase and Mr. Naqash Ahmed for his help and comments throughout the study. My huge appreciation to my study's respondents and their families, for their cooperation during data collection phase.

ABSTRACT

Following global trends, Pakistan imposed strict national lockdown in March 2021 during third wave of COVID-19 pandemic. It resulted in schools and markets closures, suspension of public transport and ban on outdoor activities. Subsequently, these restrictions put extra domestic, child and adult care workload on households, which were considered to further imbalance pre-existing gender disparities in families. Acknowledging the importance of balanced intrahousehold distribution of unpaid work as envisioned by SDG Target 5.4. and its vitality to the "egalitarian families" as advocated by UN Women, this study aimed to find the gendered impacts of COVID-19 on unpaid work time and its sub-categories at the household level. Also, it investigated the determinants of changed unpaid work patterns. In this regard, in the months of February (Pre-lockdown) and (Post-lockdown) March 2021, a representative household survey was conducted at urban Islamabad where Tarnol and G-10 sector were selected due to their diverse socio-economic profile. Quantitative research approach was employed, and 199 households were targeted. Survey respondents were primary male and female care providers from each family. Data was collected through "Time Activity Matrix" method, universally used for Time-Use research. Two sample T-tests were used to determine any possible difference in mean unpaid work hours for each care givers in pre-post pandemic. Also, various socio-economic, demographic variables were used in OLS models' estimation to understand their relationship with the difference in unpaid working hours per day by primary male and female in a household in post-pandemic scenario. Results suggest the presence of high gender inequality in unpaid domestic work, child, and adult care among primary male and female care providers in both pre- and post-pandemic times. Women from poor families were the most overburdened, contributing more than 9 unpaid work hours per day with no significant pre-post difference. During COVID-19, educated men raised their unpaid work contributions more than poorly educated men, defying traditional norms. Likewise, educated mothers from affluent families' unpaid work burden exacerbated 2 hours due to home-schooling, online classes, and lack of outsourced help. Education level, women social insurance, care-infrastructure, and television, were estimated to be vital for achieving unpaid work gender equality at the household. This study rests its novelty in its distinct primary data collected and coded subsequently under the guidelines of International Classification of Activities for Time Use Surveys ICATUS (2016) and contribute to emerging empirical evidence on unpaid work in post-COVID-19.

Keywords: COVID-19, Childcare, Unpaid Work Intrahousehold Distribution, Gender, Pakistan.

CHAPTER # 1: INTRODUCTION

1.1. Background of the Study

Over the years, the world has gotten closer to achieving gender equality. There is better representation of women in politics, more economic opportunities, and better healthcare in many places of the world. However, the World Economic Forum (2021) estimates it will take another century before true gender equality becomes a reality. Gender inequality can be defined as *"the social, legal, and cultural situation where gender and/or sex determine the varying rights and dignity for men and women. These situations are reflected in women and men unequal access to or enjoyment of rights, as well as the assumption of stereotyped cultural and social roles"* (European Institute of Gender Equality, 2021). Studies has shown that women still have uneven access to education than men; lack of employment equality; no legal protection against domestic sexual violence or domestic economic violence; poor medical care; lack of freedom and so on (UNDPa, 2020).

The contagious COVID-19 followed by containment measures has affected the private and public lives of people around the world. Gendered impacts of the pandemic are felt in health, labor market prospects, socio-economic well-being, and time use, unpaid work (UN Women, 2020). Specifically, highly gendered issue i.e., *"Intrahousehold distribution of unpaid work",* has resurfaced to the gender equality discourse in international policy circles owing to its links with human rights, labor force participation, time poverty, wellbeing, empowerment and social reproduction among others. In fact, COVID-19 has been feared to reverse the gains made in terms of gender equality.

In reference to the research topic, the corresponding discussion is focused on care, families, gender inequalities in familial pre and post COVID-19 scenario. Increased international focus on gender inequality at the household level through United Nations (UN) led Sustainable Development Goals SDGs, UN Women, International Labor Organization (ILO) has been deliberated. At the end, familial gender inequalities in Pakistan have been examined.

1.1.1. Conceptual Notes: Families, Care work, Unpaid Care Work

Family is "universal social institution whose members share a social realm defined by parenthood, conjugality and kinship relations". While *household* can be defined as a

residential unit which contains one or more individuals living together and share certain basic amenities of life i.e., food and shelter (UN Women, 2019).

Household surveys, census data and statistics mentioned in policy documents and research, generally refers to households. On the contrary, ethnographic studies and qualitative research are more appropriately based to capture family relations that encompasses households. Keeping in view the constraints in data availability regarding families, this research discourse draws on household data, but it maintains the usage of "family" term, especially when discussing intimate social relations.

While care work is generally comprised of relations and activities carried out to meet the psychological, physical, and emotional needs of children, young, adults, old, frail and people with special needs. Infants, young adults, senior citizens, people with disabilities, sick and even adults with no health complications all need entire range of care, support or protection to meet their already mentioned needs (Daly, 2001; ILO, 2018).

Care work can be categorized in two types i.e., *direct care* and *indirect care. Direct care or relational or nurturing care* comprised of direct, in person, face-to-face activities, for instance feeding a baby, attending a sick partner, tutoring young children, health checkups, assisting senior persons to take bath etc. While *indirect care or household work or non-relational care* are those activities which don't involve face to face personal care. For example, cooking, cleaning, ironing, washing clothes, laundry, performing other kinds of household tasks, and maintenance can be categorized as indirect care (Razavi, 2007). Usually, indirect caring activities are prerequisites to personal or direct care and are overlapping both in institutional and household context (Duffy, 2011).

Care work is carried out between a person who is providing care or *care giver* and *care recipient* or care receiver, usually both involved in a care relationship (Jochimsen, 2003). Possible scenarios can be between mother and child, domestic worker and client, daughter or son and ailing father, nurse, and patient. Reasons for caring can range from feelings, affection, love, responsibility, duty, familial or social pressure, and economic or financial reasons.

The economic or resource dimension appears when someone is earning while providing care through their efforts, time dedication. The costs aren't necessarily monetary i.e., lost

opportunities for getting a job, compromise on job quality, type of work etc., for unpaid carer who would have been paid off if there were no unpaid care work responsibilities (ILO, 2018).

Certainly, care work can either be paid or unpaid. The latter type is done without explicit monetary rewards. Most of the unpaid care work, irrespective of societal, cultural, national, regional differences, is primarily provided by women and girls in households or families. Besides, unpaid care workers do provide their services outside their families, that is, to their neighbors, friends, community members, or even on voluntary basis within public, market-based or non-profit institutions (ILO, 2018).

Unpaid carers are everywhere, even in countries with extensive welfare policies or in states where various aspects of care have been monetized or socialized. Occasionally, unpaid care delivery might be backed by allowances, social protection benefits, cash for care transfers which are aimed at balancing efforts for income earning losses or at recognition of unpaid care workers' contribution to the economies. Usually, individuals provide unpaid care work despite their participation in labor force, although these engagements have consequences for their job conditions, quality, earnings etc. Most of the adults, in some cases children, engages in unpaid care work throughout their life trajectory, in past, present and in future (Yeandle et al., 2017).

Summarily, care can be provided in an egalitarian, consensual manners, making it rewarding experience, or it can exploitative and repressive, blocking care givers' rights enjoyment and opportunities. As in the words of Diane Elson, feminist economist, that much unpaid work "is done for love, does not mean that we always love doing it" (Razavi, 2007).

1.1.2. Pre-COVID-19 Families: Protean Gender Inequities in Action

Pre-COVID-19 times for families and gender equality were challenging. Humanitarian crises, prolonged conflicts, population movements through migration, and corresponding refugee policies gave tough times to families as social institution. These challenges came on the heels of persistent worldwide recession, ensuing austerity measures, which severely affected populace livelihoods and eroded social policy support offered to families in general, and women in particular (UN General Assembly 2018b; UN Women, 2014b.).

While discussing the gender inequality in families, in this regard, "Time Use" Surveys are vital instruments for measuring individual engagement in unpaid care work or other activities

(Williams et.al, 2016; Ribeiro and Marinho, 2012). In Pre-COVID-19 *International Labor Organizations* (ILO, 2018) analysis of 64 national *Time Use* surveys conducted by different countries through various years, for both paid and unpaid care work, shows thought intriguing trends. Representing almost 66.9 percent of working age population, it shows that unpaid care work time (own use) done, was accumulated to be 16.4 billion working hours per day. Of these hours, women contribute 76.2 percent of the total working hours, which is almost three fourths of the total. To put it in another way, it would be equivalent to "two billion people working on full time basis for 40 hours in a week, without pay".

Additionally, although gender inequalities in intrahousehold unpaid work distribution exists around the globe, they were reported to be most glaring in developing countries (World Bank, 2019). Gender gap in unpaid work was at its widest in western Asia, northern Africa, and south Asian region (UN Women, 2019). Further dissection of unpaid work in families reveal exacerbating gender inequalities in rural and overcrowded urban slums (WHO and UNICEF, 2017), poorer families as compared to wealthy families (UN Women 2019), married couple with young children and older citizenry (ILO, 2018).

1.1.3. UN-Sustainable Development Goals and Target 5.4 "Recognition, Valuation and Redistribution of unpaid work"

In pre COVID-19 times, United Nations acknowledged the existence of gender inequality across families, communities, and economies, and through UN Sustainable Development Goal 5 focused on gender equality at familial and societal levels (UN Women, 2019). SDG Target 5.4. *"Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate"* specifically addresses gender inequality in unpaid work through focus on priority areas; *infrastructure, social protection, public services,* and *shared responsibility promotion within family and households* regarding unpaid care work (UN, 2015a). The policy and programs designed in these domains will determine whether women can be confined to "traditional roles associated with motherhood and femininity" or both men's and women's options can be broadened to have access to labor markets, participate in community events, or access leisure activities (Razavi, 2007).

Moreover, SDG 5.4.1. focus on individual countries to conduct "time use" surveys for time use statistics, and consider it critical to the attainment of SDG 5.4. Also, accomplishing strides in SDG 5.4 would lead to the achievement of other SDGs i.e., SDG 4 that is Education, SDG 3 health, SDG 8 that is decent work for all men and women (UN, 2016).

Furthermore, ILO (2018) placed the care work at the core of its "Women at Work" and the "Future of Work Centenary Initiatives" highlighting the importance of "Triple R" framework i.e., recognition, reduction and redistribution of care work. Also, UN Women (2019) envisions the achievement of the SDGs through egalitarian families and shared unpaid work responsibilities at the familial level.

1.1.4. Post COVID-19 Families: Exacerbating Gender Inequalities

COVID-19 pandemic that started as health shock, has evolved into multidimensional crises encompassing food insecurity (WFP, 2020), poverty (UN, 2020a), education, economy, inequality (OXFAM, 2021) and human development (ILO, 2020A). Its impact has not been equal across the world as COVID-19 induced lockdown has been mostly affecting countries, and social segments with pre-existing inequalities. Same holds true for gender disparity as women and girls are unevenly affected by the existing crises, primarily due to their sex.

In post COVID-19 scenario, unpaid work activities like cleaning, washing, cooking, caring for patients, childcare, home schooling and specific chores regarding sanitizing and precautionary measures, all increased care burdens of working age population. It led to exacerbation of pre-existing vulnerabilities in unpaid care work burden, gender-based violence, and social protection (UN 2020b; UN Women 2020). In essence, COVID-19 led crises exacerbated what feminist author Nancy Fraser termed as "crises of care" or "social reproduction" (Fraser 2016). COVID-19 also brought up the critical role of care to limelight, in an unprecedented way as mentioned by Wenham et al (2020). It also placed families at a place where "intrahousehold distribution of unpaid work" can be renegotiated (Marta, 021).

1.1.5. Families in Pakistan: Tangle of Domination and Love

Pakistan's families present a highly unequal, skewed, and non-egalitarian scenario as far as unpaid care work distribution is concerned. This has been proved by Government of Pakistan's conducted first large-scale *National Time Use Survey* 2007 (PBS, 2009), and ILO Report (ILO, 2018).

Pakistani women bear the heavy load of unpaid care work with longest working hours, as compared to their male partners. Men perform the lowest amount of unpaid care work out of total, at home i.e., 8.9 percent (even if they aren't engaged in paid work). Pakistan lays at the end of the scale with lowest performers like Mali, Cambodia and India scoring less than 10 percent. Gender gap of 41.1 percent would have to be closed if gender parity in unpaid care work is to be achieved at households in the country. This highly skewed trend has far reached implications for women paid work, income generating activities, socio-political empowerment, and gender inequality in the country (ILO, 2018).

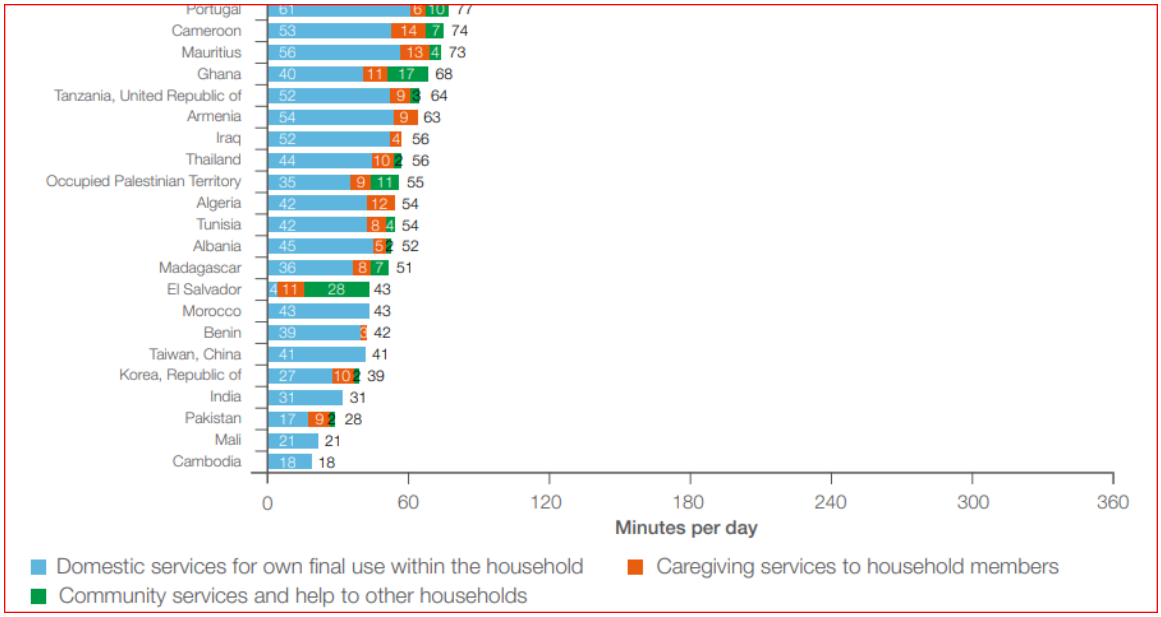


Figure 1. 1. Time spent in the three main categories of unpaid care work by men, based on primary activity, by sex, latest year. Source: ILO 2018

In Pakistan, "Dependency Ratio" of dependent population is still substantial i.e., 64.9 percent while care recipients i.e., *65 or older and 0-14 age children* constitutes 4 and 35 percent of population respectively. The ratio of dependent with independent or working age population have major implications for unpaid care, distribution of care work in intrahousehold and related concepts (PBS 2019).

Generally, ILO's *Social Protection Floor*[1] concept is not fully functional but pragmatic in Pakistan, so is the National Social Protection System, despite constitutional recognition i.e.,

[1] A nationally defined set of essential social security guarantees that ensure, at a minimum, that everyone has access to essential health care and to basic income security throughout the life cycle as required by target 1.3 of the 2030 Agenda. *Social Protection Floors* in any context should work to alleviate poverty, prevent

article 38(D). Informal sector workers while being dominant in country's economy, are out of the social protection schemes mostly, in fact there is no universal social protection scheme for working age population 15-64 years age as envisioned by SDG 1.3 (ILO, 2021). Basic services and care supportive infrastructure i.e., health, education, transportation, energy, information, communication and technology ICT sectors are present at relatively better condition in urban areas, although contrasting variations exist across well-planned, city posh areas and urban slums or periphery areas.

1.2. Problem Statement

In egalitarian societies and families, provision of care should be shared equally among state, community, market, and families. However, in developing countries context, families, in all its diverse forms, continue to be the primary care giving institutions, and women as primary actors (UN Women, 2019). Same holds true for Pakistan.

Pakistan had been infamous due to highly imbalanced gendered division of unpaid work at the households' level (ILO, 2018). National performance on SDG Target 5.4. priority areas i.e., social protection, public policies, care supportive policies and infrastructure reveals the glaring fault lines and inferior performance (SDG Pakistan, 2018).

During third wave of COVID-19 pandemic, Pakistan imposed national lockdown[2] in March 2021. In urban areas like Karachi, Lahore, Rawalpindi, Islamabad Capital Territory, and Peshawar, lockdown was observed strictly due to alarming COVID-19 cases. Pandemic induced lockdown resulted in schools, offices and childcare facilities closure, public transport ban, and restrictions on social movements. Expectedly, it is deemed to increase unpaid work for families.

Islamabad stands apart from other cities with consistently elevated level of human development, women employment trends, well-planned care supportive infrastructure, high ratio of affluent, and formally employed families. But recent decades have seen the federal capital highest population growth rates due to in migration to city's posh areas in general,

households from falling into poverty, and protect against a range of social and economic risks – including disease, loss of employment and disability – which people may be exposed to over the course of their lives.

[2] COVID-19 Period: After rising cases Government of Pakistan imposed National Lockdown in March 2021 during COVID-19 3rd way. Lockdown Standard Operating Procedures SOPs were strictly observed in major cities, including Islamabad. Ministry of National Health Services, Regulation and Coordination. Govt of Pakistan. available at: https://COVID-19.gov.pk/)

and its peripheries in particular. This have resulted in population with diverse socio-economic setups and cultural values.

Ironically, lockdown in Islamabad, led to the care burden falling uniformly on both middle and low-income households. Primarily due to the reasons that low-income households were affected with informal job loss on one side and high care burden on other side. Likewise, middle income families, who have been used to paid services of day care centers, outsourced domestic workers and nannies, lost the helping hands due to social restrictions and travel bans. Consequently, post COVID-19 care needs exacerbated manifolds uniformly, with major implications for care givers' time poverty, physical and mental health, socio-economic liberty, intrahousehold power relations, and deeply entrenched gender inequalities.

Globally, confirming the importance of intrahousehold distribution of unpaid work and its far reaching implications on gender inequality, in post COVID-19 scenario, many preliminary empirical studies from Spain (Farré et al. 2020), Turkey (İpek & Emel 2021), India (Deshpande, 2020b), Hungry (Éva et.al., 2021), Italy (Daniela, 2020), the UK (Sevilla and Smith 2020; González and Farré, 2020), the US (Carlson et al., 2020), Australia (Craig and Churchill, 2020) have been carried out to investigate the changing shifts of intrahousehold unpaid work distribution, work-life balance and increased men involvement in unpaid work. These studies focused on exploring the changing dynamics of post COVID-19 unpaid work through time use surveys i.e., 24- hour Time diary, stylized questions. The aforementioned studies primary focus had been on highly educated, internet literate, dual earner couples primarily working in formal employment sectors and accessible online

In Pakistan's context, number of studies including policy paper based on phone survey (Maryam, 2020), UN Women initiated Phone survey in the Asian-Pacific region including Pakistan (UN Women, 2020) have explored the gendered impacts of COVID-19 including the domain of unpaid work burden in households. But there has been sparse empirical evidence available in this regard, on national, provincial, and federal level, which explicitly deal with unpaid work hours in pre-and post-pandemic scenario in low, middle, and high-income families.

Therefore, it's vital to explore possible change in gender norms regarding unpaid work. Were women more overburdened by heightened care demands? Were men increase involvement observed? Do the pandemic crises jolt the persistent patriarchal hierarchies and transformed

in radical increase in men's contribution to unpaid work? What was the degree of change in unpaid work burden across heterogenous groups based on education level, family structure and size, locations? To address these questions, comparative analysis of both genders doing unpaid work in pre and post COVID-19 times in time spent in unpaid work and its magnitude will be intriguing.

1.3. Significance of the Study

Keeping in view Pakistan's regional, spatial, occupational, economic, and social differences, it is important to conduct micro studies in local settings for comprehending and measuring highly gendered issue of unpaid work in families. Thus Islamabad, with varying degree of care supportive infrastructure, employment trends, social class, family setups, education level, ethnic groups across its well-planned sectors and unplanned Tarnol provides perfect area for exploring this gendered issue.

It will help in proper understanding of unpaid care work which is extremely critical prerequisite for gender sensitive programs, schemes, and resource allocation. Additionally, unpaid care work issue has been explored dominantly in rural areas context, with negligence of semi-urban, urban areas.

The general theme of research is to bring awareness in the academia, policy makers and general public regarding highly skewed nature of unpaid care work in Pakistan's society. Treating families as "bottomless well" and "strong social institution", with immeasurable support can bring dreadful costs for households and their individuals i.e., men and women. Although, global research also points at the increasing men involvement in unpaid work at home due to office closures in post COVID-19 scenario. If found true, and backed by empirical evidence like this, it will provide a valid argument for advocacy of equal intrahousehold distribution of care work (as focused by SDG 5.4), priority policy areas for SDG 5.4., and UN Women advocated "egalitarian families" concept.

In post COVID-19 scenario, its significance arises even more. Study will add to the rapidly emerging empirical, evidenced-backed, literature on the impacts of COVID-19 in countries with poor score on gender equality domain. Surely, a shift in men involvement in unpaid work, will be beacon of hope in contemporary crises situation.

The objective is not to eliminate unpaid care work but to reduce the drudgery involved, distribute it more fairly. Also, to ensure that girls and women will have the option vis-à-vis how much unpaid care work they perform and why.

1.4. Research Objectives

In the above discussed context, the objectives of this paper would be:

- To make a disaggregated gender analysis of the unpaid work done by primary care providers in pre and post COVID-19 lockdowns.
- To examine any changes in primary care providers involvement in unpaid work
- To identify the socio-demographic and economic determinants/variables and their relationship with unpaid work increase or decrease in post-pandemic context.

1.5. Research Hypothesis

Research Hypothesis are given below:

- **H_a**: Women share of unpaid work increased during COVID-19 lockdown.
  H_0: Women share of unpaid work didn't increase during COVID-19 lockdown.

- **$H\beta$**: Men increased their share in unpaid work during lockdown.
  H_0: Men didn't increase their share in unpaid work during lockdown.

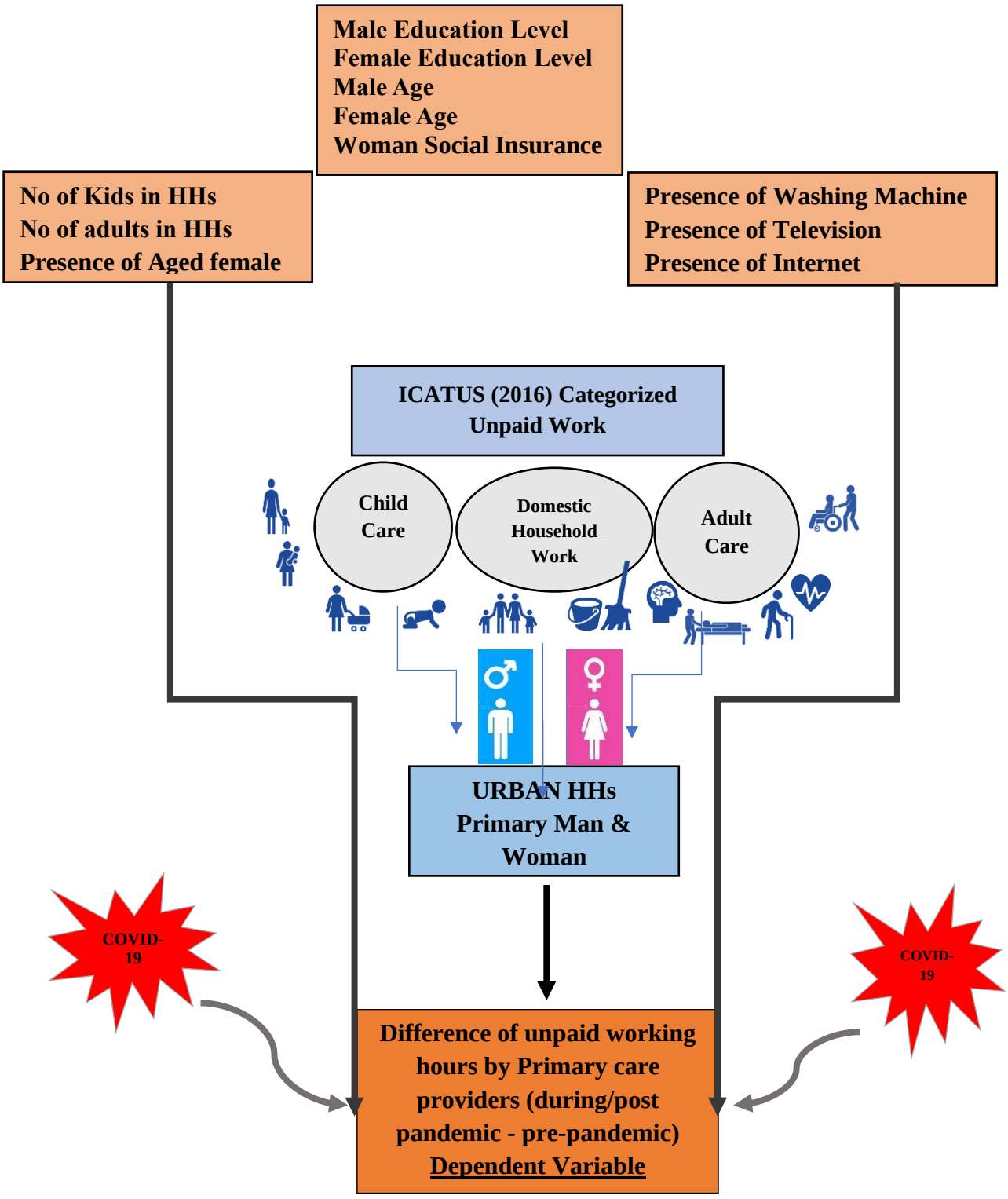
- **$H\gamma$**: Existence of disparity in the magnitude of post-pandemic unpaid care work is due to demographic and socio-economic determinants.
  H_0: Existence of disparity in the magnitude of post-pandemic unpaid care work isn't due to demographic and socio-economic determinants.

1.6. Research Question

- How did G10 sector and Tarnol's men and women allocate their time for unpaid work before (Feb-2021) and during (March-2021) COVID-19 lockdowns?
- Were there any changes in Unpaid work time by primary care providers in post COVID-19 scenario in G10 sector and Tarnol?
- Did Care givers Age, Education Level, households' children and adults' number, Television and internet presence, aged female, household type, and women social insurance affect the post-pandemic unpaid work hours difference?

1.7. Conceptual Framework

This section presents the conceptual framework of this study. Study's first two hypotheses are that in a post COVID-19 scenario, unpaid work for both woman and men primary care providers have increased. Another hypothesis is that different socio-demographic, and infrastructural variables affect the post-pandemic unpaid work difference.



1.8. Research Strengths & Limitations

The novelty of this research endeavor is the uniqueness of data collected from respondents with diverse socio-economic backgrounds i.e., G-10 sector and Tarnol. Study strives to cover the unpaid work dynamics in poor urban families, usually not accessible online. Additionally, questionnaires were filled, daily activities were categorized, and coded, following the United Nations Statistics Division (UNSD, 2019) formulated International Classification of Activities for Time Use Statistics[3] (ICATUS 2016). This give the current study the acceptance to be cross compared across the world's micro-level time use surveys.

The research study was carried out as single period survey in pre (February 2021) and post COVID-19 lockdown (March 2021). It didn't cover every day in both periods. Furthermore, due to time, budgetary constraints, only two persons i.e., primary male and female care providers were selected for data collection, while excluding other secondary care givers or household members who are also important in case of intrahousehold distribution of unpaid work.

1.9. Organization of the thesis

This research writeup is delineated in five chapters as follows:

The first chapter discusses study background, problem statement, research significance, study objectives, hypothesis, questions, conceptual framework, followed by research strengths and limitations. At the end organization of thesis is presented.

The second chapter debates upon the theoretical antecedents of unpaid work followed by theories of care work. Discourse around global, regional studies on unpaid work with a gender lens goes on to briefly report on the emerging empirical evidence of gendered impacts of COVID-19 in unpaid work domain.

[3] . The International Classification of Activities for Time Use Statistics 2016 (ICATUS 2016) is a three-level hierarchical classification (composed of major divisions, divisions, and groups) of all possible activities undertaken by the general population during the 24 hours in a day. The purpose of the classification is to provide a framework that can be used to produce meaningful and comparable statistics on time use across countries and over time. This research collected data of activities on two levels i.e., major divisions and divisions level.

Third chapter of the study covers the research design and methodology, study area description, criteria for selection of study area, sampling technique, size, framework, data collection method followed by analysis tools and ethical considerations.

The fourth chapter "Results and Discussion" presents the demographic, socio-economic, household profile of primary care providers and families for G-10 sector and Tarnol area separately. It is followed by discussion about the possible changes in unpaid work time in pre-post COVID-19 lockdown scenario for both regions separately. At the end, the changes in both genders' unpaid work time in pre and post COVID-19 lockdown scenario is calculated and taken as dependent variable, followed by carrying out regression analysis as a function of independent variables i.e., demographic, socio-economic determinants. It is carried out for both G10 Sector and Tarnol area.

The fifth chapter concludes the study results with policy suggestions and way forward for future research.

CHAPTER# 2 LITERATURE REVIEW

In line with this study, this chapter will review range of theoretical background for care work followed by empirical research on unpaid care work, time use analysis, discussion in COVID-19 scenario regarding care work, and time use surveys in both developed and developing countries context.

2.1. Care and new definition of Work

Historically, Care has been neglected in economic and development circles until 19th International Conference of Labor Statisticians ICLS-2013 adopted Resolution I on "*Statistics of Work, Employment and Labor Underutilization",* where it introduced a conceptually revolutionary definition of what comprise of work or how work can be defined. While defining "Work", In addition to including work for pay or profit, it recognizes *"the activities performed by persons of any age, sex, to produce goods or services for use by other or for own use".* The definition last part regarding *"for use by others or for own use"* signify the inclusion of work at household, community level for family members and own use, and is a decisive change in measuring work (ILO,2013).

Undeniably, this new definition of "work" is associated and aligned with 2008 *System of National Accounts* (SNA) demarcation of production boundary, including households work, volunteer work for final use (ILO, 2013). Besides, new standards defined work, covering whether they are formal, informal, legal, or illegal[4] (shown in figure below).

The ICLS framework is also evident in the revised ICATUS (2016) i.e., "International Classification of Activities for Time Use Statistics" (as shown in figure below) and it augments the international efforts for producing the necessary meaningful and comparable statistics on time use on unpaid care work specifically (UNSD, 2019).

[4] For example, Child Labor.

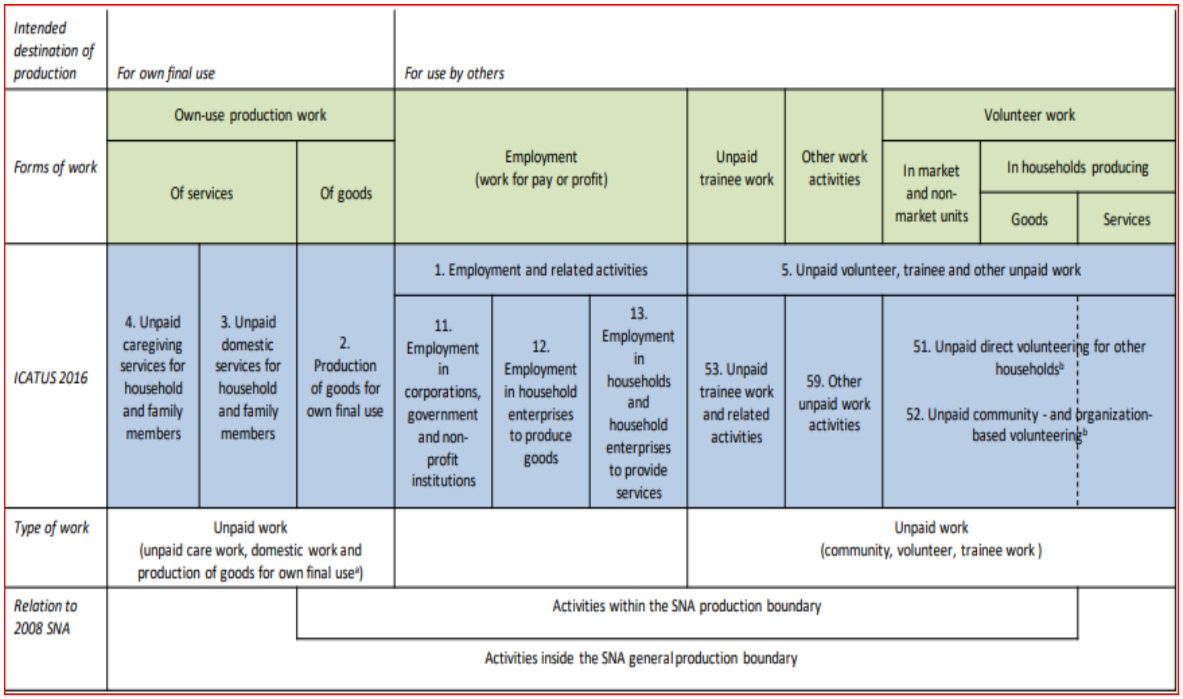


Figure 2. 1 Care work and its relation to Resolution I of the 19th ICLS, the ICATUS 2016 and the SNA 2008

Source: ICATUS 2019, United Nations Statistics Division

2.2. The Care Diamond

In 2007, Shahra Razavi in her paper *"The Political and Social Economy of Care in a Development Context; Conceptual Issues, Research Questions and Policy Options,"* proposed *"Care Diamond* Framework" which maps the social organization of care across four actors i.e., Households, Civil sector, the private sector and the State. All the actors interact in complex styles with overlapping boundaries.

Razavi (2007) highlighted that care provision in nations differs across the four actors, based on the countries social protection, public policies, and private sectors etc. Generally, in most advanced and rich countries, social organization of care is more equal across the four stakeholders of the care diamond. But in most developing nations and least developing countries, households and families remain the main care provider for themselves and society.

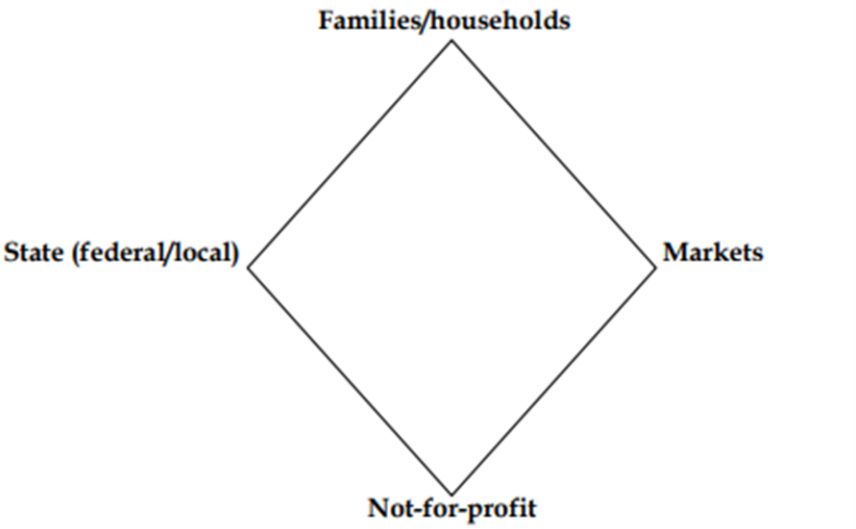


Figure 2. 2 Care Diamond

Source: Shahra Razavi **(2007)**

2.3. Families: Primary Supplier of Care

Worldwide, families have been and still are, the fundamental unit of a society. It bears a huge importance for individuals and economies. Feminist sociologists designate families as "tangle of domination and love", "crucibles of conflict and caring". Families can be simultaneously "supportive or suppressive" or they can be "stadia of gender and generational struggle". Thus, families can be the place of persistent inequalities or can be egalitarian or benign, based on their interactions within and with outside forces i.e., markets, communities, and states (Ferree, 1990). Cultural and social norms, economic conditions, laws, public policies, all combine to outline the family members rights and responsibilities to each other. While historically men being the "head" of the families that has control and power over labor, women and children lives and women being the "care giver and home maker" (Folbre 2009), have led to imbalanced division of both rights and responsibilities. While gender equality necessitates equivalent respect, recognition command of resource i.e., care, time, income and equal voice in familial decision making (Fraser et al. 2004; UN Women 2016). It also demands equality in social, political, economic, cultural arenas, and conducive legal and normative environment (UN CEDAW 2004; Balakrishnan et al. 2016). This being said, there are some thresholds to family's strengths, in case legal, conducive environment, and socio-economic support is stopped. Even egalitarian families can't cope on its own. Therefore, it

is risky and unrealistic to consider family and its members as “bottomless wells” and provider of “unlimited care supply” when its disproportionate unpaid care work falls on women and girls’ shoulders (Elson 1998).

2.4. Theories of Care Work

Theories which are highlighted relevant in the discussion of care work in relation to the market are being discussed below.

2.4.1. Care as Public Good Production

Care work whether paid or unpaid, has more “social benefits” linkage as compared to other types of work (England 2005). Public good theory focuses the generation capacity of the care work through development of care recipient skills, habits, values that can benefit the caregiver, recipients, and the society in general, thus creating “public good”. Care work develops an individual's intrinsic capabilities, nurture and raise children to be productive citizens Folbre (1995) and labor force and contribute to the social good at macro level. Care work generates healthy relationships between spouses, friends and parents and develops emotional, intellectual, and physical capabilities of care recipients and thus for the establishment of successful and stable social order Folbre (2001).

2.3.2. Caring Motives and Prisoners of Love

Folbre (2001) coined the term prisoner of love due to the effect of “caring motive and higher intrinsic rewards” on caregivers' pay gaps. She was of the view that people who are engaged in care work, enjoy relatively higher rewards intrinsically, are more altruistic, and thus less susceptible to reservations of low wages and salary. The attachment level of caregivers to their care work leads to both positive and negative results. Positive as contentment and satisfaction and negative repercussions as employers paying low wages due to caregivers' emotional attachment to their work and less chances of leaving it due to pay reasons (England & Folbre 2003, Himmelweit 1999). This explains the reasons as to why care jobs are low paying.

The prisoners of love theory also apply to the struggles among the state, mothers, and fathers. Parental love, both fatherly and motherly, although a natural phenomenon, is cultivated through experiences of providing care to one’s child. Resultantly, women who have been termed as “homemakers” and natural “caregivers" develop more attachment to their children

vis-a-vis husband and become “prisoners of love”. These implications are visible in men's unwillingness to pay child benefits after divorce as they know mother willingness for childcare. The same arguments have implications for state involvement in care in the welfare economics concept, when the state pays far more to foster homes rather than mothers-precisely due to the taken for granted motherly love that state counts on. Again, proving that mothers are prisoners of their love for children.

2.4.3. The Commodification of Emotion

The theory in focus discusses the commercialization of care through services sectors, by employers at the cost of workers' own emotions and feelings. Hochschild (1983) presented the term “emotional labor” in her work “The Managed Heart” where she explored the flight attendants training. She was struck by the training where the attendants are trained to display specific emotion and feelings of cheerfulness, jubilation despite their own strains and stresses. This theory is applicable in other services sectors too where care is sold as a commodity. In her work Hochschild (2000; 2003; 2012), she focused on capitalist market forces penetration in the markets around the globe, and the corresponding consequences for households in poor countries and women specifically.

2.4.4. Rejecting the Dichotomy Between Love and Money

Generally, the dichotomy categorizes women, altruism, love, and family as a segment which is radically opposite to men’s self-interested, non-altruistic market exchange and work segment " (Nelson & England 2002). Consequently, it is perceived that care work should not be carried out for pay reason, because profiteering and earning motives would be undermining the “intrinsic motives” associated with care work. This theoretical perspective rejects the contradictory and opposing dichotomy between self-interested economic actions and love. It takes a rather conciliatory approach and a middle path between the work done for pay and intrinsic motivation. In this regard, Economists and Experimental Psychologists point at the importance of specific mechanisms for obtaining desirable care work results. It can be in the form of compensation provided by the market (England. P, 2005).

2.5. Pre-COVID-19-19: Empirical Studies on Time Allocation and Unpaid Care Work

In pre-COVID-19 times, the gendered division of unpaid work was explored at both macro or national and micro levels across the globe through conducting time use surveys. For

instance, in Asian-Pacific region, developed countries of the region i.e., Japan, Australia, New Zealand, Republic of Korea have been conducting these surveys regularly and have mainstreamed time-use survey into their national statistics systems. On the other side, Afghanistan, Maldives, Brunei Darussalam, Palau, Marshall Islands, Singapore, and Myanmar have never carried out time-use survey till this time. Lying between these two extremes are 24 "emerging and developing" countries of the region, who have carried out small or big time-use surveys at least one time. But they haven't mainstreamed these surveys with their national statistics systems. These macro-level surveys uniformly reported the dominant engagement of women in unpaid work whether it was household work, childcare or adult care (Jacques, 2019).

On micro level, researchers used national level time use surveys data for studying in depth the contours of unpaid work empirically. For instance, Budlender (2008) carried out an important research endeavor for cross country comparison of the unpaid care work magnitude of six developing nations from diverse regions i.e., India, the Republic of Korea in Asia; South Africa, Tanzania in Africa; Argentina, Nicaragua in Latin America; with developed country i.e., Japan. The study results confirmed the uniformity in gendered patterns in both SNA, ESNA engagements across all countries. Men happen to be engaged more in SNA activities both in frequency and duration as compared to women. While women are engaged predominantly in ESNA activities. The study confirmed the existence of similar determinants or factors influencing the unpaid care work spending time, namely, marriage, age, children, work status. Other factors or determinants reflecting social standing and affluence, who had an influence on unpaid care work time spent and participatory patterns were, educational achievement, income, race, and caste. Although, some heterogeneity across different determinants in different countries were observed and patterns varied.

Carrasco, & Domínguez (2015) used national time use survey data to study the determinants of men's and women's housework participation, and total devoted work time for satisfaction of direct care needs of individuals. They found that women are still the main care providers in their families despite their employment status. Although, due to their job engagements, they externalize their caring roles either through family help or through the market if their pay permits.

In another group of European researchers Lina et.al., (2011) analyzed the (harmonized) time use surveys of fifteen European countries to have an in-depth analysis of researched countries

welfare regimes in gender context. They explored how unpaid care work phenomenon is at the core of national and regional gender inequalities. Researchers reiterated that care work beyond the market i.e., households, represents a distinctive and essential part of the national economies. Study proposed policy recommendations regarding time use surveys importance, improvements in care quality without compromising women wellbeing.

The Food and Agriculture Organization (FAO) of the United Nations carried out time use surveys on micro-level under the organization's "Righting the Wrong" program in 1990-91. These were carried out in four Asian countries - Malaysia, Pakistan, India, and Thailand. The aim was bringing prominence to women's involvement in agriculture and allied activities, promotion of women's decision-making roles, and empowering women in a general sense. The FAO "time use" surveys aimed at evaluating eight data collection methods namely, 24-hour self-reported time diary, participant observation, rapid appraisal by checklist, 24-hour recall, non-participant observation, interview questionnaire, group discussion using a checklist, and group feedback analysis. Evaluating study concluded that for data collection purposes, when men observe men and women being observed by women, it will be more productive approach. (FAO, 1991).

Furthermore, the Philippines, Indonesia, Malaysia, Sri Lanka, Vietnam, Islamic Republic of Iran conducted time-use surveys on micro levels in varying time periods with different objectives and research data methodologies. Research geographical areas ranged from urban areas, semi urban areas, or both, for cross-comparison. Range of survey methods were used. Generally, the participant observation method had been the most common method in anthropological studies, where the researcher himself/herself observed the time use patterns while living with families. In other scenarios, researchers conducted community-based surveys through "participatory rapid appraisals", focus group discussions. Random observation, non-participant observation, community discussion, stylized activity list, 24-hour time diary have also been used in different research studies in many countries[5] (ILO,2019).

[5] **Philippines** piloted a time-use survey 2000, small-scale surveys in 1975, 1976 and 1977; White (1983) small survey in **Indonesia** (1972–73 and 1977–78) followed by Govt 24hours time use 1998–99, 2004, 2005; **Malaysia** small modular, large time use & stylized questions survey, 1990-91, 2003; **Vietnam** small scale along National LSMS in 1992, 1997, 2002 and in 2004; **Islamic Republic of Iran** in 2008,2009 background questionnaire, 24-hour self-reported time diary (ILO,2019).

2.6. Post-COVID-19: Empirical studies on time allocation and gendered unpaid care work

In post COVID-19 scenario, there have been growing interest in exploring the highly gendered issue of unpaid work in developed and developing countries, primarily due to restrictions unique to contemporary pandemic induced lockdowns, and care crises.

In the onset of COVID-19, emerging body of research from the UK, the US, Germany, there have been the persistence of traditional care distribution in households where women continue to be the primary care provider and provides homeschooling more than men, in population working from home Adams-Prassl et al. (2020). Carlson et al. (2020) reported US-based survey research found that in COVID-19 times, homeschooling has ascended to become a new domestic task for families with kids and its responsibility have fallen dominantly on women. This new burden adds up to the already high child and domestic care burden in families with children.

Interestingly, lower income households, who were already facing higher unequal gendered intrahousehold distribution of unpaid work, were further thrown out of balance by the prevailing COVID-19 crises. Women unpaid work burden increased in these low-income families. Recent US survey reported sharp increase in unpaid work burden in African American, Latinos, and Asian ethnicities as compared to white families, which were more egalitarian. This ethno-racial intersectional dimension provides even more interesting insights to these highly gendered issue of unpaid work (Oxfam, Promundo-US and MenCare 2020).

Similarly, studying the COVID-19 impact on childcare in United Kingdom families in nuclear families through real time daily data collected, Sevilla and Smith (2020) reported the increase of sharing childcare burden in families. Researchers reported the reduction of gendered childcare gap i.e., from 30.5 to 27.2 per cent in post COVID-19 scenario as compared to pre-COVID-19 times. Although, men increased engagement in childcare was related to their employment status i.e., working from home, lost his job or furloughed. This assumption was reaffirmed in another study where fathers who lost jobs dedicated twice amount of time to childcare in post COVID-19 scenario Andrew et al. (2020).

In other originated studies, Alon et.al (2020), Hupkau and Petrongolo (2020) who assessed the impacts of COVID-19 on gender equality in the US found that there is anticipation of

high change in childcare provision if fathers work from home during pandemic crises, thus contributing more to childcare and not women. This research shows promising trends of abolishment of traditional gender defined norms and emergence of new working arrangements in households in unpaid work domain.

Another study from Australian families provides further findings in unpaid work dynamics in pos-COVID-19 induced lockdown scenario. Craig and Churchill (2020) reported men's increased involvement in childcare i.e., 54 per cent to 40 per cent, while Australian women dedicate more time to their household work and adult care. It reaffirms the established view that men take more interests in childcare in comparison with domestic chores.

In German context, Möhring et al. (2020) reported income as one of the most important determinants of increase in men engagement in childcare in pandemic scenario, as higher earner men who can work from home, can lead to more egalitarian childcare work distribution in families.

Del Boca et.al., (2020, 2021) conducted online research surveys for analyzing the COVID-19 new working arrangements impacts on domestic work, childcare, and homeschooling among dual earner Italian couples. Results shown extra increase of domestic and childcare burden for Italian women only, while childcare work was more equally shared within both men and women. Their empirical estimates showed that women domestic household work changes in post-lockdown scenario doesn't appear to be dependable on their partner working arrangements.in empirical terms, 68 percent of Italian women witnessed increased in housework while 61 percent increase in childcare, while 40 percent of men were providing more time to housework and 51 percent to childcare.

Marta Seiz (2021) investigated the unpaid work division at Spanish households in the aftermath of COVID-19 lockdown. An online survey from dual earners, high resource, highly educated couples provide useful insights into the renegotiating prospects of unpaid work in Spanish families. Research survey results revealed the changing trends in families and in majority cases nonnormative and egalitarian arrangements were reported. In this regard, "time availability" was found to be decisive factor in achievement of egalitarian status at household level. However, certain households maintained traditional household unpaid work patterns with Spanish women continued providing major unpaid responsibilities at the household levels.

Evidence from research endeavors i.e., Farré and González (2019) explored the impacts of pandemic in Spanish family's unpaid work distribution and reported slight increase in men contribution to domestic work including grocery shopping. Tamm (2019), showed that fathers who take paternal leave are more exposed to unpaid household and care work and can led to increasing men unpaid work involvement.

Likewise, Eva et.al. (2021) carried out survey research for exploring the impact of pandemic on childcare provided by men and women in Hungry. By doing the empirical analysis in pre- and post COVID-19 time frame, the researchers reported equal i.e., 35 per cent increase in childcare duties by both men and women. But as Hungarian women have been dedicating high amount of time in childcare even before pandemic lockdown in absolute terms, their childcare work hours increased more and further widens the already existed childcare work gap between both genders. Highest gender inequality was reported in educated couples seconded by middles class city dwellers.

İpek & Emel (2021) used Turkish *Lifestyle Survey* conducted during pandemic lockdown in 2020 with questions on time use, unpaid and paid work for both men and women. Research approach was to quantitatively measure the unpaid and paid work changes for both genders under the pandemic lockdown conditions. Results shows the increasing Turkish men participation in unpaid work, predominantly in men working from home. For women, the unpaid work burden increased, further exacerbating the gender disparities. Turkish working women, in particularly were overburdened, thus making decent work-life balance unsustainable. Intriguingly, the intra-disparities among women based on education, and employment diminished in post-pandemic unpaid work scenario, as purchasing power turned out to be rather obsolete under the pandemic restrictions.

Recently, Chauhan (2020) conducted an internet-based survey research for studying the impact of COVID-19 pandemic induced lockdown on unpaid care work time patterns of India's urban areas men and women. She also explored differences of gender division of unpaid care work in pre and during-COVID-19 scenario. Her results confirmed that pandemic has increased the sufferings of Indian women in general within unpaid care work time, magnitude, and patterns. Specifically, the time burden exacerbated with varying intensity based on socioeconomic determinants i.e., marital status, income level, employment status, number of children, household structures. Research found that one of the positive developments of the pandemic lockdown was the increased involvement of men in

unpaid care work and chances of more egalitarian families. Chauhan (2020) used a survey method followed by semi-structured interviews covering the gender involvement in pre-determined unpaid care chores at homes.

In discussion paper, Deshpande (2020) used Indian high frequency, national panel level data collected with an aim to investigate the pandemic gendered impact on paid, unpaid work and income level during lockdown and recovery phase. Decrease in domestic work hours was reported for both women and men during the first lockdown month, thus reducing gender gap in average domestic hours spent. It was primarily due to rise in men domestic work. But, in recovery phase, the men contributory hours to domestic work dropped, although not to pre-pandemic level. This highlighted the promising shift in normative household unpaid work distribution trends, that if persists, will be a positive development.

Summarily, the evolving research evidence on the COVID-19 impacts on unpaid work dynamics in household context seems to propose that intrahousehold redistribution of unpaid care work rests on three key factors i.e., employment status of the primary care providers, parents flexible working conditions, and mother job type. Scenario, where father have flexible working arrangements, work from home setup or have lost his job, can more likely increase men involvement in unpaid work at home. Nevertheless, primary care providers and mothers specifically, remain the primary domestic household worker irrespective of their working conditions and employment status.

2.7. Studies in Pakistan's context

The first Pakistani (1986-89) study focusing on time use was at micro level and conducted by the International Food Policy Research Institute with government collaboration and USAID funding. Study focused on providing information for policy improvements in food management and good security. Study scope was 44 villages and 800 households (ILO & UNDP, 2018). Furthermore, as aforementioned in developing countries context, the FAO conducted micro-level, time-use surveys in Pakistan back in 1990-91 for evaluation of eight data collection methods (FAO, 1991).

The national level, time use, standalone survey was conducted in 2007 covering the entire country i.e., 97 percent of the country's population. Survey aimed at gaining information on individual and household characteristics, socio economic background etc. from two people per household. Time use Survey (TUS) used both self-reported time diaries for urban areas

and recall dairy interviews for others. Gender disparities were witnessed in time use patterns across Extended System of National Activities E-SNA. Extended System of National Accounts activities included "household maintenance, care for children, sick and elderly and community services". Pakistan's urban men were reported to be contributing 27 mean minutes to unpaid work while urban women 272 minutes or 4 hours 53 minutes (PBS, 2009).

Correspondingly, many researchers have tried to explore the national time use data set for further insights in this important phenomenon. Arif and Saqib (2012) explored the time use, time poverty, and the determinants of time poverty based on the statistics of the national survey. TU Analysis of the TUS sample showed the time poverty incidence as 14 percent. Both employed and unemployed women were found to be more "time poor" as compared to men. The primary reason for this "time poverty" was cited to be the women's involvement in societally categorized activities that they have to do, no matter what. Working women were found to be far time poorer than their fellow non-working women. Thus, females are inclined to deal with significant tradeoffs between monetary poverty and time poverty. There was a significant link between time poverty and low income, as people in low-income households are time poor entailing double jeopardy situations for workers. Among others, study recommends fair distribution of responsibilities at household levels between women and men.

Summarily, aforementioned studies were predominantly carried out in developed, high income countries with the exception of Turkey and India, who are upper and lower middle-income countries with low performance on gender equality landscape. In developed countries context, respondents were dominantly highly educated, formally employed, dual earner couples while surveys were carried online to be filled by respondents' themselves. At the same time, these nations have prevalence of small, nuclear family structure, coupled with enhanced welfare regime social protection coverage, have relatively better care supportive infrastructure, and vibrant gender norms. No doubt the contributions made by these studies are critical to ongoing discourse on highly gendered issue of unpaid work, but their conclusions are skewed toward highly educated families and these studies have acknowledged these limitations in their studies i.e., Daniela (2020). Likewise, there have been limited post COVID-19 time use research studies i.e., apart from India, on intrahousehold work distribution in south Asian continent, which is notorious for holding the lowest score in "in-house" gender equality in unpaid care provision (ILO, 2018). Previous

studies, primarily carried out surveys with subjective, stylized questions regarding unpaid work with questions on “how much on average” you contribute toward unpaid work? or how much your spouse contributes to a week? These types of questions are prone to recall bias, respondents under or over estimation of their unpaid work time and leads to issues regarding reliability of data.

In Pakistan’s context, the emerging literature followed the same data collection patterns as mentioned in developed countries. The unpaid work research was generated by subjective, vague questions, mostly as part of larger broad study, where 2-3 questions on intrahousehold unpaid work were asked (UN WOMEN, 2020; Maryam et.al, 2020). Thus, the above-mentioned research gaps need to be filled and addressed by carrying out a study in Pakistan’s context with focus on diverse respondents, detailed categorization and codding of unpaid work and sub-categories using United Nations Statistics Division (UNSD) guidelines in a post COVID-19 scenario. The resultant research results will add to the emerging literature on COVID-19 impacts on intrahousehold unpaid work distribution as envisioned by SDG 5.4., 5.4.1. and UN Women’s egalitarian family’s concept. It will be an update from Pakistan, a country infamous for its worst and persistent inequalities at the family level.

CHAPTER # 3: RESEARCH DESIGN & METHODOLOGY

3.1. Description of the study area

For the research study, the areas of focus are to be the urban households of Islamabad. In COVID-19 scenario, national level lockdown measures were imposed and observed in urban areas more stringently. The social restrictions and ban on public movement affected urban areas and cities, making the selection of federal Islamabad more appropriate choice for post-pre COVID-19 research. Additionally, the varying cultures, social values, and Human Development Indices scores within Islamabad, give justification to research area selection.

Islamabad Capital Territory (ICT), Pakistan's federal capital city with the highest national level population growth i.e., 4.8 percent intercensal annual growth rate, have grown substantially to 2 million as per 2017 census (PBS, 2017a). ICT Demographic trends reveal that city's majority population is of working age (15-64 years), making up to 59 percent of the entire population (PBS, 2019b). Islamabad total number of households stands at 340,000, while urban households at 170,000 that is half of the total units in the ICT (PBS, 2017b).

It is cosmopolitan area with highly diverse population. Punjabis comprise 65 per cent of the total population, followed by 10.5 per cent Pashtuns, 14 per cent Urdu speakers, and the remaining 7 per cent are mix of Kashmiris, Sindhi, and Balochis (World Population Review, 2019). Islamabad has the highest national literacy rate of 88 per cent, more than 10 per cent have bachelor's degree while 5.2 percent have masters. Islamabad's Multi-dimensional Poverty Index score is 0.0136 (UNDP, 2015). HDI value for Islamabad is 0.875, scoring in high human development (NHDR, 2015). Nevertheless, disparities exist on regional, sectoral levels in Islamabad.

3.2. The Criteria for selection of G10-Sector

G-10 Sector, Islamabad is located near Kashmir Highway, further subdivided in G10/1, G10/2, G10/3, G10/4 subsectors. G-10 Sector has adequate care supportive infrastructure, dedicated commercial zones, parks, excellent quality public and private educational institutes, mosques, health care facilities, community centers, cricket ground, driving institute. It is well-developed and secured place housing middle and upper middle-income families headed by primary earner from formal employment sectors like federal government, private sectors, Multi-National Corporations etc. Human Development Index is high both for

men and women with high education trends, contrary to rest of the national education trends, consequently dual earner trends are highly prevalent.

In pre-COVID-19 times, domestic helpers, nannies, women care providers were outsourced by G-10 affluent families for care services on hourly, daily basis for household chores like cooking, cleaning, washing clothes, ironing clothes, adult care, childcare, and grocery shopping.

In post COVID-19 times, domestic workers services were curtailed due to March 2021 lockdown restrictions in lieu of third wave. Resultantly, unpaid work burden fell on G-10 families, making it perfect opportunity for insightful study in pre-post comparison on highly gendered issue of unpaid work.

3..3. The Criteria for selection of Tarnol

Tarnol, located on the outskirts of Islamabad. Pakistan Bureau of Statistics place it under the District Islamabad Urban domain (PBS, 2017b). Comparatively to other parts of capital city Islamabad, Tarnol isn't as much developed, although basic amenities of life like schools, social services, shopping facilities, public transportation are available.

With high density in Tarnol population, HDI is poor with low educational trends, care supportive infrastructure is inadequate. Most of the residents are poor, low-income families headed by primary earner from informal sector i.e., self-employed, Industrial labor, manual labor, lower-level private employees. Tarnol has been home to in-migration from Punjab and Khyber Pakhtunkhwa's low income, poorly educated labor, who come for employment opportunities.

In pre and post COVID-19 Tarnol, no domestic helpers or nannies were available. Post-pandemic March lockdown during 3rd wave adversely affected the employment patterns of these families. All these differing characteristics of Urban Tarnol, make it perfect case for its cross comparison with relatively better off sectors of Islamabad.

3.4. Study Area

As Previously discussed, the study areas map of Tarnol and G-10 Sector depicting the number of households and related infrastructure is presented below in figures.

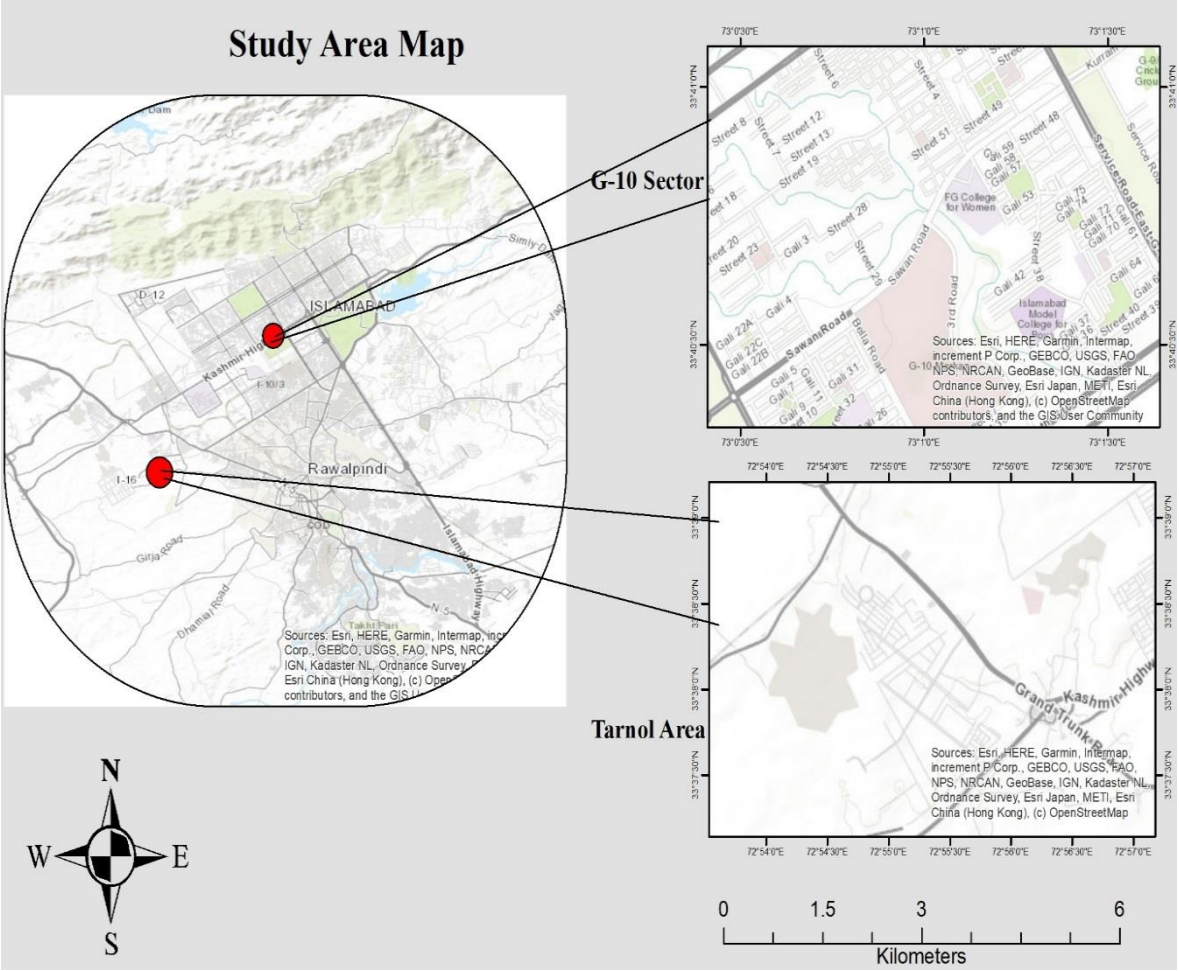


Figure 3. 1. Study Area Map

3.5. Research Methodology

This research endeavor is a micro-level quantitative survey study by design carried out in G-10 sector and Tarnol. The aim of the research design is the assessment of intrahousehold unpaid care work distribution in low-income households by providing a complete picture of 24 hours daily routine of primary care providers and their dedication to unpaid work.

Survey study was conducted in two phases i.e., February (Before pandemic Lockdown) and March (During pandemic Lockdown) 2021, with an aim to collect data from the calculated number of respondents for the intended cross comparison in pre-post pandemic lockdown scenario.

Time-Use Data questionnaire was filled through face to face "One-day or Progressive 24-hour" recall interview from respondents, asking them about how they spent their time

yesterday, during February 2021 and March 2021. One-day recall schedule was followed because it has extensively been used in Time surveys around the world i.e., Laos, The Philippines, India, Pakistan and so on. Additionally, in comparison to other time-use data collection instruments, one day recall approach leads to reliable data which is chronologically in good order (ILO & UNDP, 2018). Robinson (1985) and Juster (1986) found this method to be low-cost having no systematic bias and good data results.

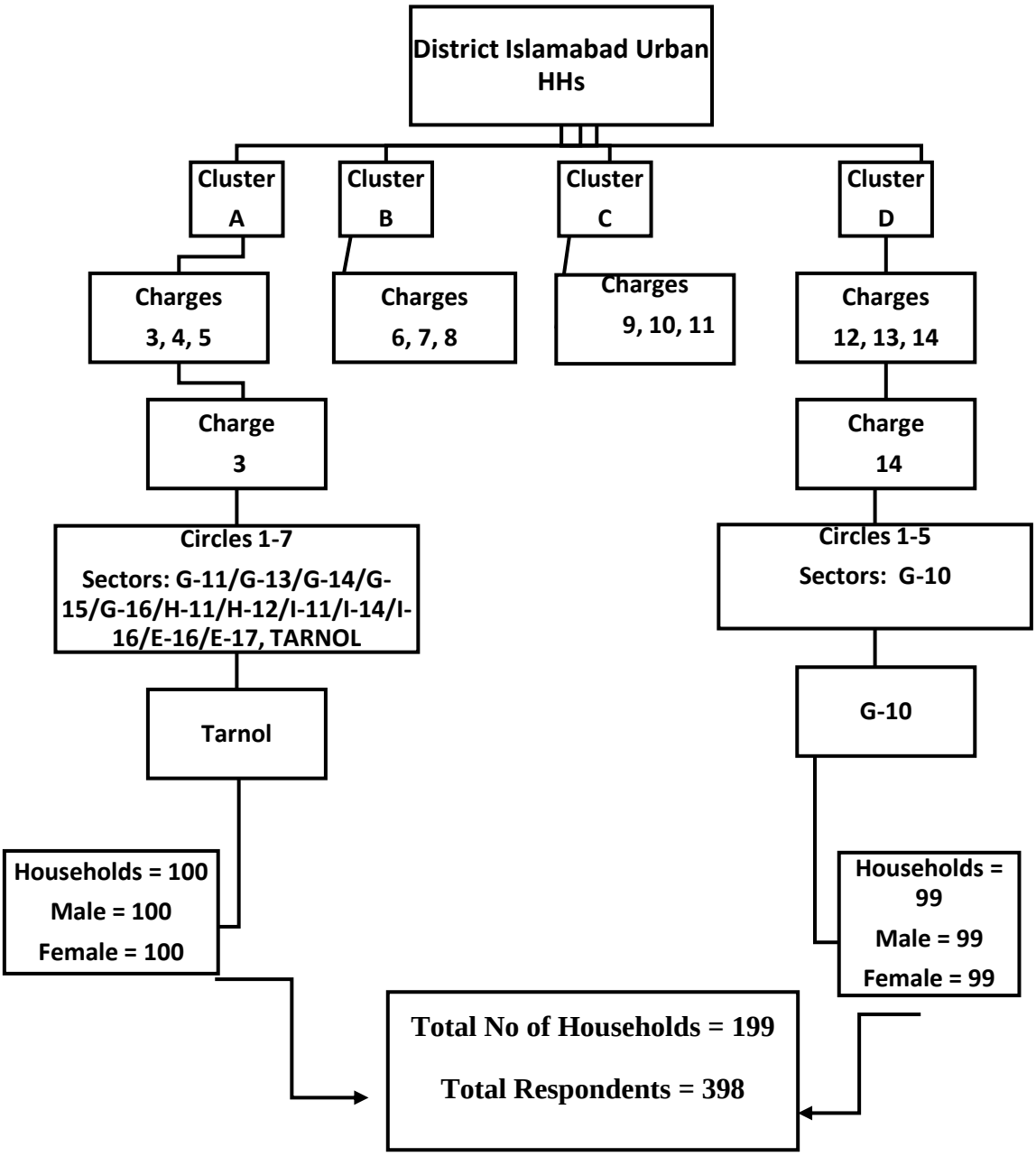
As the only Time-Use survey in Pakistan's national context was conducted fourteen years ago in 2007 (PBS, 2009), international sources like UNSD[6], ICATUS (2016), ILO (2019), UNRISD [7] reports, time use survey guidelines, case studies, etc. were used for seeking guidelines in conceptual, and analytical domains for formulating this research methodology.

3.5.1. Sample Design

Multistage-random sampling procedure was adopted keeping in view the large population size, and quantitative nature of this survey research. Sample framework follows ILO & UNDP (2018) suggested sampling framework for time-use survey research (ILO & UNDP, 2018). District Islamabad Urban households have been divided in Clusters, charges, and circles. Subsequently G-10 sector and Tarnol households were selected based on already discussed criteria.

[6] Guide to Producing Statistics on Time Use: Measuring Paid and Unpaid Work, Department of Economic and Social Affairs, Statistics Division. United Nations (2005).
[7] A Critical Review of Selected Time Use Surveys by Debbie Budlender, Gender and Development Program Paper No 2. June 2007. Debbie Budlender (2007).

3.5.2. Sampling Framework



3.5.3. Sample Size

Sampling under Time-Use surveys consists of sampling of households and household members. For the households sampling, a methodology provided by Taro Yamane (Yamane, 1967) has been employed which is given as.

$$n = \frac{N}{1 + N(e)^2}$$

Where "n" is the sample size and "N" is the total population and "e" being the sampling/margin error estimated either at 0.10, 0.05 or 0.01.

As explained in sampling framework, urban Islamabad[8] has been divided into clusters, charges, circles, and then subsequent sectors. Charge 3 and Charge 14 were selected and considered as population N, for calculating sample size n, because the sampled area "Tarnol" and "G-10 Sector" belong to these charges respectively, as per PBS provided information[9].

With district Islamabad urban region Charge "3" total number of Households = 51704, and Charge "14" total number of Households = 7562 (PBS, 2017b), and "e" at 0.10, the formula gives calculated sample size "n" for Charge 3= 100 households and Charge 14= 99 households. Subsequently, total number of households were calculated to be 199. Furthermore, as this research endeavor focuses on intrahousehold unpaid care work distribution, one primary male and female care giver of each family was selected as respondent, accounting at 398 respondents in total.

Estimated sampling error was ±10 and confidence interval of 90%, which is accepted in social science research. Furthermore, sampling error of ±10 in sampling for stand-alone "time-use" survey research is justifiable due to its time-consuming nature, field and logistics costs, high expenditures in traveling contrary to other household surveys (ILO & UNDP, 2018).

[8] Available at: https://www.pbs.gov.pk/sites/default/files/bwpsr/islamabad/ISLAMABAD_SUMMARY.pdf

[9] According to the PBS provided information, *Charge 3* consists of Sectors G-11/G-13/G-14/G-15/G-16/H-11/H-12/I-11/I-14/I-16/E-16/E-17, Tarnol while Charge 14 consists of G-10 Sector alone (Email Correspondence).

3.6. Survey Instruments

Predesigned, semi-structured questionnaire was used for data collection. It had two parts i.e., 1) background information section. 2) Time Activity Matrix inquiring the respondents time-use pattern.

3.6.1. Background Questionnaire:

In background section, information about household demographic, socioeconomic aspects were covered i.e., age, gender, occupation, marital status, number and age of children, household structure and family members age/number, education, health status, income earned. This information is aligned with survey's objectives and important part of time-use survey. Specifically, as objective of this study are covering the care economy aspects at the household level, it is vital to have questions regarding family members, their ages, their health, caring arrangements within household members.

3.6.2. Time Activity Matrix

Second part of the study is pen and paper-based *Time Activity Matrix,* which separately covered "time spending pattern" of the primary care providers' pre (February 2021) and post (March 2021) lockdown daily routines. This was done through face to face one-day recall procedure and matrix was filled with mutual help. Activities (Major divisions) were listed on the top "horizontally" and the time periods were listed in column "vertically" for one-hour time slot. It covered every time episode of activities, over the duration of normal 24 hours day starting from 4-5 am till 3-4 am. It was one-hour incremental time journey of respondent's entire day. A sample of Time Activity Matrix is given below in Figure 3.2:

(B.1) Time Activity Matrix **Man Primary Care Provider**

Please think about what you were doing in the last 24 hours (yesterday morning at 4am, finishing 3am of the current day). I will ask you for the main activity and one simultaneous activity, if you were doing at a certain time during the day.

	Time	Paid work	Unpaid GDP work	House work	Child care	Adult care	Volunteer Work	Learning	Social & Comm, Religious	Cult, leisure Media, Sport	Self-care
1	4-5 am										
2	5-6 am										
3	6-7 am										
4	7-8 am										
5	8-9 am										

Figure 3. 2 Time Activity Matrix

Respondents were asked as to what they did on hourly basis yesterday and the mentioned primary activity was then noted in Time activity Matrix. For right classification of care activities, contextual variables[10] through probing questions were asked for overcoming logical gaps in events sequence or in case of simultaneous activity. Information on single activity per time interval was collected during data collection.

A list of all expected activities (available in Appendix-III) that a person can perform during 24 hours in a day has been accumulated in the form of The *International Classification of Activities for Time-Use Statistics* (ICATUS) under the custodianship of United Nations Statistics Division (UNSD). The latest agreed upon ICATUS 2016 provides a framework for international comparison, irrespective of data collection instrument type (UNSD, 2019). In this study, guidance was taken from ICATUS 2016 for classifying, coding activity as to whether it was unpaid domestic work, child care or adult care.

3.7. Statistical Tools and Data Analysis

Microsoft Excel 365 ProPlus was used for data entry, tabulation, and SATA SE14 was used for data analysis. Descriptive statistics, paired T-tests and regression analysis were employed.

3.7.1. Two Sample T-test

The test statistic is calculated as:

$$t = \frac{\bar{x}_1 - \bar{x}_2 - \Delta}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

H_0: $\mu_1 - \mu_2 = 0$

H_a : $\mu_1 - \mu_2 \neq 0$

[10] . In order to correctly classify activities in ICATUS in a mutually exclusive manner, information about the context in which the activity is carried out is necessary. Experts during the Expert Group Meeting in 2012 identified four core contextual variables to be collected: (a) "For whom" the activity was carried out; (b) Whether the activity was "for pay or profit" (i.e., intended for the market); (c) "With whom" the activity was carried out; (d) The location where the activity was carried out. Thus, it makes classification of activity a lot easier (UNSD, 2019).

Where $\bar{x}_1$ and $\bar{x}_2$ are the means of two samples i.e. pre-pandemic hours and post-pandemic hours, Δ is the hypothesized change between the population means (0 if testing for equal means), s_1 and s_2 are the standard deviations of the two samples (Pre and Post), while n_1 and n_2 are the sizes of the two samples (No of Observations).

3.7.2. Ordinary Least Square (OLS) Regression

In the case of a model with p explanatory variables, the OLS regression model writes:

$$Y = \beta_0 + \Sigma_{j=1..p} \beta_j X_j + \varepsilon$$

Or with explanatory variables x1,x2,x3….xp

$$y_i = \beta_1 x_{i1} + \beta_2 x_{i2} + \cdots + \beta_p x_{ip} + \varepsilon_i,$$

where Y is the dependent variable (Difference of unpaid working hours by primary care providers i.e., during/post pandemic - pre-pandemic), β_0 is the intercept of the model, X_j corresponds to the j^{th} explanatory or independent variable of the model (j= 1 to p) as given in the table 3.1, and e is the random error with expectation 0 and variance σ^2.

3.8. List of Variables

The list of dependent and independent variables is given below:

Outcome/Dependent Variable	**Explanatory/Independent Variables**	**Source**
Difference of unpaid working hours by Male (during/post pandemic - pre-pandemic)	1.No of Kids in HHs	Deshpande (2020), Marta (2021).
	2. No of Adults	ILO (2018)
	3. Male Education Level	Eva et. al (2021), Daniela (2020),
	4. Female Education Level	Eva et. al (2021)
	5. Male Age	(Farré et al. 2020), (2020)
	6. Female Age	Daniela (2020)
Difference of unpaid working hours by Female (during/post pandemic - pre-pandemic)	7. Presence of Washing Machine	ILO (2018)
	8. Presence of Television	ILO (2018)
	9. Presence of Internet	ILO (2018)
	10. Presence of Aged female	ILO (2018), Hunady et. al. (2014)
	11. Woman Social Insurance	ILO (2018)

Table 3. 1 List of Variables

3.9. Ethical Consideration

Ethical principles were strictly observed and followed keeping in view respondent's consent, and privacy issues. Specifically, concerns of female primary care providers regarding anonymity, purdah (traditional Hijab) were addressed with the help of local religious scholar, acquaintances, and domestic worker. Data collection form female care provider were carried out in the presence of family male. No audio, video recording was done of the data collection process.

CHAPTER # 4: RESULTS & DISCUSSION

As the research areas are G-10 sector and Tarnol area, the corresponding discussion separately deliberate on the contours of unpaid work and its intrahousehold distribution for both regions, in pre- and post-pandemic lockdown scenario.

The focus is on the demographic, educational, employment and households' profile of G-10 sector, and Tarnol area primary care providers and their households. These issues are central to understanding unpaid work dynamics, as highlighted by Razavi, (2007), ILO (2018), and UN (2016).

Furthermore, unpaid work distribution at household level with major disparities in sub-categories of unpaid work among G-10 sector's male and female are explored. Any changes (before and during pandemic lockdown) in primary care providers unpaid work patterns are being discussed and their statistical significance calculated. At the end, cross comparison between G-10 sector and Tarnol area is done.

4.1. Demographic Profile of Primary Care Givers

4.1.1. G-10 Sector and Tarnol Gender

For G-10 sector and Tarnol area, there were 99 and 100 households respectively, in total 198 households. As the research study focus on the intrahousehold distribution of unpaid work, primary male and female care providers were respondents in G-10 sector and Tarnol area. Thus, one primary male and one primary female were respondents from each family, totaling 398. In case of single parent households, the elder son, elder daughter, grandfather, or grandmother were considered as primary care providers instead and interviewed. all the respondents were from working age[11] category and considered primary care providers accordingly.

4.1.2. G-10 Sector Care Givers Age Structure

G-10 sector primary care givers' age has been divided in six age categories i.e., 10-20 years, 20-30 years, 20-30 years, 3-40 years, 41-50 years, 51-60 years, 61-70 years. Figure correspondingly provide care givers' age information, highlighting that majority of the care

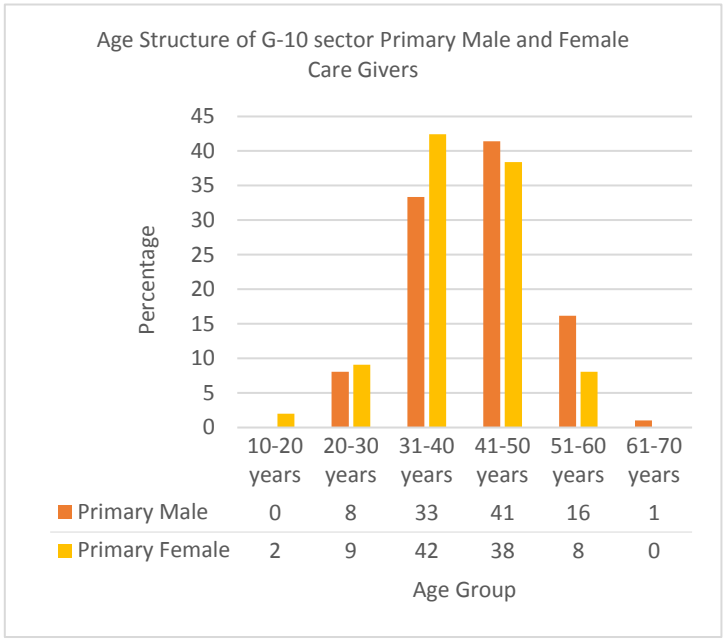
[11] According to UN Global Compact: In developing countries context, working age for Light Work, regular work and hazardous work is 12, 14, and 18 years respectively (UN Global Compact, 2021). While Pakistan's Employment of Children Act, 1991 consider 14 years and above as to be the legal working age (ILO) (Government of Pakistan, 1991).

givers (74 percent male, 80 percent female) are from age group 31-40 and 41-50. it confirms that care responsibilities for both male and female are high in middle age.

The exceptional 2 percent of female between "10-20 years" age group as primary care givers signify the caring responsibilities that girls below 20 years age assumed due to the absence of mothers, confirming gender defined roles. Age group 51-60 constitute third highest number of care providers i.e., 16 percent male and 8 percent female, primarily as it comes under the domain of working age population. However, it also implies the aging phenomena in G-10 sector sampled households' male category i.e., 16 percent contrary to female 8 percent, which could further exacerbate the caring burden of women as they are the main adult care providers in families.

Whereas, Tarnol primary care givers' age has also been divided in six age categories i.e., 10-20 years, 21-30 years, 31-40 years, 41-50 years, 51-60 years, 61-70 years respectively. Figure given below, provides care givers' age information, highlighting that majority of the care givers (78 percent male, 70 percent female) are from age group 31-40 and 41-50. It confirms that care responsibilities for both male and female are high in middle age.

The exceptional three and five percent of Tarnol male and female as primary care givers at the youngest age category 10-20 signify the gender defined caring responsibilities. it is both valid for girls below 20 years age who assume family caring responsibility due to the absence of mothers, confirming gender defined roles. while below 20 years of aged 3 percent male care givers shows the prevalence of early marriage and corresponding male household headship that is a usual norm in low-income households, particularly in Pashtun families. Age groups 51-60 and 61-70 constitute the meager 7 male and 5 percent of female care providers highlighting that the majority of Tarnol care givers are young.



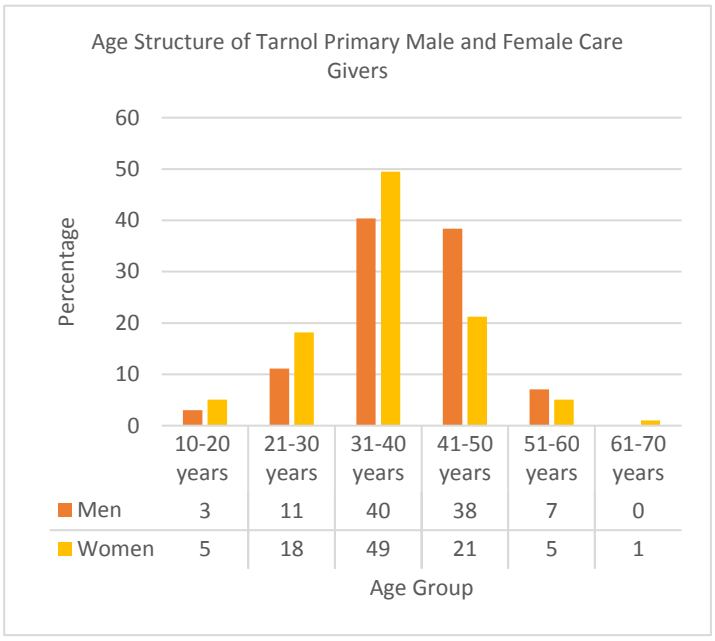


Figure 4.1. Primary Care Providers Age Structure

Source: Survey Data

The mean age and standard deviation of G-10 sector's primary care providers of both genders is given in table 4.2. Primary male care provider age is 42 while for female, it is 38 years. The mean four years age difference shows the prevailing trend in Pakistan's social context where men still prefer to marry comparatively younger women as decades ago reported by Sathar et.al. (1998).

Mean primary male age 39 and female primary care giver age being 36 years shows the evident trend of early marriages and subsequent family headship in low-income households. Although this may be partly attributed to ethnic profile of primary care givers as well. (As shown in Table 4.1).

G-10 Sector	Mean	Population	Std. Dev.	Tarnol	Mean	Population	Std. Dev.
Primary Male Age	42.566	99	8.225	Primary Male Age	39	99	8.53
Primary Female Age	38.758	99	7.904	Primary Female Age	36	99	8.81

Table 4.1. Primary Care Providers Mean Age

Source: Survey Data

4.2. Educational Profile of Primary Care Givers

Education is extremely critical parameter in the context of human development in general and paid work, job preferences, social security, intrahousehold unpaid work distribution, women empowerment, and childhood development in particular. Furthermore, the primary care providers educational profile influences their employment profile, time spending patterns under post-pandemic circumstances.

G-10 Sector

G-10 sector educational profile shows the considerably better and highly educated nature of the sampled families, contrary to Tarnol in specific and national average in general. Whopping 87 percent of the primary male and 66 percent of primary female care providers have graduation and post-graduation education level, followed by 28 percent female care givers having higher secondary or college education as presented in figure 4.1. Surprisingly, more female that is 59 percent, than male i.e., 54 percent, are highly educated. there are no illiterate primary care providers in G-10 sector sample.

Tarnol Area

Tarnol educational profile shows the relatively poor education profile of the sampled families, contrary to G-10 sector in specific, and Islamabad average in general (PBS, 2019). Nearly 62 percent of the primary male and 82 percent of primary female care providers have below secondary education level, followed by 27 percent male and 18 percent female higher secondary graduates.

A little i.e., 7, and 4 percent male care givers have diploma or college education as presented in figure 4.1. Expectedly, no female is highly educated i.e., graduate in Tarnol. there are 14 percent female and 2 percent male illiterate primary care providers in Tarnol sample.

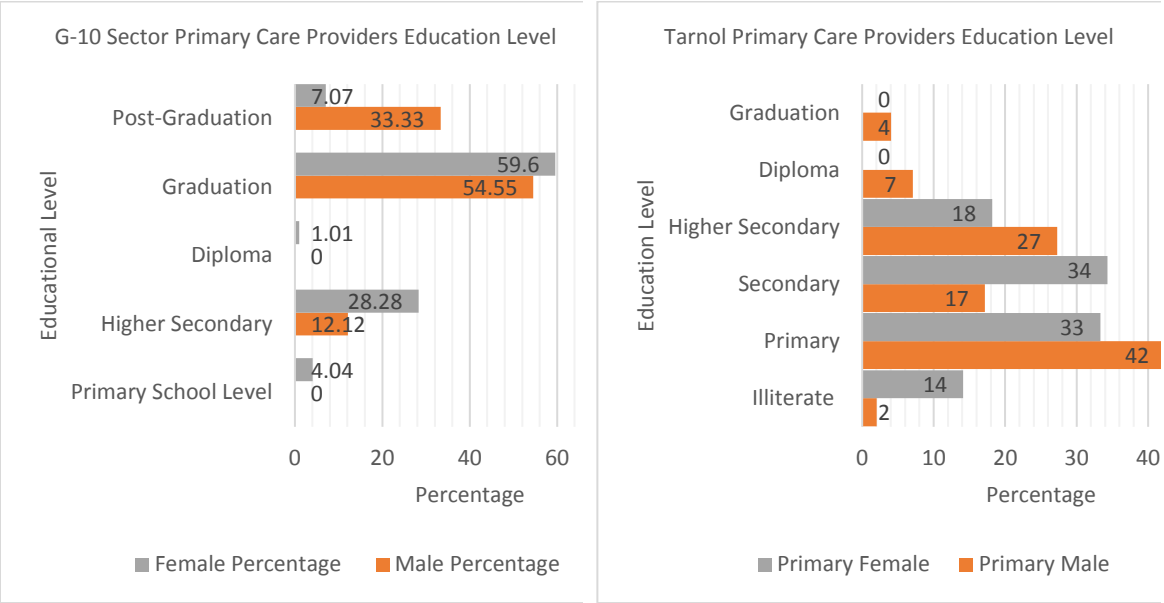


Figure 4.2. Primary Care Providers Education Level

Source: Survey Data

4.3. Employment Profile of Primary Care Givers

Employment is the principal source of income for households that shape the economic health of a family and society. Under the contemporary circumstances due to COVID-19 induced economic shocks, which are unique in nature due to its paid work suspension measurements, owing to pandemic containment, the employment type, and the linked job security, working hours flexibility becomes more important. The exclusion of educated woman from paid work reflects the still prepotent male-breadwinner, women-care giver and home maker trends in urban Islamabad G-10 sector.

G-10 Sector

G-10 sector, specifically its sectors G-10/1 and G-10/2 are housing predominantly the federal government employees and their families, followed by private firms' employees, businesspersons and self-employed. The majority male employment was in government sector i.e., 41 percent, 21 percent private employment and businessmen, and 15 percent self-employed. As given in figure 4.2.

On the contrary, women, despite being highly educated (66 percent with graduation and above) were out of the labor force i.e., 74 percent economically inactive. This shows the "labor force participation penalty" for women (ILO, 2018). While 26 percent primary female care givers are engaged in paid work. Private sector employment in women was 11 percent followed by women self-employment and meager government employment accounting to 9 and 5 percent respectively (Figure 4.2.).

Tarnol

Tarnol is specifically housing predominantly informal working employees and their families, with tiny number of primary care providers working in formal establishment. The majority male jobs were in self-employment sector accounting to 27 percent, followed by 23 percent industrial labor, 19 percent private employees and 12 percent male care givers employed in business sector, as given in figure 4.2.

Likewise, Tarnol's women were predominantly i.e., 83 percent not in the labor force, even if they wanted to work. Women were more engaged in self-employment and private sector employment as 12 and 4 percent respectively. Domestic working was the major profession for Tarnol's female, who used to work in affluent families of Islamabad. Only one percent of primary female care providers were in industrial employment with no representation in business and government employment.

Confirming government estimation, Tarnol's primary care providers suffered the hardest blow in terms of job loss during pandemic induced lockdowns, owing to dominance in informal economic sector for both male and female, which came under severe strain in the context of march, 2021 lockdowns. It was reported by previous industrial impact assessment studies (Ahmad i., 2020; GOP, 2021; UNIDO, 2020). Subsequently, excluding essential industries, services sectors like export-oriented industries, food manufacturing, non-essential industries and services were closed, and it put poor households with pre-existing inequalities in further abyss (PBS, 2020). It also affected intrahousehold distribution of unpaid work, gender relations at house, prevalence of gender-based and intimate partner violence (UNDP, 2020).

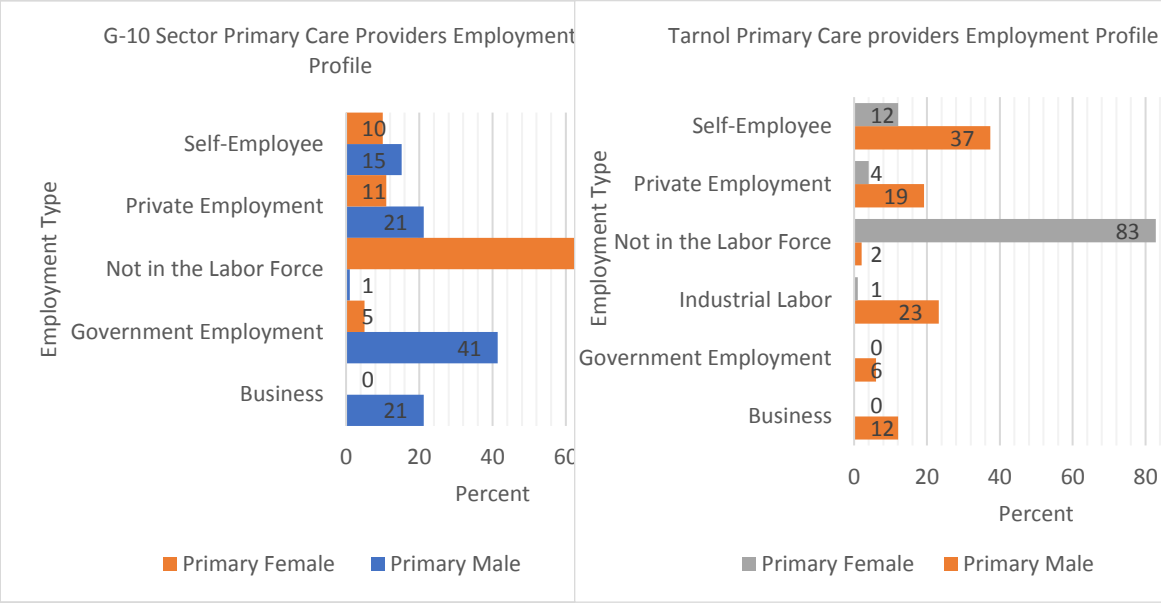


Figure 4.3. Primary Care Providers Employment Profile

Source: Survey Data

4.4. Households Profile of G-10 Sector and Tarnol area

4.4.1. Household Size

G-10 Sector Households Size

G-10 sector household size or no of family members range from two persons to ten percent per family. Nearly 22 percent families have 6 members, 21 percent have 5 members and 17 percent have 7 members as given in figure 4.3. It reflects the national and Islamabad's population trends with an average household size of 6-7 (PBS, 2017a).

G-10 sector families having above 8-10 members is 17 percent while almost 22 percent of families have up to 4 members. The trends are shown in figure 4.3. Almost 6 percent of families have no children. The high ratio i.e., 22 percent of relatively smaller (below 4 members) families shows the increasing trends of small families in g-10 sector, Islamabad. It also reflects the usual demographic trends in urban areas who have high scores in HDI, standard of living and smaller families.

Tarnol Households Size

Tarnol household size or no of family members range from two persons to twelve percent per family. Nearly 23 percent families have 5, 6 members, 17 percent have 7 members and almost 6 percent have 8-9 members. Tarnol's eight percent families have 10 and above household size as given in figure 4.3.

Contrary to G-10 area, where there was high incidence of smaller i.e., below 4 members constitute 22 percent, Tarnol's below 4 family size is only 16 percent. The occurrence of relatively large families in Tarnol area imitate the continued tendencies of large size families in semi-urban, urban slum, and low-income household residing areas, irrespective of geographical cities.

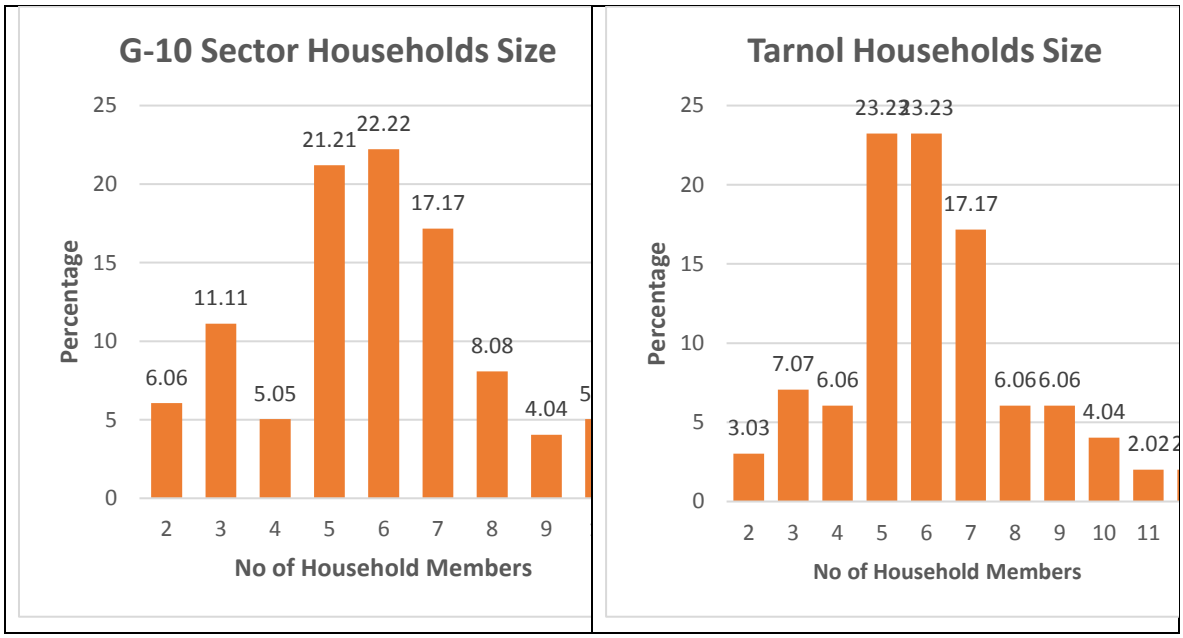


Figure 4.4. Household Size of G-10 Sector and Tarnol

Source: Survey Data

4.4.2. Household Types

Diversity has been observed in G-10 sector and Tarnol area's family forms across the ethnic lines, with Pashtun mostly and to some extent, Punjabi families that have high percentage of joint and extended families. Urdu speaking families have high occurrence of nuclear families. Gilgit families have shown mixed family forms. These familial types of trends reflect the

complex multi-dimensional socio-economic, demographic and cultural influences affecting family forms in urban cities.

G-10 Sector Household Types

In this research study, majority i.e., 53 percent of the G-10 sector households are nuclear, followed by 39 percent extended or joint and 7 percent single parent households as shown in figure 4.4. it reflects the considerable change in family forms in Pakistan's urban culture. Although G-10 sector joint families still constitute to be a major family form, trends are changing.

Tarnol Household Types

Tarnol's majority i.e., 52 percent households are extended families, followed by 38 percent nuclear, 6 percent single parent, and 3 percent nucleus households as shown in Figure 4.4. It reflects the persistence of extended and joint family forms in Pakistan's poor, semi-urban culture. Which goes on to influence women opportunities in paid work. However, despite dominance of joint families in Tarnol, trends are changing.

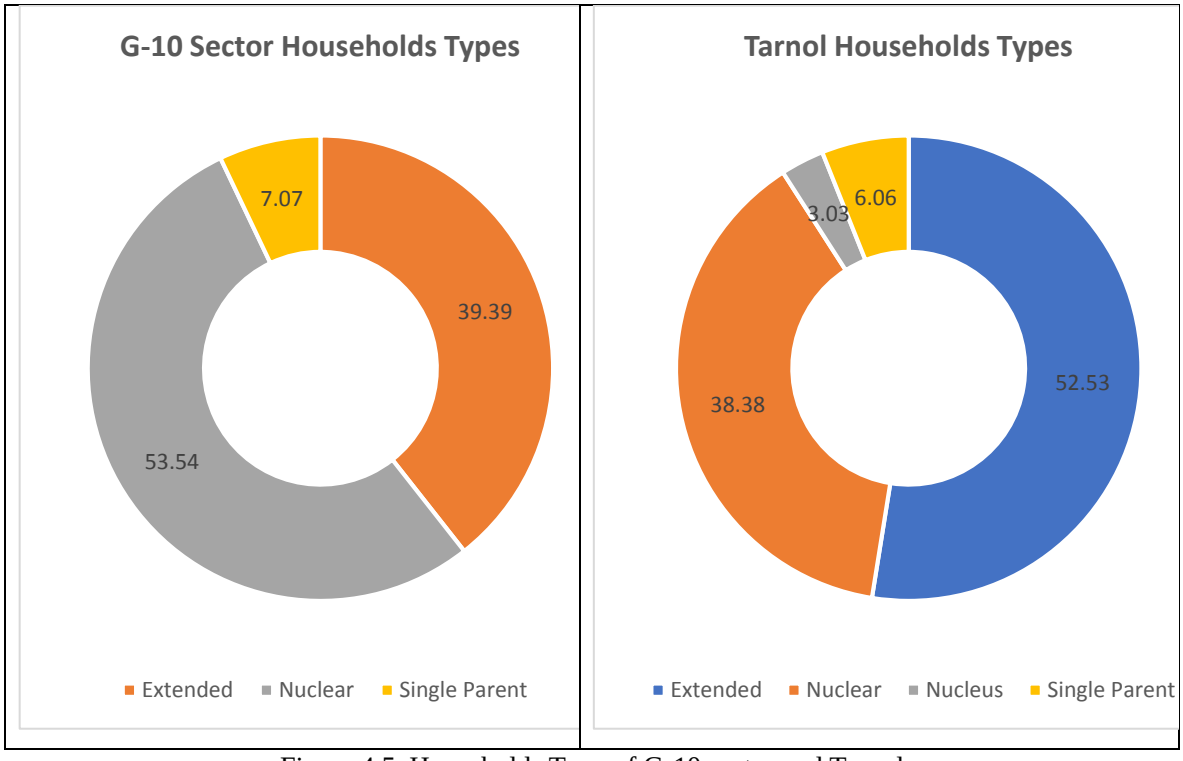


Figure 4.5. Households Type of G-10 sector and Tarnol

Source: Survey Data

4.4.3. Number of Children Per Household

The number of children and their age is important aspect of unpaid work dynamics, as they constitute important category of care recipients and increase unpaid workload for care givers, resulting in "motherhood penalty ", while on the contrary male receive the "fatherhood premium " and thus it further widens the "parenthood employment gap" and put "job quality penalty" among other things (ILO,2018). Individuals within age limit of 0-14 years, are considered as children (PBS, 2017a) and under 7 kids are reported to be significant receivers of caring efforts and time (ILO, 2018).

G-10 Sector Number of Kids Per Households

The age composition of G-10 sectors families' primary care providers as previously discussed, reflects in family patterns and childbearing kids. Primary care givers are 70-80 percent from age category 31-50 (as previously discussed) and hence in the prime age of childbearing. Correspondingly, 28 percent families have 3 kids, 27 percent have 4 kids and 14 percent families have 5 kids respectively. Cumulatively, 30 percent families have 3 and less than three kids. Table 4.3. shows the results.

Although there is high occurrence of 3+ of kids in G-10 families, but there is high prevalence of nuclear families with less percentage of extended families, where extended family members live together.

Tarnol Number of Kids Per Households

The age composition of Tarnol families' primary care providers as previously discussed, is reflected in family patterns and childbearing trends. Tarnol primary care givers are 78-70 percent from age category 31-50 (as previously discussed) and thus in the prime age of childbearing with high fertility rates as compared to G-10 sector. The early marriages trend in Tarnol's poor income households with no childbirth gaps leads to high number of children in all categories, in comparison with G-10 sector families.

Subsequently, 29 percent families have 3 kids, 18 percent have 4 kids and 14 percent families have 5, 2, and 1 child respectively. Cumulatively, 64 percent families have 3 or more than 3 children. Table 4.3 shows the results.

Total No of Children	Freq.	Percent
0	7	7.07
1	13	13.13
2	10	10.10
3	28	28.28
4	27	27.27
5	14	14.14
Total	99	100.00

Total No of Children	Freq.	Percent
0	7	7.07
1	14	14.14
2	14	14.14
3	29	29.29
4	18	18.18
5	14	14.14
6	3	3.03
Total	99	100

Table 4.2. Total No of Children in G-10 Sector and Tarnol

Source: Data Survey

4.5. Gendered distribution of G-10 Sector Unpaid Work in Pre-pandemic Lockdown

To understand the dynamics of unpaid work and its subsequent categories i.e., domestic or household work, childcare, and adult care, it is imperative to understand the intrahousehold distribution of unpaid work among both primary care providers i.e., male and female.

In G-10 Sector, there is a high prevalence of middle-aged, educated, formal sector-employed, and dual earner couples. It has relatively high number of nuclear families with a smaller number of secondary kinship care givers i.e., grandparents, in-laws.

In pre-pandemic times, G-10 sector male contributed on average 2.98 or almost 3 hours to unpaid work. Category-wise, men contributed more to childcare with 2.1 hours, confirming earlier studies reporting men increase share in gratifying childcare than household chores (Sevilla & Smith, 2020). It is followed by 0.58 hours in domestic work and the least to adult care with 0.29 hours. The results are briefly calculated in table 4.4.

Descriptive Statistics of Unpaid Work (Male Pre-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Male Domestic work	99	0.6	.655	0	2
Male Childcare	99	2.1	1.25	0	5
Male Adult care	99	0.3	.479	0	2
Total Unpaid Work	99	3.0	1.52	0	6

Table 4.3. G-10 Sector Primary Male Unpaid Work in Pre-Pandemic

Source: Survey Data

In pre-pandemic lockdown period, G-10 sector women were the primary care givers as far as mean unpaid work is concerned. Female spent 6.8 hours on average in unpaid work tasks at home, while domestic work took 3.7 hours on average, constituting major time effort of G-10 primary female followed by 2.4 hours of childcare work and 0.5 hours for adult care as given in table 4.5.

In pre-pandemic period, G-10 sector families outsourced domestic work, childcare, and adult care to paid domestic workers or nannies and it significantly gave them a moment of respite during unpaid working time and freedom for SNA, Non-SNA activities or ICATUS (2016) demarcated other activities under major divisions besides unpaid work.

Descriptive Statistics of Unpaid Work (Female Pre-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Female Domestic Work	99	3.8	1.178	1	6
Female Childcare	99	2.4	1.349	0	6
Female Adult care	99	0.5	.689	0	3
Total Unpaid Work	99	6.8	2.0	2	10

Table 4.4. G-10 Sector Primary Female Unpaid Work in Pre-Pandemic

Source: Survey Data

Summarily, in pre-pandemic lockdown period, there was no gender equality in unpaid work at G-10 sector households. Aforementioned discussed tables display the significant asymmetrical nature of all categories of unpaid work between primary male and female, highlighting the uneven intrahousehold distribution of unpaid work.

4.6. Gendered distribution of G-10 Sector Unpaid Work in Post-pandemic Lockdown

Government of Pakistan imposed lockdown during 3rd way in March 2021. It put restrictions on social activities, public transport, people movement, and working hours. Thus, hired services of domestic female and male workers who have been providing daily unpaid care work services to rather affluent families of G-10 sector, were choked. Subsequently, the previously delegated unpaid tasks were reassigned to G-10 sector primary care givers.

Post-pandemic unpaid work distribution saw changes in both primary care givers time spending patterns. G-10 sector primary male care givers increased their average mean unpaid work hours to 4.42 and corresponding domestic work to 1.47, child 2.53 and adult care 0.69 hours respectively, confirming comparable results in developed Carlson et al. (2020) and developing countries (Deshpande, 2020). Males increase their contribution mostly to childcare, as in line with literature (Biroli et al., 2020; Mangiavacchi et al., 2020). The results can be seen in Table 4.6.

Descriptive Statistics of Unpaid Work (Male Post-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Male Domestic work	99	1.5	1.07	0	4
Male Childcare	99	2.3	1.16	0	5
Male Adult care	99	0.7	0.86	0	3
Total Unpaid Work	99	4.4	1.71	1	8

Table 4.5. G-10 Sector Primary Male Unpaid Work in Post-Pandemic

Source: Survey Data

G-10 sector primary female care givers experienced many folds increase in unpaid work and its subsequent types. Average unpaid work mean in post-pandemic lockdown scenario was enormous 8.9 hours per day for women which is almost equal to full working day hours. Additionally, it shows the persistence of traditional norms which consider women as the primary care givers irrespective of education, social status. For women, household work or chores continued to be primary care work aspect of unpaid work with almost 5 hours, seconded by 3 hours of childcare and 0.697 of adult care. Estimated means of unpaid work are presented in Table 4.7.

Descriptive Statistics (Female Post-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Female Domestic work	99	5.2	1.22	1	8
Female Childcare	99	3	1.53	0	6
Female Adult care	99	0.7	0.89	0	3
Total Unpaid Work	99	8.9	2.1	2	13

Table 4.6. G-10 Sector Primary Female Unpaid Work in Post-Pandemic

Source: Survey Data

In post-COVID-19scenario, unpaid work disparity reflects unequal unpaid work landscape at the households' level, even in comparatively affluent, educated, dual earning couples residing in G-10 sector with well-equipped care supportive infrastructure highlighting resilient patriarchies in Pakistan's context. Results reported by Daniela (2020) in Italian, Sevilla and Smith (2020) and González and Farré (2020) in the UK context, shows these similar trends on international level.

4.7. Changes in G-10 Sector Primary Care Providers Unpaid Work during Pre-and Post-Pandemic Lockdown: *T-tests*

Comparing the panel data between Panel A: *Pre-Pandemic* (during Febuarary,2021) and Panel B: *Post-Pandemic* (during March 2021) shows interesting trends in unpaid work redistribution in G-10 sector households.

Primary male care providers of G-10 sector increased their unpaid workload across unpaid work in general and all of its subsequent categories i.e., domestic work, child and adult care. The highest average increase was witnessed in domestic work scoring 0.9 hours followed by adult care 0.4 and minimal 0.1 hours increase in childcare. Shown in Table below.

Subsequently, across all variables i.e., unpaid work, domestic work, child and adult care, *Two Sample T-tests* are conducted in pre-post scenario or between Panel "A" and Panel "B". The aim is to test whether the changes between two means in pre-and post-pandemic unpaid work and its categories, are significant statistically or not. Furthermore, the *Two-Sampled T-test* for unpaid work and all of its subsequent categories i.e., domestic work, child and adult care have been conducted and attached in Appendix-II.

Primary Male Care Provider

		Pre-Pandemic Lockdown		Post-Pandemic Lockdown				
Variable (hours)*	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Difference**	T-test*** (Pass/Fail)	T-test Score
Domestic work (Hours)	99	0.6	0.7	1.5	1.07	0.9	Significant	7.0
Childcare (Hours)	99	2.1	1.3	2.3	1.16	0.1	Insignificant	0.8
Adult care (Hours)	99	0.3	0.5	0.7	0.86	0.4	Significant	4.1
Total Unpaid Work (Hours)	99	3.0	1.5	4.4	1.71	1.4	Significant	6.2

*Average number of hours given by each primary male care provider to each listed activity.

Difference in averages is calculated by subtracting Pre-pandemic Mean from Post-pandemic mean i.e., Difference = $\mu 1 - \mu 2$. * T-test scores calculated for each listed activity individually by testing the equality of means. Significant if t-test score is higher than -1.96 and +1.96.

Table 4.7. G-10 Sector Primary Male Unpaid Work Means Difference and T-Tests

Source: Survey Data

Research hypothesis *HB: Men increased their share in unpaid work during Lockdown* was accepted as the test statistics value was higher than *T-value*. Therefore, the Null Hypothesis Ho: μ1=μ2 (means are equal) is to be rejected.

As for as G-10 Sector primary female care providers are concerned, the mean difference between female in pre-and post-scenario across unpaid work and all its subsequent categories were statistically significant except for adult care. G-10 sector primary female domestic work increased with highest 1.4 hours of average followed by childcare having 0.6 and adult care with 0.2 hours of difference respectively. As shown in the table.

Primary Female Care Provider

		Pre-Pandemic Lockdown		Post Pandemic Lockdown				
Variable* (hours)	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Difference**	T-test*** (Pass/Fail)	T-test Score
Domestic Work (Hours)	99	3.8	1.178	5.2	1.229	1.4	Significant	8.0
Childcare (Hours)	99	2.4	1.349	3	1.532	0.6	Significant	2.75
Adult care (Hours)	99	0.5	0.689	0.7	0.886	0.2	Insignificant	1.3
Total Unpaid work (Hours)	99	6.8	2.0	8.9	2.1	2.1	Significant	7.1

*Average number of hours given by each primary female care provider to each listed activity.

**Difference in averages is calculated by subtracting Pre-pandemic Mean from Post-pandemic mean i.e., Difference = μ1-μ2.

***T-test scores calculated for each listed activity individually by testing the equality of means. Significant if t-test score is higher than -1.96 and +1.96.

Table 4.8. G-10 Sector Primary Female Unpaid Work Means Differences and T-Tests

Source: Survey Data

Subsequently, across all variables unpaid work, domestic work, child and adult care, *Two Sample T-tests* are conducted in pre-post scenario or between Panel "A" and Panel "B" for G-10 Sector female. The aim is to test whether there have been any changes between two means in pre-and post-pandemic across unpaid work and its categories. The two-sampled T-tests for unpaid work and all of its subsequent categories i.e., domestic work, child and adult care are attached in Appendix-II.

Research hypothesis H_a, which hypothesized the increase in primary female unpaid work is to be accepted as the test-statistics value was higher than t-value (1.96) and the means in pre-post scenario weren't equal. Therefore, their respective Null hypothesis of no change is to be rejected. T-tests for all categories are given at the end of the draft in Appendix-II.

4.8. Gendered distribution of Tarnol Unpaid Work in Pre-pandemic Lockdown

Contrary to G-10 Sector, in Tarnol, there is a high prevalence of middle-aged, uneducated, informal sector-employed, and single earner household model with male headship. It has relatively high number of joint families with a larger number of secondary kinship care givers i.e., in-laws, living together, instead of nuclear families.

In pre-pandemic lockdown scenario, Tarnol male contributed on average 2.78 hours to unpaid work. Category-wise, men contributed more to domestic care with 1.38 hours, followed by 1.14 hours in childcare and the least to adult care with 0.25 hours. Although, the 2007 conducted Pakistan's only *Time-Use survey* report men's 28 minutes to unpaid work in 24 hours (GoP, 2009), contrary to the findings of this study. But the national macro level study with population of all country, with highly heterogenous cultures, social contexts, geographical location, ethnic and educational profile etc., make the differences between results understandable. Furthermore, almost 14 years have passed and there might have been increased in men' unpaid work as reported here. The results are briefly calculated in Table 4.10.

Descriptive Statistics of Unpaid Work (Male Pre-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Male Domestic work (Hours)	99	1.38	0.82	0	4
Male Childcare (Hours)	99	1.14	1.10	0	4
Male Adult care (Hours)	99	0.25	0.48	0	2
Total Male Unpaid Work (Hours)	99	2.77	1.37	0	7

Table 4.9. Tarnol Primary Male Unpaid Work in Pre-Pandemic

Source: Survey Data

In pre-pandemic lockdown period, Tarnol women were the primary care givers as far as mean unpaid work is concerned. Female spent whopping 9 hours on average in unpaid work tasks at home, which is more than a full working day hour. While domestic work took 5.5 hours on average, constituting major time effort of Tarnol primary female followed by 2.75 hours of childcare work and 0.78 hours for adult care as given in Table 4.11. The high domestic working hours of Tarnol's primary female reflects poor care-supportive

infrastructure and the related drudgery involved in carrying out household chores, and lack of men's cooperation It is also linked with prevalence of large families in the area.

In pre-pandemic period, Tarnol families, being economically under-resourced with poor care supportive infrastructure, were doing all of the unpaid work primarily themselves. There was no outsourcing of unpaid work as the circumstances didn't allow, resultantly, women were the primary home makers as reported by Arif and Saqib (2012) in Pakistan's context, following gender norms. Furthermore, it also reflects the non-egalitarian families, where secondary family members, in-laws might have not shared the primary female care burden. Thus, high unpaid workload led to less time for other activities including unpaid work, freedom for SNA, Non-SNA activities or ICATUS (2016) demarcated activities under major divisions besides unpaid work.

Descriptive Statistics of Unpaid Work (Female Pre-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Female Domestic work (Hours)	99	5.51	1.47	0	8
Female Child Work (Hours)	99	2.75	1.42	0	6
Female Adult Care (Hours)	99	0.78	0.97	0	5
Total Female Unpaid Work (Hours)	99	9.03	2.02	4	14

Table 4.10. Tarnol Primary Female Unpaid Work in Pre-Pandemic

Source: Survey Data

Summarily, in pre-pandemic lockdown period, there was high gender inequality in unpaid work at Tarnol households. Aforementioned discussed tables 4.10 and 4.11 display the significant asymmetrical nature of all categories of unpaid work between primary male and female, highlighting the highest uneven intrahousehold distribution of unpaid work in Tarnol pre-pandemic scenario as compared to G-10 pre-pandemic.

4.9. Gendered distribution of Tarnol Unpaid Work in Post-pandemic Lockdown

Government of Pakistan imposed lockdown during 3rd way in March 2021, putting restrictions on social activities, public transport, people movement, and working hours. Thus, the already overburdened primary female care givers from Tarnol were faced by even more unpaid work due to school closure, spouse, or male earner jobs. The financial instability due to lockdown induced job-loss strained gender relations, giving way to problems at home.

Post-pandemic unpaid work distribution saw changes in both primary care givers time spending patterns. Tarnol primary male care givers increased their average mean unpaid work hours to 3.83 and corresponding childcare work to 1.65, domestic work 1.3 and adult care 0.88 hours respectively. Male continued to contribute most of their unpaid work hours to childcare, reflecting global trend (Mangiavacchi et al., 2020). The results can be seen in Table 4.12.

Descriptive Statistics of Unpaid Work (Male Post-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Male Domestic work (Hours)	99	1.30	0.92	0	5
Male Childcare (Hours)	99	1.65	1.02	0	5
Male Adult care (Hours)	99	0.88	0.87	0	4
Male Total Unpaid Work (Hours)	99	3.83	1.58	0	8

Table 4.11. Tarnol Primary Male Unpaid Work in Post-Pandemic

Source: Survey Data

Tarnol pre-burdened primary female care givers unpaid work increased minimally with mixed trends in its subsequent unpaid work types. Average unpaid work mean in post-pandemic lockdown scenario was enormous 9.9 hours per day for women. Household work or chores continued to be primary time-consuming aspect of unpaid work with almost 5.49 hours, seconded by 3.27 hours of childcare and 1.16 hours of adult care. Estimated means of unpaid work are presented in Table 4.13.

Descriptive Statistics of Unpaid Work (Female Post-Pandemic Lockdown)

Variable	Obs	Mean	Std. Dev.	Min	Max
Female Domestic work (Hours)	99	5.49	1.48	0	9
Female Child Work (Hours)	99	3.27	1.68	0	7
Female Adult Care (Hours)	99	1.16	1.37	0	6
Female Total Unpaid Work (Hours)	99	9.93	2.30	2	14

Table 4.12. Tarnol Primary Female Unpaid Work in Post-Pandemic

Source: Survey Data

4.10. Changes in Tarnol's Primary Care Providers Unpaid Work during Pre-and Post-Pandemic Lockdown: *T-tests*

Comparing the panel data between Panel A: *Pre-Pandemic* (before March,2021) and Panel B: *Post-Pandemic* (during March 2021) shows interesting trends in unpaid work redistribution in Tarnol households.

Primary male care providers of Tarnol increased their unpaid workload minimally across unpaid work in general and its subsequent categories i.e., child and adult care. The only exception being domestic work, where men further lowered their share i.e., 0.08 hours. The highest average increase was witnessed in men adult care with 0.63 hours followed by childcare 0.51 hours. These results are in lines with other empirical studies conducted in both developed Adams et al. (2020), and developing countries (Deshpande, 2020), which reported increasing men involvement in unpaid work in general and childcare specifically. Results are shown in Table below.

Furthermore, across all variables unpaid work, domestic work, child and adult care, *Two Sample T-tests* were conducted in pre-post scenario or between Panel "A" and Panel "B".

Primary Male Care Provider

		Pre-Pandemic Lockdown		Post-Pandemic Lockdown				
Variable* (Hours)	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Diff**	T-test*** (Pass/Fail)	T-test Score
Domestic work (Hours)	99	1.30	0.83	1.30	0.92	-0.08	Insignificant	0.65
Childcare (Hours)	99	1.14	1.11	1.65	1.02	0.51	Significant	3.33
Adult care (Hours)	99	0.25	0.48	0.88	0.87	0.63	Significant	6.25
Total Unpaid Work (Hours)	99	2.78	2.42	3.83	1.58	1.05	Significant	4.98

*Average number of hours given by each primary male care provider to each listed activity.

Difference in averages is calculated by subtracting Pre-pandemic Mean from Post-pandemic mean i.e., Difference = $\mu 1 - \mu 2$. * T-test scores calculated for each listed activity individually by testing the equality of means. Significant if t-test score is higher than -1.96 and +1.96.

Table 4.13. Tarnol Primary Male Unpaid Work Means Difference and T-Tests

Source: Survey Data

Research hypothesis *Hβ: Men increased their share in total unpaid work during Lockdown* was accepted as the test statistics value 4.98, which exceeds 1.96. Therefore, the Null Hypothesis Ho: μ1=μ2 (means are equal with no change) is to be rejected. Furthermore, the Two-Sampled T-test for unpaid work and all of its subsequent categories i.e., domestic work, child and adult care are attached in Appendix-I.

As for as Tarnol's primary female care providers are concerned, their domestic work decreased 0.02 on average hours, which can be in part explained by the close knitted familial dynamics in Pakistan's social context, where relatives, in-laws, elder daughters help their mothers in case they are sick, overburdened and need help. This is particularly possible in large extended family's context, which is highly prevalent in Tarnol area. While childcare increased with 0.52 and adult care with 0.38 hours of difference respectively in pre-post era. The mean difference between female in pre-and post-scenario across unpaid work and all its subsequent categories were found to be statistically significant except in domestic work i.e., shown in table 4.15.

The minimal increase in Tarnol's primary female childcare work hours show the lack of home schooling, intensive parenting by Tarnol mothers due to their own poor HDI and absence of child development. Furthermore, unlike G-10 sector female, Tarnol's female were poorly educated and didn't have necessary skills, basic knowledge of contemporary educational syllabus. Likewise, Tarnol children studying in government schools hadn't have the robust online classes mechanism, as compared to G-10 sector kids from relatively affluent families. Resultantly, high domestic chores load at the cost of rather gratifying childcare led to negligence in early child development in this crucial time. This negligence is likely to affect child development mentally and lead to inferior performance of child in education and life (Jalongo, 2021).

These findings confirm the earlier studies carried out in Pakistan's context like the policy brief (Emcet et.al., 2021), policy paper based on phone survey (Maryam, 2020), and UN Women initiated Phone survey in the Asian-Pacific region including Pakistan (UN Women, 2020. The increase in women child and adult care is in line with studies in developing countries like Turkey (İpek & Emel 2021), India Chauhan (2020), and Deshpande (2020).

Primary Female Care Provider

		Pre-Pandemic Lockdown		Post-Pandemic Lockdown				
Variable	Obs	Mean	Std. Dev.	Mean	Std. Dev.	Difference	T test (Pass/Fail)	T-test Score
Domestic work (Hours)	99	5.51	1.47	5.49	1.48	-0.02	Insignificant	0.05
Child Work (Hours)	99	2.75	1.42	3.27	1.68	0.52	Significant	2.38
Adult Care (Hours)	99	0.78	0.97	1.16	1.37	0.38	Significant	2.27
Total Unpaid Work (Hours)	99	9.03	2.02	9.93	2.3	0.90	Significant	2.92

*Average number of hours given by each primary female care provider to each listed activity.

**Difference in averages is calculated by subtracting Pre-pandemic Mean from Post-pandemic mean i.e., Difference = μ1-μ2.

***T-test scores calculated for each listed activity individually by testing the equality of means. Significant if t-test score is higher than -1.96 and +1.96.

Table 4.14. Tarnol Primary Female Unpaid Work Means Difference and T-Tests

Source: Survey Data

Furthermore, across all variables unpaid work, domestic work, child and adult care, *Two Sample T-tests* were conducted in pre-post scenario or between Panel "A" and Panel "B" for Tarnol primary female care givers as given in table 4.15. The aim is to test whether the changes between two means in pre-and post-pandemic unpaid work and its categories, are significant or not.

Research Hypothesis H_a*: Women share of total unpaid work increased during COVID-19lockdown*, with means difference of 0.90 hours were statistically significant with T-test score more than 1.96. Therefore, null hypothesis Ho: *Women share of total unpaid work declined during COVID-19 lockdown* is be rejected. Individual T-tests are attached in Appendix-I at the end of thesis draft.

4.11. Cross-Comparison in Unpaid Work Change Between Primary Care Providers of G-10 Sector and Tarnol

In continuation of discussion regarding unpaid work distribution, it is pertinent to do a cross comparison between distinctive G-10 sector and Tarnol. It will give a summarize view of who has the highest care burden in pre and post scenario? And who increased their contribution to unpaid work responsibilities the most.

	G-10 sector Male			Tarnol Male		
	Pre-Pandemic	Post Pandemic		Pre-Pandemic	Post Pandemic	
	Mean	Mean	G-10 Difference	Mean	Mean	Tarnol Difference
Domestic work (Hours)	0.6	1.5	0.9	1.38	1.30	-0.08
Child Work (Hours)	2.1	2.3	0.1	1.14	1.65	0.51
Adult Care (Hours)	0.3	0.7	0.4	0.25	0.88	0.63
Total Unpaid Work (Hours)	3.0	4.4	1.4	2.78	3.83	1.05

Table 4.15. G-10 Sector and Tarnol Primary Male Unpaid Work Means Difference

Source: Survey Data

The table shows that in both surveyed areas i.e., G-10 sector and Tarnol, the highest pre-and post-pandemic unpaid workload was that of primary male care giver of G-10 area. G-10 primary male care givers increased their unpaid work with 1.4 hours, with highest increase of 0.9 hours in domestic chores, followed by 0.4 adult care and minimal increase in childcare. Tarnol men increased also increased their overall unpaid work but with minimal 1.05 hours with 0.63 increase in adult care, and 0.51 hours increased in adult care. Interestingly, men lowered their domestic work hours further.

As far as primary female care givers are concerned, they were performing major chunk of unpaid work in their families i.e., G-10 female with pre-pandemic 6.8 hours and 8.9 hours in post-pandemic with increased time difference of 2.1 hours in general; Tarnol female with 9.03 hours in pre- and 9.9 hours in post-pandemic with increased time difference of 2.1 hours in general, respectively.

	G-10 sector Female			Tarnol Female		
	Pre-Pandemic	**Post-Pandemic**		**Pre-Pandemic**	**Post Pandemic**	
	Mean	**Mean**	**G-10 Difference**	**Mean**	**Mean**	**Tarnol Difference**
Domestic work (Hours)	3.8	5.2	1.4	5.51	5.49	-0.02
Child Work (Hours)	2.4	3.0	0.6	2.75	3.27	0.52
Adult Care (Hours)	0.5	0.7	0.2	0.78	1.16	0.38
Total Unpaid Work (Hours)	6.8	8.9	2.1	9.03	9.93	0.90

Table 4.16. G-10 Sector and Tarnol Primary Female Unpaid Work Means Difference

Source: Survey Data

For G-10 sector female care givers, domestic work increased with 1.4 hours due to suspension of paid care givers services in view of march restrictions, while childcare also increased. The observed increased in childcare by highly educated G-10 sector primary female care givers reaffirm the incidence of labor-intensive parenting style or motherhood trends in middle and elite class families, where mothers give massive attention to child educational attainment, namely "concerted cultivation" (Lareau 2003; Vincent and Maxwell 2016; Csurgó and Kristóf 2018).

Nevertheless, the whopping 8.9 and 9.93 unpaid work hours by G-10 sector and Tarnol's female highlight the high unpaid work burden, which could lead to psychological and physical problems in the long run. Unfortunately, widening of gender inequality in

intrahousehold distribution was witnessed despite men staying at home for long due to prevailing circumstances.

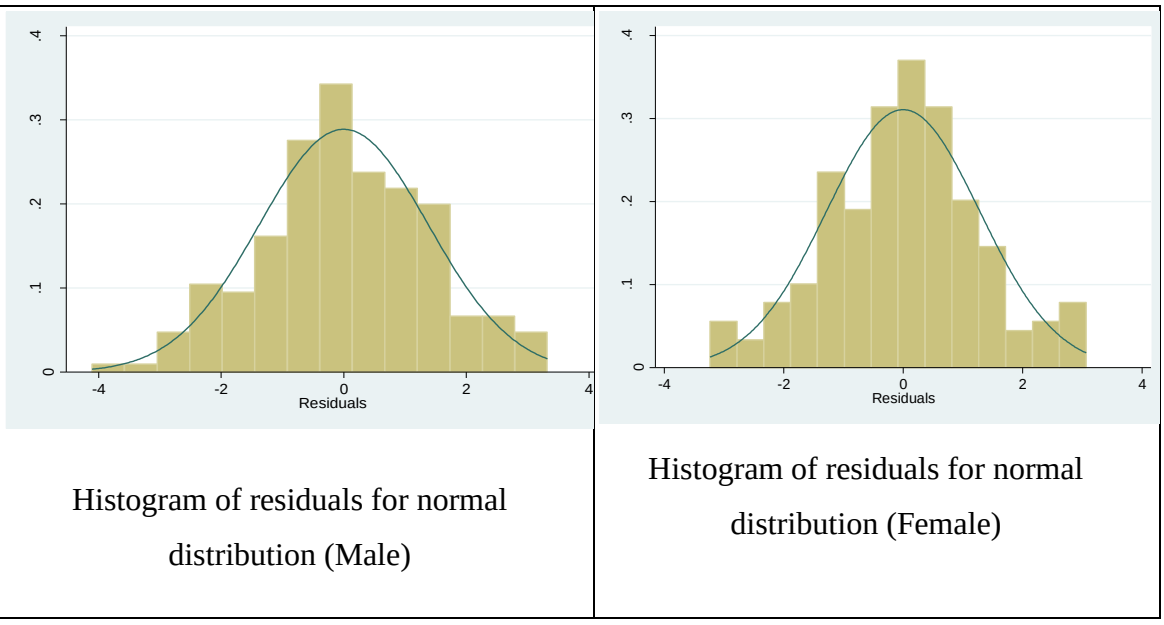
4.12. Ordinary Least Square Regression

4.12.1. Assumptions of OLS Models and Diagnostic Tests

Ordinary Least Square regression model has some assumptions, which should be satisfied to generate the best, unbiased coefficient estimates most closed to the true population values. In case, some assumptions aren't true, remedial measures are taken to improve the results. These assumptions are *Normality, Linearity, Homoscedasticity Multicollinearity*, among others. The diagnostic tests for each assumption for both regression models i.e., primary male and primary female has been carried out and given below.

1) Normality

These histograms of the residuals examine both male and female model for normality. Histograms provide visible evidence of any possible deviation from the normal distribution.



Histogram of residuals for normal distribution (Male)

Histogram of residuals for normal distribution (Female)

Figure 4.6. Histograms of Residuals for Normality

The residuals in both plots (figure 4.5) show tendency to cluster around "0" with a bell-shaped curve, indicating normal distribution.

Another test, Shapiro–Wilk W test for normality for each variable in the specified variable list. The results are as follows in table 4.18.

VARIABLE	OBS	W	V	Z	PROB>Z
RESIDUALS FEMALE	198	0.99144	1.265	0.541	0.29413
RESIDUALS MALE	198	0.99607	0.581	-1.248	0.89396

Table 4.17. Shapiro-Wilk W test for normal data

Our null hypothesis is that residuals are normally distributed. The Shapiro-Wilk W test has a p-value of 0.29 for female and 0.89396 for male, which is greater than our 0.05 level of confidence. Therefore, we failed to reject the Null Hypothesis for both female and male and conclude that the residuals are normally distributed.

2) Homoscedasticity/Constant Variance

Homoscedasticity means "to have equal variance" or constant variance. It is the contact test to check the variance of our residuals. The below calculated Cameron and Trivedi (1990) performs "information matrix test for regression model and an orthogonal decomposition into tests for heteroskedasticity, skewness, and kurtosis" for both female and male regression models.

	Female			*Male*		
Source	chi2	Df	p	chi2	df	p
Heteroskedasticity	114.06	112	0.4280	100.26	85	0.1236
Skewness	22.87	18	0.1957	26.05	16	0.0534
Kurtosis	0.01	1	0.9079	0.04	1	0.83228
Total	136.95	131	0.3435	126.35	102	0.0514

Table 4.18. Cameron & Trivedi's decomposition of IM-test

Female regression model P value is 0.428 which is greater than our alpha of 0.05 as shown in table 4.19. We therefore fail to reject the null hypothesis of heteroskedasticity. Therefore, the model has some presence of heteroskedasticity. The same is true for male regression model because of the P-value of 0.1236, which is greater than alpha value of 0.05.

The second test for Homoscedasticity is Breusch-Pagan / Cook-Weisberg test as in table 4.20.

Female	**Male**
Ho: Constant variance Variables: fitted values of diff_postpre_woman_unpaidwork	Ho: Constant variance Variables: fitted values of diff_postpre_man_unpaidwork
chi2(1) = 4.50	chi2(1) = 1.91
Prob > chi2 = 0.0338	Prob > chi2 = 0.1666

Table 4.19. Breusch-Pagan / Cook-Weisberg test.

The Breusch Pagan test also confirms the presence of heteroskedasticity because female p-value is 0.0338 which is less than our alpha of 0.05 so we reject the null hypothesis.

For male, we find that our p-value is 0.1666 which is greater than our p-value of 0.05. Therefore, we fail to reject our null hypothesis of constant variance/homoscedasticity. This is contradicting to the previous test (IM test) where we confirmed presence of heteroscedasticity. So, we conclude that for males, the results are mixed.

3) Multicollinearity

We compute the Variance Inflation Factors for our Female OLS model (Model 1). The results are presented below:

Variable	VIF	1/VIF
Kids	1.29	0.772487
Adults	1.08	0.924175
Husband Education		
Unknown or not applicable	18.69	0.053498
Primary	19.18	0.052131
Secondary	9.44	0.105953
Higher secondary	17.58	0.056898
Diploma	4.69	0.213345
Graduation/ Higher	25.13	0.039799
Wife Education		
Unknown or not applicable	5.67	0.176218
Primary	4.45	0.224818

Secondary	3.49	0.286563
Diploma	5.92	0.168807
Graduation/Higher	8.83	0.113225
Washing Machine	1.79	0.558631
Internet	1.76	0.569631
Woman social insurance	1.21	0.828103
Wife Age	5.01	0.199577
Husband Age	2.14	0.467954
Mean VIF	7.63	

Table 4.20. Variance Inflation Factors for Model 1

The VIF produces mixed results. We find that some variables (independent) have VIF which is below 10 showing that there is no multicollinearity. The education for the husband showed presence of multicollinearity perhaps because educational status may be related to the corresponding education level of the wife (shown in table 4.21). The mean VIF for above mentioned male model is more than 1, but it is a result of the multicollinearity in the education variable. The same case is with male model, as shown below in table 4.22.

Variable	VIF	1/VIF
kids	1.07	0.935923
adults	1.41	0.709249
Husband Education		
Unknown or not applicable	19.52	0.051238
Primary	18.76	0.053302
Secondary	9.15	0.109276
Higher Secondary	17.8	0.056173
Diploma	4.72	0.211902
Graduation/Higher	26.4	0.037885
Wife Education		
Unknown or not applicable	2.28	0.438042
Primary	4.25	0.235556
Secondary	3.47	0.287932
Higher Secondary	5.68	0.17594
Graduation/Higher	8.64	0.115704
television	1.22	0.821575
Woman Social Insurance	3.21	0.31176
Household Type	1.45	0.691649
Mean VIF	8.06	

Table 4.21. Variance Inflation Factors for Model 2

4.12.2. Descriptive Statistics

Table 4.23 shows the descriptive statistics for the key variables used in estimating the models to understand the relationship of the key factors with the difference in unpaid working hours (domestic, childcare, and adult care) per day by primary female care provider and primary male care provider in a household. To derive the two dependent variables used in this study, we subtracted the number of unpaid working hours (domestic, childcare, and adult care) before pandemic from the corresponding value of unpaid working hours during pandemic hours for both female care provider and male care provider in a household.

It is worth mentioning that the unpaid working hours by both woman and man have increased in post-pandemic as compared to the pre-pandemic times. For instance, on average, the number of unpaid working hours by woman has increased by 1.49 hours which is relatively higher than those by man (1.24 hours) at a household level. It should be noted that for at least one woman and one man in the sample used in this analysis, the number of unpaid working hours has reduced by 9 hours and 3 hours compared to the pre-pandemic situations, respectively (Table 4.23).

According to statistics, the average number of kids in a household is almost 3. Note that there were at least one household each where there were either no kids i.e., "Nucleus family" or up to 6 kids. Referring to the primary male's educational qualification, statistics indicate that in 28.79% of the households, male have graduate or higher degrees. Furthermore, 1.01% of the primary male in the survey were illiterate which is substantially lower compared to primary female i.e., 6.06% of the female were illiterate.

Significantly, the percentage of primary female who had graduate or higher degrees was 32.32% which is relatively higher compared to the corresponding percentage of primary male. Referring to the entertainment and care supportive infrastructure facilities, statistics show that 78.79%, 78.28%, and 86.87% of the households have washing machine, internet, and television, respectively. Furthermore, our analysis reveals that on average the primary male is 3.5 years older than female.

Variables	Mean/Freq.	S.D./Percent.	Min.	Max.
Dependent Variables				
Difference of unpaid working (domestic, childcare, adult care) hours by female (during/post pandemic - pre-pandemic)	1.49	1.76	-9	5
Difference of unpaid working (domestic, childcare, and adult care) hours by male (during/post pandemic - pre-pandemic)	1.24	1.64	-3	7
Explanatory Variables				
Number of kids in a household	2.97	1.504	0	6
Number of adults in a household	0.37	0.727	0	4
Male Care provider education				
Unknown or not applicable	37	18.69%	0	1
Illiterate	2	1.01%	0	1
Primary	42	21.21%	0	1
Secondary	16	8.08%	0	1
Higher Secondary	37	18.69%	0	1
Diploma	7	3.54%	0	1
Graduation (or higher)	57	28.79%	0	1
Female Care provider education				
Unknown or not applicable	9	4.55%	0	1
Illiterate	12	6.06%	0	1
Primary	37	18.69%	0	1
Secondary	34	17.17%	0	1
Higher Secondary	42	21.21%	0	1
Graduation (or higher)	64	32.32%	0	1
Presence of washing machine (Yes/No)	156	78.79%	0	1
Presence of internet (Yes/No)	155	78.28%	0	1
Presence of Television (Yes/No)	172	86.87%	0	1
Presence of aged (60 and above) female (Yes/No)	67	33.84%	0	1
Social insurance of Female (Yes/No)	22	11.11%	0	1
Female age (years)	37.68	7.43	19	60
Male age (age years)	41.21	8.11	18	68
Household type is Nucleus (Yes/No)	94	47.47%	0	1

Table 4.22. Descriptive Statistics of Key Variables

Source: Survey Data

4.12.3. Modeling Results

In this section, we discuss the results obtained from the two models. As mentioned earlier, first, we compute the difference of unpaid working hours for female and male care provider during pandemic and before pandemic times which are then used as dependent variables. Given the nature of the two response variables, this study applies two *Ordinary Least Square (OLS) regressions* to understand how key factors relate to the change (increase or decrease) in unpaid working hours by both primary female and male due to the pandemic. Note that decision of including a specific explanatory variable (or category of a particular explanatory variable) was based on intuition, parsimony, and overall model goodness of fit statistics. We have used 95% confidence criteria for statistical significance; however, for the sake of completeness, few variables or categories of variable were kept in the models which were

marginally significant or did not show any significant relationship with the response variable. Several useful insights can be obtained from the two model as discussed in the subsequent paragraphs.

The first model shows how various key factors relate to the change in female unpaid working hours during pandemic compared to the pre-pandemic situation (Table 4.24). Several interesting insights could be obtained from the model. For instance, our results indicate that while keeping all other variables in the model at their mean values, a unit increase in number of kids and number of adults in a household increase the number of unpaid working hours per day for female by 0.219 and 0.358 units, respectively (Table 4.24). These findings were expected as the number of an additional kid or adult to a household who usually need extra care and time may increase the number of unpaid working hours of female (ILO,2018), primarily due to gender-defined roles of women being homemakers. Furthermore, it exacerbated in post-pandemic times due to school and offices closures, additional health precautionary measures, childcare, and home schooling. Previous studies i.e., Costoya, et al., (2021), Garcia et al. (2020), and UN Women (2020) show similar findings.

Referring to the male education, our results indicate that compared to illiterate male, if a primary male has some level of education, the number of unpaid working hours by woman during pandemic (compared to the pre-pandemic times) reduce. For instance, compared to illiterate male care provider, if a primary male holds diploma and graduate or higher degree, the number of unpaid working hour by woman during pandemic (compared to pre-pandemic) reduces 2.146 and 2.802 units respectively. These findings were anticipated as higher education, being a proxy to declining conservative traditional gender norms, could lead to acknowledgement of female unpaid work burden and increase in men participation. Additionally, educated men were more willing to help in childcare, home-schooling, online classes, child passive care and COVID-19 induced hygienic chores. This relationship can be proved in already carried out T-tests and presence of high gender inequality in G-10 sector and Tarnol families.

In relation to the presence of care-supportive infrastructure i.e., washing machine, we found that presence of washing machine in a household reduces the number of unpaid working hours per day by woman (or wife) by 0.666 units while keeping all other variables at their mean values. This make sense as availability of such appliances could be beneficial to

women to reduce some of their unpaid working hours compared to households with no washing machine due to which the woman may need to wash the clothes by hands which could be more time consuming. On the other hand, the availability of internet at home increases the number of daily unpaid working hours by woman (during pandemic compared to before pandemic) by 0.913 units. This is an interesting finding and could be attributed to the fact that other family members especially husband and young children might spend more time on surfing internet and thus would not share the unpaid work with the woman who is usually a key responsible for taking care of all the house chores at home.

Reiterating the importance of ILO's *Social Protection Floor* concept, including "social insurance", the explanatory variable "women covered with social insurance" led to the 0.874 unit decreased in women unpaid work hours. Pakistan's contemporary social policy or social insurance initiatives for active working age (15-64) population provides support through contributory social insurance schemes i.e., pensions, benevolent fund schemes, education stipends etc., for persons employed in public and few registered establishments (ILO, 2019). Keeping in view the working women included in this sample, this model estimates its high relevance to highly gendered issue of intrahousehold unpaid work distribution and signifies its importance to SDG 5.4. attainment.

Referring to the female age, according to the modeling results, we found that a unit increase in female age (years), increase the unpaid working hours by female per day by 0.240 unit during pandemic (compared to pre-pandemic). With the primary female care givers mean age of 37 years in the current study, starting from 19 to 60 years, the reported unit increase is understandable and confirm the dominant literature view of increasing care burden from teenage till working age of 60 with highest care burden in middle age (ILO, 2018). This trend holds true in post-pandemic scenario. Usually, after 60 years of age, female are predominantly grandmothers and reduce their unpaid work contributions in joint and extended families (ILO, 2018). Correspondingly explanatory variable, the presence of female care recipient with 60 and above years age adds 0.598 hours of unpaid work to the female care provider caring burden. This is highly prevalent in Pakistan's social context, where in-laws, extended family members live together, and elders don't indulge in domestic chores. Furthermore, in COVID-19 aftermath, the manifold increase in health care needs due to relatively high vulnerability of senior citizens confirm the reported findings.

Following these trends, a unit increase in male age led to 0.068 unit increase in woman unpaid work hours, which is minimal due to many reasons. As the mean male age is 41 and considerable percentage i.e., 45 percent of families are of extended family forms, the adult care burden usually distributes to secondary care providers in families. These findings were reported by ILO (2018) as well.

Explanatory Variables	**Difference of unpaid working hours (during pandemic - pre-pandemic) for woman**		
	Coeff.	**Std. Err.**	**t-stats**
Number of kids in a household	0.219	0.082	2.68
Number of adults in a household	0.358	0.155	2.31
Primary Male education (Base = illiterate)			
Unknown or not applicable	-3.146	1.180	-2.67
Primary	-3.544	1.142	-3.10
Secondary	-3.384	1.202	-2.81
Higher Secondary	-2.833	1.147	-2.47
Diploma	-2.146	1.248	-1.72
Graduation (or higher)	-2.802	1.181	-2.37
Primary Female education (Base = illiterate)			
Unknown or not applicable	-0.895	0.833	-1.07
Primary	-0.912	0.576	-1.58
Secondary	-1.038	0.527	-1.97
Higher Secondary	-0.042	0.634	-0.07
Graduation (or higher)	0.339	0.677	0.50
Presence of washing machine (Yes/No)	-0.666	0.351	-1.90
Presence of internet (Yes/No)	0.913	0.346	2.64
Social insurance of woman (Yes/No)	-0.874	0.373	-2.34
Presence of aged (60 and above) female (Yes/No)	0.598	0.273	2.19
Female age (years)	0.240	0.112	2.14
Male age (age years)	0.068	0.037	1.86
Constant	-1.778	2.363	-0.75
Model Summary			
Number of observations	198		
F statistics (19, 178)	4.890		
Prob > F	0.000		
R-squared	0.343		
Adj R-squared	0.273		
Root MSE	1.498		

Table 4.23. Model Results for Change in Unpaid Working Hours for Female

Source: Survey Data

The second model Table 4.25. shows how various key factors relate to the change in primary male unpaid working hours during pandemic compared to the pre-pandemic situation (Table 4.25). Several thought-provoking trends could be inferred from the model. For example, following the rising unpaid hours trends during pandemic, a unit increase in explanatory

variables children and adult number increase unpaid work hours for men by 0.115 and 217 respectively.

Additionally, regarding education explanatory variables, while keeping all other variables in the model at their mean values, a unit increase in male education level, starting from basic education level till graduation, led to increase in primary male care givers unpaid work burden 2.8, 3.2, 2.5 and the 3.1 units respectively. The highest i.e., 3.1 unit increase in unpaid work was estimated in explanatory variable "male graduates", as educated men contributed more toward unpaid work and all its categories in post-pandemic times. The same hold true for explanatory variable "women education" where, a unit increase in women education from primary till graduation, led to increase in men unpaid work hours of 0.94, 0.97 and 1.87 respectively.

Explanatory Variables	**Difference of unpaid working hours (during pandemic - pre-pandemic) for man**		
	Coeff.	**Std. Err.**	**t-stats**
Number of kids in a household	0.115	0.075	1.53
Number of adults in a household	0.217	0.179	1.21
Husband education (Base = illiterate)			
Unknown or not applicable	3.193	1.241	2.57
Primary	2.811	1.160	2.42
Secondary	3.281	1.215	2.70
Higher Secondary	2.563	1.185	2.16
Diploma	2.521	1.288	1.96
Graduation (or higher)	3.144	1.242	2.53
Wife education (Base = illiterate)			
Unknown or not applicable	2.109	0.794	2.66
Primary	0.944	0.579	1.63
Secondary	0.099	0.541	0.18
Higher Secondary	0.972	0.638	1.52
Graduation (or higher)	1.877	0.688	2.73
Presence of Television (Yes/No)	-0.864	0.358	-2.42
Social insurance of woman/wife (Yes/No)	0.837	0.395	2.12
Household type is nucleus (Yes/No)	-0.530	0.264	-2.01
Constant	-2.579	1.373	-1.88
Model Summary			
Number of observations	198		
F statistics (16, 181)	2.61		
Prob > F	0.0011		
R-squared	0.1873		
Adj R-squared	0.1155		
Root MSE	1.5402		

Table 4.24. Model Results for Change in Unpaid Working Hours for Male

Source: Survey Data

Presence of explanatory variable "Television" at the household level led to the 0.864 decrease in primary men unpaid work hours. It should be noted that in pre-pandemic times,

men have been dedicating more time to childcare as compared to unpaid work other sub-categories i.e., domestic chores, adult cares. In post-pandemic times, the presence of entertainment variable led to the engagement of primary care recipients i.e., child, adults in watching television and thus men unpaid work burden reduced. During pandemic, child-care subcategories that includes home-schooling, passive care, taken out children to parks, were taken over by the indoor entertainments through television and thus in a way took care of kids. Additionally, government aired specific educational programs, cartoons, lectures for engaging school going children due to their school closure, which indirectly reduced the men childcare.

Interestingly, women with access to social insurance schemes were better off as a unit increase in social insurance entitlements led to increase in 0.837 hours of men unpaid work share. This is a positive development toward egalitarian family. Besides, woman who are beneficiaries of social insurance schemes, are in relatively better position at the household level because they are more empowered economically, have higher edge in household's decision making and daily affairs, including unpaid work distribution. Very interestingly, during pandemic induced lockdown when economic security was the most important thing, men were willing to change stereotypically held gender roles.

Furthermore, in nucleus families, which have no kids, a unit increase in this explanatory variable decreases the unpaid work hours for men. This is primarily due to the absence of primary care recipients i.e., children and aged family members, who needs high care intensive unpaid working hours. In post-pandemic period, where the childcare, adult care burden was exacerbating manifolds, owing to newly emerged hygienic related chores, the absence of care recipients from nucleus families led to decline in men unpaid work hours and increase in their self-care and other activities.

Summarily, the *Hγ: Existence of disparity in the magnitude of post-pandemic unpaid care work is due to demographic and socio-economic determinant is accepted* and null hypothesis is rejected with this model estimation.

CHAPTER # 5: CONCLUSION & WAY FORWARD

The primary domestic institution – households and families- have historically served as sites of intimacy and care as well as inequality and power. In pre-pandemic times, progress on gender equality front have been slow, including at the household's level (UN Women, 2019). COVID-19 pandemic outbreak and its containment through lockdown and economic shutdown, have exposed the deeply rooted, persistent inequalities in familial context of developing countries including Pakistan.

With novelty in focusing on both (male and female) primary care providers or heterosexual couples of each household rather than women and men separately, this study explores the dynamics of intrahousehold unpaid work redistribution as envisioned by SDG Target 5.4. and its Indicator 5.4.1, by generation of unpaid work time statistics (UNSTATS, 2019). It also explores the egalitarian level of intrahousehold unpaid work distribution.

This study results shows that summarily, in the pre-and post-pandemic scenario, unpaid intrahousehold distribution remained gendered imbalance across all families, with increase in unpaid work burden and its sub-categories for both male and female care providers. Although, further dissecting the contours of unpaid work leads to unique peculiarities. Female primary care providers from poor households faced the highest unpaid work burden of more or less 9 hours in pre-and post-pandemic scenario. It is even more than full working hours day of paid employment if women had been on job. Likewise, educated women from affluent family's unpaid work hours increased substantially in post-pandemic scenario, owing to the non-availability of hired domestic help during COVID-19 induced lockdowns. Defying traditional norms, educated men increased their unpaid work across all sub-categories with more margin than poorly educated men, in post COVID-19 times. Surprisingly, men from low-income families with informal jobs decreased their domestic work further despite being staying at home in lieu of post-pandemic job loss, which can be attributed to persistence of gender stereotyping, patriarchies or depression due to post-pandemic job-loss.

This study's unique data also give us the opportunity to disentangle the effects of various socio-economic, infrastructural, and demographic factors in changes of unpaid work hours for both men and women during COVID-19 lockdowns. For instance, across all families, female care givers' disadvantage is found to be stable. However, not all women are equally

overburdened in post-pandemic: those with graduate or post-graduate education are more likely to increase their unpaid work hours due to their increased involvement in home schooling, intensive parenting as is prevalent in urban, educated, affluent families (Csurgó and Kristóf 2018). Likewise, in families, an increase in education level of men is estimated to increase men unpaid work hours dedication and reduction of unpaid work burden of their spouses, leading to potential transformation toward UN Women's "*Egalitarian families"* with breakup from traditional dichotomy of men as breadwinner and women as homemakers (UN Women, 2019).

Moreover, the presence of aged female i.e., mother, mother-in-law, increase the unpaid work burden for primary female care providers. This finding is in line with Pakistan's unique socio-cultural and familial values where aged female in general and mother in laws in particular, avoid contributing toward domestic chores, and subsequently daughter in laws being primary care providers carry the burden. This issue is more prominent in post COVID-19 times as female senior citizenry that has high life expectancy stays care recipients for long time and more vulnerable due to health complications. The national level inadequate, and underdeveloped health care infrastructure led to transfer of care load onto households and on female in families. Additionally, the presence of care supportive technology i.e., washing machine was estimated to be the factor minimizing the unpaid work hours for woman. This is understandable as the presence of time-saving technology in post-pandemic lockdown is likely to decrease the drudgery of work and give the woman a choice to spend their time in self-care, religious, leisure, social, communication or income generating activities.

Interestingly, the presence of internet in households led to increase in the women unpaid work hours as the family secondary care providers or members children, siblings, partner, might be busy with internet usage and opt not to give a helping hand to the primary female care providers.

Besides, women who were covered with social insurance protection benefits led to decline in women unpaid work and increase in men taking unpaid work responsibilities in the households. It confirms the efficacy of women entry in formal paid employment due to the economic security in the form of social insurance, pension benefits, maternity, or paternity leave, and paid sick leave etc. that it offers. Currently in Pakistan, highly feminized informal economic sector i.e., above 70 percent women being informal workers (PBS, 2018), is vulnerable to relative poverty and economic insecurity. The silver lining i.e., "social

insurance" through presence of women in formal labor force with decent jobs will surely give them economic independence and bargaining power necessary for intrahousehold redistribution of unpaid work.

Nevertheless, the presence of entertainment technology like Television led to the visible decrease in unpaid work hours of primary male care givers. In post COVID-19 times, the schools' closure, and emergence of home-schooling compelled governments to initiate tele-education programs for school going children. Subsequently, the childcare responsibilities of parents were lessened by television presence.

This study's estimated middle-term, unpaid work time gender differences during COVID-19 have significant implications on Pakistan's notorious standing on gender inequality, female labor force participation, and women economic empowerment. The issue of imbalanced intrahousehold distribution of unpaid work results lead to high proportion of "out of the labor force" and "economically inactive" primary female care providers from both low- and high-income urban areas with varying educational levels, as reported in this study. If the current crises persist, the long-term implications can exacerbate negative impacts for women and further slowdown the inclusion of women in socio-economic sphere as envisioned in *National SDGs Framework's* and its *National Priority Targets* (SDG Pakistan, 2018). In this regard, the inclusion of women in formal labor force, work-family friendly policies, social insurance i.e., easy access to maternal leave and paternal leave to spouses, pension credits, tax allowances, and childcare vouchers to families, should be encouraged. These will reduce the losses attached with motherhood penalty, promote financial independence, open paths toward ILO's "decent work" and improve woman bargaining power at the household level for renegotiating unpaid work.

Furthermore, the widening gender inequality at household level could be mitigated by extensive efforts for redefining conservative gender roles through education in the long term, as educated spouses are found to be more open to egalitarian familial values. Improvement of care-supportive, labor and time-saving infrastructure, technologies and practices in poor, peripheral areas is vital for reducing time and drudgery involved in caring out domestic tasks. For this both long- and short-term infrastructure investment is also vital. This issue is extremely critical in semi-urban, urban slum areas where the basic amenities of life are in under-developed state. In post COVID-19 times, keeping in view the health-related risks to vulnerable primary care recipients i.e., senior citizenry and children, state should improve

health services, care access and quality, and health centers opening hours. This will give families access to utilize public care services instead of relying on women to undertake these responsibilities. Also, the continuation of television aired educational programs through Tele-school channels should be ensured as it lessens the home-schooling burden on parents, both male and female. In short, all stakeholders i.e., families, markets, state, market, and civil society would have to redesign, fund, and deliver care to make intrahousehold gender equality possible through reduction and redistribution of unpaid work.

The way Forward

Although men increasing inclusion in unpaid work chores is a silver lining in this debate, it might be a short-lived phenomenon which could evaporate once containment measures are left up. Regarding further research scope, there is a need to measure the long-term impacts of COVID-19 on unpaid work distribution at households. Further research is needed in exploring the childcare more closely, because the quality of childcare bears huge importance for child development. Additionally, the heterogeneity across households along unpaid work sub-categories i.e., domestic work, childcare, adult care, hasn't been addressed in this study, researcher intends to explore that issue in the near future.

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APPENDICES

TARNOL Area Two-Sample T Tests (Appendix-I)

```
. ttest WomenDomesticWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	5.505051	.1480818	1.473395	5.211187	5.798914
1	99	5.494949	.1487762	1.480304	5.199708	5.790191
combined	198	5.5	.1046893	1.473109	5.293544	5.706456
diff		.010101	.2099108		-.4038728	.4240748

```
    diff = mean(0) - mean(1)                                      t =   0.0481
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 ` Pr(T < t) = 0.5192         Pr(|T| > |t|) = 0.9617          Pr(T > t) = 0.4808
```

```
. ttest WomenChILdCare, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	2.747475	.1423826	1.416689	2.464921	3.030028
1	99	3.272727	.1691638	1.683159	2.937027	3.608427
combined	198	3.010101	.1118498	1.573866	2.789524	3.230678
diff		-.5252525	.2211091		-.9613108	-.0891942

```
    diff = mean(0) - mean(1)                                      t =  -2.3755
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0092         Pr(|T| > |t|) = 0.0185          Pr(T > t) = 0.9908
```

```
. ttest WomenAdultcare, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	.7777778	.0979648	.9747376	.5833698	.9721858
1	99	1.161616	.1374946	1.368054	.8887625	1.43447
combined	198	.969697	.0853011	1.200292	.8014765	1.137917
diff		-.3838384	.168825		-.7167851	-.0508916

```
    diff = mean(0) - mean(1)                                      t =  -2.2736
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0120         Pr(|T| > |t|) = 0.0241          Pr(T > t) = 0.9880
```

```
Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	9.030303	.2027712	2.017548	8.62791	9.432696
1	99	9.929293	.2316231	2.304621	9.469644	10.38894
combined	198	9.479798	.1568334	2.206841	9.17051	9.789086
diff		-.8989899	.3078399		-1.506094	-.2918861

```
    diff = mean(0) - mean(1)                                      t =  -2.9203
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0020         Pr(|T| > |t|) = 0.0039          Pr(T > t) = 0.9980
```

```
. ttest MenDomesticWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	1.383838	.0833575	.829397	1.218418	1.549259
1	99	1.30303	.0924422	.9197886	1.119582	1.486479
combined	198	1.343434	.0621461	.8744729	1.220877	1.465991
diff		.0808081	.1244751		-.1646744	.3262905

```
    diff = mean(0) - mean(1)                                      t =   0.6492
Ho: diff = 0                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.7415         Pr(|T| > |t|) = 0.5170          Pr(T > t) = 0.2585
```

```
. ttest MenChILdCare, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	1.141414	.1112235	1.10666	.9206947	1.362134
1	99	1.646465	.1028487	1.023331	1.442365	1.850564
combined	198	1.393939	.0776641	1.09283	1.24078	1.547099
diff		-.5050505	.1514877		-.8038056	-.2062954

```
    diff = mean(0) - mean(1)                                      t =  -3.3339
Ho: diff = 0                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0005         Pr(|T| > |t|) = 0.0010          Pr(T > t) = 0.9995
```

```
. ttest MenAdultcare, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	.2525253	.0483567	.4811431	.156563	.3484875
1	99	.8787879	.0876557	.8721628	.7048381	1.052738
combined	198	.5656566	.0546852	.7694895	.457813	.6735002
diff		-.6262626	.1001094		-.8236924	-.4288328

```
    diff = mean(0) - mean(1)                                      t =  -6.2558
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

```
. ttest MenUnpaidWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	2.777778	.1381292	1.374369	2.503665	3.051891
1	99	3.828283	.1592606	1.584623	3.512235	4.14433
combined	198	3.30303	.1116018	1.570376	3.082943	3.523118
diff		-1.050505	.2108165		-1.466265	-.6347451

```
    diff = mean(0) - mean(1)                                      t =  -4.9830
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

G-10 Sector Area Two-Sample T-Tests (Appendix-II)

```
. ttest MenDomesticWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	.5858586	.065811	.6548111	.4552588	.7164584
1	99	1.474747	.107772	1.072318	1.260877	1.688618
combined	198	1.030303	.0704907	.9918914	.8912899	1.169316
diff		-.8888889	.1262771		-1.137925	-.6398527

```
    diff = mean(0) - mean(1)                                      t =  -7.0392
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

```
Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	2.111111	.1258972	1.252662	1.861272	2.36095
1	99	2.252525	.1160607	1.15479	2.022206	2.482844
combined	198	2.181818	.0855466	1.203747	2.013114	2.350523
diff		-.1414141	.1712314		-.4791067	.1962784

```
    diff = mean(0) - mean(1)                                      t =  -0.8259
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.2049         Pr(|T| > |t|) = 0.4099          Pr(T > t) = 0.7951
```

```
. ttest MenAdultcare, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	.2929293	.0481625	.4792112	.1973523	.3885063
1	99	.6969697	.0866882	.8625371	.5249397	.8689997
combined	198	.4949495	.0515103	.7248138	.3933672	.5965318
diff		-.4040404	.099169		-.5996156	-.2084652

```
    diff = mean(0) - mean(1)                                      t =  -4.0743
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0001          Pr(T > t) = 1.0000
```

```
. ttest MenTotalUnpaidWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	2.989899	.1529582	1.521914	2.686359	3.293439
1	99	4.424242	.1723466	1.714827	4.082226	4.766259
combined	198	3.707071	.125771	1.769754	3.45904	3.955101
diff		-1.434343	.2304334		-1.888791	-.9798963

```
    diff = mean(0) - mean(1)                                      t =  -6.2245
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

```
. ttest WomenDomesticWork, by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	3.79798	.1183789	1.177855	3.563061	4.032899
1	99	5.171717	.1235432	1.229239	4.92655	5.416885
combined	198	4.484848	.0983709	1.384201	4.290853	4.678844
diff		-1.373737	.1711037		-1.711178	-1.036297

```
    diff = mean(0) - mean(1)                                      t =  -8.0287
Ho: diff = 0                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000


. ttest WomenChildCare , by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	2.434343	.135573	1.348935	2.165303	2.703384
1	99	3	.153969	1.531972	2.694454	3.305546
combined	198	2.717172	.1042797	1.467346	2.511524	2.92282
diff		-.5656566	.2051499		-.9702412	-.1610719

```
    diff = mean(0) - mean(1)                                      t =  -2.7573
Ho: diff = 0                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0032         Pr(|T| > |t|) = 0.0064          Pr(T > t) = 0.9968
```

```
. ttest WomenAdultcare , by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	.5454545	.0692641	.6891688	.4080023	.6829068
1	99	.6969697	.0890345	.8858818	.5202837	.8736557
combined	198	.6212121	.0565168	.7952617	.5097565	.7326677
diff		-.1515152	.1128036		-.3739798	.0709495

```
    diff = mean(0) - mean(1)                                      t =  -1.3432
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0904         Pr(|T| > |t|) = 0.1808          Pr(T > t) = 0.9096
```

```
. ttest WomenTotalUnpaidWork , by(prepost)

Two-sample t test with equal variances
```

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
0	99	6.777778	.2023137	2.012996	6.376293	7.179263
1	99	8.868687	.215196	2.141173	8.441637	9.295736
combined	198	7.823232	.1650679	2.322712	7.497705	8.148759
diff		-2.090909	.2953645		-2.67341	-1.508409

```
    diff = mean(0) - mean(1)                                      t =  -7.0791
Ho: diff = 0                                     degrees of freedom =      196

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 1.0000
```

APPENDIX-III

International Classification of Activities for Time-Use Statistics (ICATUS) 2016

Major Divisions

Major Division	*Activity Title*
1	Employment and Related Activities
2	Production of goods for own final use
3	Unpaid domestic services for household and family members
4	Unpaid caregiving services for household and family members
5	Unpaid volunteer, trainee, and other unpaid work
6	Learning
7	Socializing and communication, community participation and religious practice
8	Culture, leisure, mass media and sports practices
9	Self-care and maintenance

Major Divisions and Divisions

Major Division	*Division*	*Activity Title*
1	**Code**	**Employment and Related Activities**
	11	Employment in corporations, government, and non-profit institutions
	12	Employment in household enterprises to produce goods
	13	Employment in households and household enterprises to provide services
	14	Ancillary activities and breaks related to employment
	15	Training and studies in relation to employment
	16	Seeking employment
	17	Setting up a business
	18	Travelling and commuting for employment
2	**Code**	**Production of goods for own final use**
	21	Agriculture, forestry, fishing, and mining for own final use
	22	Making and processing goods for own final use
	23	Construction activities for own final use
	24	Supplying water and fuel for own household or for own final use
	25	Travelling, moving, transporting, or accompanying goods or persons related to own-use production of goods
3	**Code**	**Unpaid domestic services for household and family members**

	31	Food and meals management and preparation
	32	Cleaning and maintaining of own dwelling and surroundings
	33	Do-it-yourself decoration, maintenance, and repair
	34	Care and maintenance of textiles and footwear
	35	Household management for own final use
	36	Pet care
	37	Shopping for own household and family members
	38	Travelling, moving, transporting, or accompanying goods or persons related to unpaid domestic services for household and family members
	39	Other unpaid domestic services for household and family members
4	**Code**	**Unpaid caregiving services for household and family members**
	41	Childcare and instruction
	42	Care for dependent adults
	42	Help to non-dependent adult household and family members
	44	Travelling and accompanying goods or persons related to unpaid caregiving services for household and family members
	49	Other activities related to unpaid caregiving services for household and family members
5	**Code**	**Unpaid volunteer, trainee, and other unpaid work**
	51	Unpaid direct volunteering for other households
	52	Unpaid community- and organization-based volunteering
	53	Unpaid trainee work and related activities
	54	Travelling time related to unpaid volunteer, trainee and other unpaid work
	59	Other unpaid work activities
6	**Code**	**Learning**
	61	Formal education
	62	Homework, being tutored, course review, research and activities related to formal education
	63	Additional study, non-formal education, and courses
	64	Travelling time related to learning
	69	Other activities related to learning
7	**Code**	**Socializing and communication, community participation and religious practice**
	71	Socializing and communication
	72	Participating in community cultural/social events
	73	Involvement in civic and related responsibilities

	74	Religious practices
	75	Travelling time related to socializing and communication, community participation and religious practice
	79	Other activities related to socializing and communication, community participation and religious practice
8	**Code**	**Culture, leisure, mass media and sports practices**
	81	Attending/visiting cultural, entertainment and sports events/venues
	82	Cultural participation, hobbies, games, and other pastime activities
	83	Sports participation and exercise, and related activities
	84	Mass media use
	85	Activities associated with reflecting, resting, relaxing
	86	Travelling time related to culture, leisure, mass media and sports practices
	89	Other activities related to culture, leisure, mass media and sports practices
9	**Code**	**Self-care and maintenance**
	91	Sleep and related activities
	92	Eating and drinking
	93	Personal hygiene and care
	94	Receiving personal and health/medical care from others
	95	Travelling time related to self-care and maintenance activities
	99	Other self-care and maintenance activities

APPENDIX-IV

"IMPACT OF COVID-19ON THE GENDER DIVISION OF UNPAID WORK IN URBAN ISLAMABAD: A CASE OF HOUSEHOLDS IN G10 SECTOR AND TARNOL"

Questionnaire

This is a survey, which is part of my research work leading to the award of MS Degree in Development Studies from National University of Science & Technology NUST, Islamabad. Please take a moment to complete the survey to the best of your ability. Your response will be kept strictly confidential.

(A) Background Questionnaire

- Region (G-10/Tarnol)
- Household No
- Location: Semi Urban-1, Urban-2
- Ethnicity:

  Balochi-1, Punjabi-2, Pashtun-3 Sindhi-4, Others-5

(A.1) Household Characteristics

1 Type of House: Kutcha-1. Semi Pucca-2, Pucca-3

2 Nature of the Household: Rented-1, Own-2

3 Family Structure: Nuclear-1, Single Parent-2, Extended-3

4 What type of cooking fuel source is primarily used?

Wood-1, Natural Gas-2, Kerosine-3,LPG-4, Electricty-5

5 What is the main source of water?

Piped public water-1, Borehole in residence-2,

6 What kind of toilet facility do you have?

No facility-1, Common toilet-2, Multiple Tiolets-3

7. Does your household have the following home technology? (Yes-1, No-2)

i. Electricity connection

ii. Pressure cooker

iii. A refrigerator

iv. A water pump

v. A mixer/grinder

vi. A Washing Machine

vii. Any motor vehicle

viii. Television

ix. Internet Connection

8. Social Protection Coverage of family: Yes-1, No-2

i. Sick/Disabled

ii. Children[12]

iii. Adults[13]

iv. Old/Aged

11. Is there any domestic worker in the family? (Yes-1, No-2)

(A.2) Details of the Household members

Sr No	Relation with head of HH[14]	Gender M-1, W-2	Age (years)	Marital Status [15]	Disabled[16]	General Education level[17]	Employment Status[18]

[12]Childcare, Daycare etc.

[13] Social assistance, Social Safety Nets,

[14]Self-1, Spouse of head-2, Married Child-3, Spouse of married child-4, Unmarried child-5, Grandchild-6, Father/mother-in-Law-7, Brother/Sister-in-Law and other relatives-8

[15]Never married-1, currently married-2, widowed-3, divorced/separated-4

[16] Yes-1, No-2

[17] Primary Education-1, Secondary-2, Higher Secondary-3, Any degree-4, Any post graduate degree/diploma-5 Technical Diploma/ITI-6, Professional- 7 Illiterate- 9

[18]Agricultural labour-1, Farmer-2, Industrial labour-3, Industrialist-4, businessman-5, government employee-6, private employee-7, self-employed-8, Unpaid family worker-9, Unemployed-10, Student-11, Not in labour force-12, Domestic worker- 13

(B.1) Time Activity Matrix **Man Primary Care Provider**

Please think about what you were doing in the last 24 hours (yesterday morning at 4am, finishing 3am of the current day). I will ask you for the main activity and one simultaneous activity, if you were doing at a certain time during the day.

	Time	**Paid work**	**Unpaid GDP work**	**Housework**	**Childcare**	**Adult care**	**Volunteer Work**	**Learning**	**Social & Comm, Religious**	**Cult, leisure Media, Sport**	**Self-care**
1	4-5 am										
2	5-6 am										
3	6-7 am										
4	7-8 am										
5	8-9 am										
6	9-10 am										
7	10-11 am										
8	11-12 pm										
9	12-1 pm										
10	1-2 pm										
11	2-3 pm										

	Time	Paid work	Unpaid GDP work	Housework	Child Care	Adult Care	Volunteer work	Learning	Social & Comm, Religious	Cult, leisure Media, Sport	Self-care
12	3-4 pm										
13	4-5 pm										
14	5-6 pm										
15	6-7 pm										
16	7-8 pm										
17	8-9 pm										
18	9-10 pm										
19	10-11 pm										
20	11-12 am										
21	12-1 am										
22	1-2 am										
23	2-3 am										
24	3-4 am										
Total											

(B.2) Time Activity Matrix **Woman Primary Care Provider**

Please think about what you were doing in the last 24 hours (yesterday morning at 4am, finishing 3am of the current day). I will ask you for the main activity and one simultaneous activity, if you were doing at a certain time during the day.

	Time	**Paid work**	**Unpaid GDP work**	**Housework**	**Childcare**	**Adult care**	**Volunteer Work**	**Learning**	**Social & Comm, Religious**	**Cult, leisure Media, Sport**	**Self-care**
1	4-5 am										
2	5-6 am										
3	6-7 am										
4	7-8 am										
5	8-9 am										
6	9-10 am										
7	10-11 am										
8	11-12 pm										
9	12-1 pm										
10	1-2 pm										
11	2-3 pm										

	Time	**Paid work**	**Unpaid GDP work**	**Housework**	**Childcare**	**Adult care**	**Volunteer Work**	**learning**	**Social & Comm, Religious**	**Cult, leisure Media, Sport**	**Self-care**
12	3-4 pm										
13	4-5 pm										
14	5-6 pm										
15	6-7 pm										
16	7-8 pm										
17	8-9 pm										
18	9-10 pm										
19	10-11 pm										
20	11-12 am										
21	12-1 am										
22	1-2 am										
23	2-3 am										
24	3-4 am										
Total											