Female labor force participation and religiosity in the patriarchal urban Pakistan *

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Abstract

Female labor force participation is low in Muslim-majority countries, which are largely concentrated in South Asia and the Middle East and North Africa region. While it is widely believed that Islam discourages female labor force participation, the causal mechanisms are unclear, as these countries are also characterized by patriarchal social norms that seem to play a substantial role in limiting women's participation in workforce. This study investigates how Islamic teachings affect the attitudes of male decision-makers toward the work participation of female household members, and whether these teachings have any downstream effects on the women themselves. Using a right-touch experiment targeting male decision-makers in urban Pakistan, this study finds that Islamic information supporting female work participation improves male decision-makers' attitudes and the positive effect persists even after six months. Furthermore, we also observe downstream effect in the form of increased future work aspirations of daughters or younger sisters of the household heads. While actual female labor force participation remains limited as most girls in our sample continue further studies, this represents an encouraging first step toward enhancing women's workforce participation in a patriarchal Muslim society.

Keywords: Female labor force participation; Islam; Patriarchy; Aspiration; Pakistan

JEL Classification: J16, J21, O53, Z12

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1 Introduction

Female labor force participation (FLFP) is considered important in poverty alleviation, women's empowerment, and bridging gender gaps (World Bank, 2011; Duflo, 2012). FLFP can also help in improving the economic situation of households at a micro level, and subsequently, provide a foundation for macroeconomic development. Despite its evident importance both at the national and household/individual levels, FLFP rates remain low in Middle East and North Africa (MENA) and South Asian countries, the so-called "patriarchal belt" (Kandiyoti, 1988). It has been of great interest for researchers and policy makers how to enhance FLFP in these regions.

Factors explaining low FLFP rates include lack of childcare, necessary skills and education, and income earning opportunities. Recently, the social norm against FLFP, particularly in patriarchal societies has attracted researchers' attention (for example, Alesina, Giuliano, and Nunn, 2013; Bernhardt, Field, Pande, Rigol, Schaner, and Troyer-Moore, 2018; Jayachandran, 2021). In these societies, FLFP decisions are often made by male household members such as fathers, elder brothers, and husbands, and the randomized controlled trials (RCT) targeting male household members have been conducted. These studies, mainly consisting of new or updated information provision to male household members, have shown mixed results, with limited impact on actual FLFP (Dean and Jayachandran, 2019; Bursztyn, Gonzalez, and Yanagizawa-Drott, 2020; Makino, 2024).

Closely related to the social norm, but relatively understudied, is how the religious norm related to Islam influences FLFP. Even though social constraints are impediments to FLFP, they are either justified or reinforced by Islamization in countries like Pakistan, highlighting the potential role of Islam in modifying FLFP (Hathaway and Lee, 2004). Inconsistent with the general public image that Islam restricts women's behavior, the association between Islam and low FLFP rate shown by the macro-level data provides divergent conclusions (Ross, 2008; Guiso, Sapienza, and Zingales, 2003). Besides, the macro-level data complicates the elicitation of causal impact of Islam on FLFP. The micro-level empirical studies concerning the impact of religion in general and Islam in specific, on preventing FLFP are scarce despite the apparent close relationship between

the religious and social norms. This is partly because of the lack of variation in religious norms which is required for empirical identification in the "patriarchal belt" where most of them are Muslims.

We consider it empirical question whether the religious norm has an impact on FLFP, i.e., it may have a positive or negative impact on FLFP. On one hand, some Quranic passages, teachings by Prophet Muhammad and guidelines proposed by some religious scholars are interpreted as encouraging FLFP. On the other hand, the strict Islamic guidelines that must be followed by women while they work outside their homes might be perceived a deterrent to FLFP (Biberman, Gul, and Ocakli, 2016). Moreover, some of the Islamic teachings can be misinterpreted in a manner that can discourage female empowerment through education and employment (Ali et al., 2022). Therefore, intervention composed of different passages or guidelines may differentially affect FLFP.

Considering the above background, our study aims to investigate the causal impact of religion on FLFP by implementing the light-touch RCT in urban Pakistan. Our two interventions use two different sets of Islamic information about FLFP; the first intervention presents evidence that Islam allows women to work (positive intervention), and the second intervention discusses rules that must be followed if women are to work outside their homes (negative intervention). We provide information to fathers or elder brothers who are more likely to decide on their daughters'/sisters' work participation. The pure control group receives no information.

We consider Pakistan as an ideal setting to implement RCT because of the reasons as below. (1) It is one of the lowest FLFP countries (Redaelli and Rahman, 2021), and therefore, presents a natural setting where the urgency and relevancy to study whether religion enhances or discourages FLFP is imminent. (2) Men oversee the household decisions including FLFP in Pakistan, and men (husband or father) are largest cited barrier preventing women from working outside the home (Gentile, 2022; Makino, 2024). (3) 96% of the population in Pakistan is Muslim (the second largest Muslim population in the world),[1] and hence, provides a religiously homogenous environment that is ideal to

[1]Islam is world's second largest and fastest growing religion (Pew Research Center 2017). Therefore, our findings can have a direct relevance to the global Muslim population.

identify the pure impact of religious intervention on FLFP. In a religiously heterogenous country, or even in other Muslim majority countries but with significant representation of other religions, the impact of Islam on FLFP might be obscured as teachings and practices from other co-existing religious groups can either directly influence FLFP, or indirectly through modifying social norms about FLFP. (4) Islam plays a pivotal role in the socio-economic and financial decisions both at micro and macro level,[2] offering an ideal setting to systematically test whether religion influences FLFP as well, and if it does, in what direction.

The results show that positive information about FLFP affects male decision-makers' attitudes toward FLFP favorably. The intervention has a stronger effect on their attitudes toward their own daughters'/sisters' work participation than on their views of FLFP in general. This is a novel finding since men often express support for the idea of FLFP when it is unrelated to their own household even in a patriarchal society but oppose it for their own household members (Makino, 2024). Existing studies do not usually distinguish between these two perspectives on FLFP (Bursztyn et al., 2020), yet differentiating between social and personal opinions is crucial, as the latter ultimately determines household and individual decisions. As expected, and consistent with the concept of knowledge depreciation (King and Behrman, 2009), the impact of the intervention was smaller at endline compared to immediately after the intervention. We were unable to analyze the daughters'/sisters' actual FLFP since only three were employed for pay at endline. This is not surprising, as many were still pursuing higher education. However, the positive information increased their aspirations to work in the future, which may play a crucial role in their eventual FLFP decisions.

[2]Islamic teachings play an integral role in socio-economic decisions in Pakistan. The visible impact can be seen in the financial domain where interest free banking based on Islamic principles has taken a center stage with assets and deposits making up 20% of the total financial system (State Bank of Pakistan, 2022). Similarly, Islamic teachings promoting harmony and discouraging corruption were added to the school curriculum in KPK province to encourage young people to develop these traits from early childhood (Ashfaq, 2015). Misconceptions about Islamic teachings also lead to avoidance and non-acceptance of certain practices. For example, sex education is considered a taboo in Pakistan because people incorrectly believe that all forms of sex education are against Islamic teachings (Nadeem, Cheema, and Zameer, 2021). Overall, we have numerous instances where Islamic teachings are used to either encourage or discourage certain behaviors in Pakistan. Acknowledging the important influence of Islam on decision-making, in the current study we use Islamic intervention to see its impact on FLFP in Pakistan.

Our work is not the first to study how religion influences FLFP at the individual level. Dildar (2015) empirically investigated the differentiated impact of the social norm and religiosity on women's labor force participation using individual data in Turkey. Her study measured the religiosity, i.e., intensity of religious practices, and thus made variation in the religious measure among Muslims. The results showed that the social norm had a stronger negative impact on FLFP, and that the religiosity was weakly associated with preventing FLFP only in the urban area. Limitation of her study is that the relationship between religiosity and FLFP was simply an association, but not causality. Furthermore, Dildar (2015) used only ritual-based religiosity measures. While ritual-based measure is a useful proxy for religiosity, research in the last several decades shows that religiosity is best understood as a multidimensional phenomenon (Cornwall, Albrecht, Cunningham, and Pitcher, 1986). Therefore, more research is required to inspect whether the reported negative association of religiosity with FLFP depends on the nature and type of religiosity measures.

Our study adds to several streams of literature. First and foremost, our work contributes to the scant literature on norms and FLFP in Muslim countries. The other two prominent studies in this domain are Dildar (2015) who examined correlation between religion and FLFP in Turkey, and Bursztyn et al. (2020) who studied the impact of correcting social norms on FLFP in Saudi Arabia. While our work is related to these studies as we target Muslim population, it has notable differences. Unlike Dildar (2015), we provide evidence for the causal impact of religion on attitudes towards FLFP that will include an important policy implication in the "patriarchal belt." Unlike Bursztyn et al. (2020), we study the impact of religious intervention on attitudes.[3] Another important distinction is that we examine FLFP for unmarried young women with at least graduate degree, while Dildar (2015) and Bursztyn et al. (2020) studied FLFP for married women. Studying the impact of intervention on married women's FLFP is important but has an obvious limitation; the impact of intervention can be confounded by marriage responsibil-

[3]Often it is believed that religion and social norms are disjoint elements in a Muslim country. In reality, religion in Muslim countries plays an important role in shaping up social norms including those related to FLFP. Therefore, unlike Bursztyn et al. (2020), our work using religious intervention targets one of the important underlying forces shaping up social norms.

ities (such as childcare, household chores and others). Our work overcomes this limitation by observing the impact of intervention on unmarried women's labor force participation.

Second, we examine the impact of religious intervention on FLFP attitudes measured right after the intervention and at the end line, and therefore, report whether such an intervention has an immediate impact or causes a relatively sustainable shift in attitudes in the short run. The detection of impact in the short run can be helpful to the future policies aimed at the enhancement of FLFP in Pakistan. It will also serve to the policy makers and the public by revealing the mechanism inhibiting FLFP.

Third, beyond FLFP, our work contributes to the scarce field literature studying the impact of Islamic information on economic choices, for example, credit card debt repayment of Islamic bank's customers in Indonesia (Bursztyn, Fiorin, Gottlieb, and Kanz, 2019), and uptake of Islamic savings accounts in Pakistan (Ahmad, Lensink, and Mueller, 2023). While these studies examined financial decisions, our work adds a new dimension to this literature by focusing on FLFP. Our work also contributes to the general literature examining the role of religion in economic choices (Iannaccone, 1998; McCleary and Barro, 2006; Campante and Yanagizawa-Drott, 2015; Benjamin, Choi, and Fisher, 2016, and others).

Lastly, to the best of our knowledge, this is the first study to include Islamic content as an intervention aimed at enhancing FLFP. Our findings in Pakistan can be equally applicable to other Muslim countries where low FLFP rates remain a serious concern. As our intervention using Islamic information related to FLFP was checked and approved by a religious scholar, the acceptance of our findings by Muslims in Pakistan and other Muslim countries is likely to be higher due to its credible intervention materials. Moreover, designing an intervention using Islamic materials requires a thorough understanding and knowledge of Islam combined with guidance of a religious expert. This is one of the main hindrances that many studies do not use Islamic information as intervention in RCTs. Our work contributes to this gap in literature by studying the impact of carefully designed religious intervention on FLFP.

2 Methodology

The core of our research consists of the light-touch randomized intervention, i.e., information provision.

2.1 Location of the Study

We focused on Lahore district in the Lahore city, the second largest city in Pakistan, and obtained observations from four tehsils (Lahore Cantt, Lahore city, Model Town, Shalimar Town) covering 53 union councils. We selected the urban area as research cite because of the following reasons.

First, FLFP in urban areas in Pakistan remained almost stagnant, increasing from 7% to 11% from 1992 till 2014, while it doubled in the rural areas (increased from 16% to 32.9%) (Amir, Kotikula, Pande, Bossavie, and Khadka, 2018). Therefore, the issue of low FLFP is acuter in the urban centers and requires urgent attention and intervention.

Second, Dildar (2015) shows, in the Turkish context, that religiosity matters for FLFP only in the urban area, and we consider similarly in Pakistan based on our previous research experience. Third, as we explain below, we are interested in the young women's income-earning opportunities in white-collar sector. Availability of white-collar jobs provides us the prerequisite environment to test the impact of religious information on actual FLFP decisions given that in some religious teachings, white-collar jobs are only acceptable for women to engage in. Except for teaching, white-collar sector jobs are available only in urban areas.

Fourth, (Dean and Jayachandran, 2019) and (Makino, 2024) could not find an increase in actual FLFP after the light-tough intervention of information provision targeting the male decision maker of the household in rural South Asia. One of the reasons may be that their intervention area was rural, and was too conservative, and thus unrealistic, to observe the actual enhancement of FLFP in the short period. We are certainly interested in enhancing FLFP in rural area but consider that the first attempt be better addressed in the urban area.

2.2 Eligibility of the Target Households

We define the eligible household as the one with (1) at least one unmarried daughter who completed college education (14 years of education) and do not currently work outside the home, and (2) a male household member who is the main breadwinner and decision-maker, typically her father or elder brother. The following considerations based on our knowledge in urban Pakistan determined this eligibility.

To concentrate on social and religious norms as preventive factors rather than child-care or primary responsibility of housework, we focus on unmarried daughters' paid-work participation. Therefore, the decision-maker is most likely their father or elder brother, and our intervention targets these male decision-maker of the households with an aim to eventually encourage FLFP through their change in attitudes towards FLFP.

The eligibility of girls is to have graduate degrees or higher because it is realistic to work in the white-collar sector once they obtain college degree. We consider white-collar jobs because they are mostly acceptable for unmarried girls to work in the Pakistani society, which enables us to eliminate any effects of social stigma against women with lower education working in non-white-collar sector. In our setting, it is also important to focus on white-collar jobs since some Islamic teachings consider they are only acceptable for women to engage in. Besides, only 25% of women with college degree work outside the home in Pakistan (Tanaka, 2016), which demonstrates an urgent need to target FLFP among these women. We deliberately restrict our sample to non-working women at baseline so that we can measure actual change in FLFP, if any, which is the goal of both researchers and policy makers.

2.3 Sample Size and Survey Design

The sample size is 507 households: 341 treatment households in which 169 households are assigned to the positive intervention (arm1), and 172 households are assigned to the negative intervention (arm2) and 166 controlled households (arm3). Note that the randomization is carried out mechanically just before the intervention. We have determined the sample size to assure 80% statistical power (see the Appendix for the effective sample

size).

We selected Gallup Pakistan[4] to implement our study. Gallup Pakistan has extensive experience in conducting surveys, and in implementing academic studies. Based on these eligibility criteria, Gallup conducted a pilot study to examine the cost of obtaining a random sample from Lahore. As our eligibility criteria are very specific, pilot survey revealed that complete random sampling was infeasible given our budgetary constraints. Thus, we employ a mixed methodology, utilizing non-random sampling techniques including references and the snowball method. Initially, families are selected through references obtained by enumerators, and the interviewed households were requested to share five contacts meeting the specified criteria. From these referenced households, we sought consent, confirmed the criteria, and secured appointments for three interviews. The response rate of the households was 50% because some eligible households declined to participate due to the number of interviews. This process was continued until reaching the target sample of around 500 households. Note that in this type of experiment of information provision, the convenient sampling is not uncommon (see Bursztyn et al., 2020; Dean and Jayachandran, 2019).

For the successful execution of this study, Gallup enlisted three female supervisors who, in turn, assembled a team of 30 female interviewers. These interviewers were responsible for recruiting households meeting the study criteria and for implementing the complete study. Female enumerator conducted baseline, intervention and follow up surveys to eliminate possible contamination dependent on different genders of enumerators. Moreover, as our study involved interviewing female members along with the male household head, due to practical religious reasons (female household members might observe purdah from unknown male enumerators), Gallup selected all female enumerators for the implementation. The team of 30 enumerators was already well-experienced in conducting surveys and was trained further by the female supervisors considering the specific nature of this study. The authors visited Lahore to participate in the pilot survey and provided feedback to Gallup. The authors visited Lahore again during the baseline and inter-

[4]Gallup Pakistan's website available at: https://gallup.com.pk

vention implementation to check and confirm the implementation protocols are strictly followed.

2.4 Intervention Materials

The intervention aimed at exogenously influencing the fathers' (or elder brothers') belief on religious norm concerning FLFP. The intervention was simple, it reminded fathers (or elder brothers) the Quranic passages or Islamic guidelines which encourage FLFP (positively intervention) or specify a set of regulations that women should follow if they work outside home (such as seeking permission of the guardian to work and following Islamic dress code). Even though these teachings themselves do not stop women from working, the stringent rules can be perceived as a deterrent to FLFP, and hence we call it a negative intervention. The positive religious information concerning FLFP was provided to arm1, potentially negative religious information to arm2, and pure control (no information) to arm3. See Supplementary Materials (Appendices 1 and 2) for positive and potential negative intervention used in the study (English translation of the Urdu text).

Leveraging the experience of conducting experiments on religion and economic choices in Pakistan, the authors prepared an initial draft of the intervention materials and shared with a contemporary Islamic scholar (also known as *Alim*) for approval. The scholar reviewed and adjusted the materials as needed for both positive and negative interventions. We followed this protocol to ensure that the intervention materials are truly aligned with the Islamic teachings, and hence, eliminated the possibility of errors. Furthermore, during the intervention the respondents were communicated that these materials are approved by an Islamic scholar to ensure that they seriously consider these materials are deduced from the Islamic teachings.

2.5 Baseline, Post-Intervention and Endline Surveys

The structured questionnaires were used for baseline, post-intervention and endline surveys. All these surveys were conducted in Urdu language. Gallup Pakistan translated

the English surveys in Urdu, and one of the authors (who is native Urdu speaker) cross-checked all the translated materials and made changes wherever necessary. Before implementing baseline survey, an informed consent was verbally administered. The informed consent clearly communicated the aims and objectives of the study, number of surveys to be conducted, monetary benefits (participants could earn up to 1000 rupees based on their decisions in a Dictator Game implemented in the post-intervention survey), mechanisms in place to ensure privacy, anonymity and confidentiality. The respondents were informed that they are free to participate and can quit the study at any time without any repercussions. Every enumerator read the same consent form to all the respondents in Urdu language.

2.5.1 Baseline

The baseline survey was administered to the households agreeing to participate in the study. The baseline survey consisted of seven sections. The first six sections were administered to the male head of the household in the absence of other household members. The last section was administered to the head's daughter/sister qualifying our inclusion criteria. The survey to the daughter/sister was administered in the absence of other family members to ensure the responses are not influenced or contaminated by the presence of other family members.

The baseline survey to the male household heads elicited demographic information of all household members (1st section), financial information of earning members (2nd section), and household assets (3rd section), The fourth section elicited general patriarchal attitudes, specific attitudes towards their own daughters or sisters working outside home, the role of husband and wife in their household decisions, and the social status of the household in the neighborhood. All these questions were based on the earlier work of Makino (2024) in Pakistan.

The fifth section elicited individual religiosity and Islamic knowledge about FLFP. As explained earlier, religiosity is best understood as a multi-dimensional phenomenon. Therefore, taking help from literature on the operationalization of religiosity (Fukuyama,

1961; Cornwall et al., 1986), we use three different measures (belief-based, ritual-based and knowledge-based) to elicit comprehensive information about religiosity. Specifically, the knowledge-based subjective religiosity measures the extent of overall Islamic knowledge on a five-point Likert scale (1 = Expert; 5 = Never studied). The scale is reversed such that higher values represent higher knowledge. The belief-based instrument measures self-declared religiosity on a scale of 1 to 5 where 1= Very religious and 5 = Not at all religious. The frequency of daily prayer (0 = don't pray; 5 = Offers all five compulsory prayers) is a ritual-based objective measure. Also, the used three-dimensional religiosity covers the essential elements of Islam (beliefs, worship, Islamic education), and therefore largely captures the core aspects of being a Muslim. The questions used to elicit the belief and ritual-based dimensions of religiosity are obtained from the work of Umer, Kurosaki, and Obayashi (2025) with Muslim subjects in Pakistan. Based on lab and field experiments, Umer et al. (2025) present evidence that the frequency of daily prayer is the relatively precise measure of individual religiosity of Muslims. Therefore, we also consider frequency of daily prayer as our main proxy for religiosity, while use the other measures to conduct robustness checks. We also construct a religiosity index by adding the values of the three religiosity measures (higher values represent higher religiosity). Furthermore, we use the frequency of recitation of Quran (1 = Daily; 8 = Don't recite) as an additional robustness check. Irrespective of using any religiosity measure, our main findings remain consistent.

The sixth section of the baseline survey was administered to the daughter/sister qualifying our inclusion criteria. The questionnaire elicited information about the extent to which the girl covers her body when going outside, her academic and career aspirations. A complete baseline survey and consent form in English is available in supplementary materials.

2.5.2 Intervention and Follow-up Survey

The intervention was administered at least three hours after the baseline survey. The enumerator read out the intervention materials to the male respondents. We followed

this protocol as it was difficult ex ante to determine the education levels of the male respondents and their ability to read the intervention materials. The control group did not receive any information. We administered a brief follow-up survey right after the intervention eliciting attitudes towards FLFP (general) and towards their daughter/sister working outside home (specific) and their religious knowledge about FLFP. The three-hour gap between the baseline survey and the intervention/follow-up survey was selected to mitigate respondent fatigue. We also intended to alleviate potential confusion of respondents since some questions are the same between the baseline and the follow-up surveys.

Right after the intervention, we also implemented a dictator game (DG) with a recipient organization working in Lahore to help females become earning members of the society (Kashf Foundation)[5], and therefore, working towards FLFP enhancement. The game was played with real stakes (1000 PKR) and subjects could donate any money to the organization or keep all for themselves. We included the DG as it elicits choices with real money, mitigating issues associated with non-incentivized and hypothetical decisions such as experimenter expectancy effects. We did not disclose the name of the recipient organization because it can affect behavior of the dictators, as witnessed in our pilot study.[6] The money respondents kept to themselves was provided to them in the form of a mobile credit around one month after the intervention (in most cases, mobile credit is transferred within one week). To enhance the credibility of the DG, we provide an option to the respondents to receive the final payment receipt of money transferred to the recipient organization via message (See Appendix for the DG protocol).

We selected Kashf Foundation as recipient organization because it is a dedicated

[5]The official website of the organization can be accessed at: https://kashf.org

[6]In the pilot study, we used three recipients (Kashf Foundation, Edhi Foundation and anonymous citizen) as our recipients, and randomly selected one of the three decisions for payment. The dictators were comparing their donations across the three respondents, rather than treating each decision independently. Therefore, we decided to play only one dictator game with Kashf Foundation as recipient. We did not disclose the name of the recipient because of the two reasons. First, a pleasant or an unpleasant previous experience of the dictator with the organization can impact their current donations. Second, dictator's preconceived positive or negative notions about the organization built through social circles and surrounding environment can impact the donations. To avoid these unnecessary but possible confounding factors, we decided not to disclose the name of the organization and disclose only its work related to FLFP.

organization working in Lahore and other parts of Pakistan to help women become earning members of the society through various programs. Therefore, the organization has a direct relevance to our intervention related to FLFP, in particular, attitudes toward FLFP in general. At the end of the intervention cumulative money donated by all subjects was transferred to the recipient organization.

2.5.3 Endline Survey

The endline survey, in principle, used the same questionnaire which was used in the baseline survey. We added several new questions to both male household heads and to daughters/sisters, such as the one obtaining information about their knowledge of any other household engaged in a similar study to control for the possible spillover effects.

The timeline of the surveys and intervention is presented in Figure 1. The baseline survey was conducted in January-March 2024, followed by the information provision intervention a brief follow-up survey, at the earliest three hours later. Then the endline survey was conducted in October-December 2024.[7]

3 Data

Table 1 reports summary statistics of the baseline characteristics of girls and their households, along with the balance test results. As for how to construct the outcome and control variables, see Appendix Table A1.

Daughters/sisters are, on average, 24 years old, which aligns with our eligibility criteria, i.e., households with at least one unmarried girl who has completed 14 years of education. Accordingly, their education level is either 14 years (=1) or higher (=2). Household heads are defined as the primary male decision-makers of the households. On

[7] Additionally, we will conduct the supplementary phone-based follow-up survey between October and December 2025. In the endline survey, we did not systematically collect information on current enrollment status for respondents aged above 16, although many of the girls appear to still be enrolled (see the attached structural questionnaire). We will also ask about the girls' employment status, educational and work aspirations, and their father's(brother's) attitude toward their work participation one and a half years after the intervention. Please note that we expect a relatively high attrition rate, as this phone-based survey was not planned originally. Since it is uncertain whether quantitative analysis will be feasible based on this follow-up survey—and we may use the data primarily for qualitative analysis—we consider this survey to be supplementary.

average, they are 42–43 years old, meaning they are typically the girls' fathers. Around 70–80 percent of household heads are married, and 90 percent are literate, having completed and average of 10 years of education.

The wealth index is constructed using principal component analysis based on ownership of various valuable assets, including a radio, television, bicycle, motorcycle, car, electric fan, air conditioner, stove, wardrobe, washing machine, sewing machine, refrigerator, generator set, wristwatch, wall clock, and mobile phone.

Patriarchy is measured by assessing the internalization of patriarchal norms among fathers (or elder brothers) based on their responses to various statements at baseline. The exact statements are provided in the Appendix Table A1. Respondents rated their agreement on a 5-point Likert-scale, ranging from strongly agree (=5) to strongly disagree (=1). The survey asked respondents whether they agreed or disagreed with statements, such as:

- "Household work (like cooking, washing, and cleaning) is the responsibility of all members and not just of women."
- "A woman should not argue with her husband even though she disagrees with him."

Since the patriarchy measure reflects the level of conservatism among fathers (or elder brothers), the scale values were adjusted so that the most conservative response was assigned a value of 5, while the most progressive response was assigned a value of 1. The patriarchy index is the standardized summation of responses to all 15 questions.

Regarding balance across the treatment and control arms, there is one imbalance, namely, in ritual-based religiosity at the 0.05 significance level. However, only one out of 24 differences is significant at the 0.05 level, which is lower than what would be expected by random chance alone. Following Imbens and Rubin (2015), the normalized size of the difference is calculated as the difference in means between the two arms divided by the square root of half the sum of their variances. This value is 0.26, which is very close to the suggested benchmark of 0.25. Therefore, we can assume that the arms are balanced.

4 Estimation and Results

4.1 Estimation Equations

Our intervention reminds the fathers (or elder brothers) the Quranic passages or guidelines which presumably affect attitudes toward FLFP positively or negatively. We examine whether the various measures of FLFP are affected by the intervention, and consider the following estimation model:

$$Y_i t = \alpha_0 + \alpha_1 T1_i + \alpha_2 T2_i + \beta_1 Religiosity_{i1} + \beta_2 Patriarchy_{i1} + \boldsymbol{x}'_{i1}\gamma + \varepsilon_i, \qquad (1)$$

where $T1_i$ and $T2_i$ are binary variables that take the value of 1 if household i is in the positive and negative treatment arms, respectively. $Y_i t$ is several measures related to FLFP. The primary outcome is fathers' (or elder brothers') extent of Islamic knowledge concerning female's right to participate in the labor force, and the attitudes of fathers' (or elder brothers') toward FLFP. They are measured right after the intervention $t = 2$ and at endline $t = 3$. We also examine the impact of the intervention on fathers' willingness to pay toward FLFP enhancement (see the DG in Section 2). As downstream secondary variables, we consider the effects of intervention on the daughters' attitudes toward FLFP (see the Appendix questionnaire, section 6). Though the intervention targets their fathers (or elder brothers), the change in attitudes of the male decision-maker's attitudes may affect the female members of the household. Although our ultimate interest is rather the actual FLFP, however, we considered that observing the actual FLFP in the context of South Asia is very challenging in light-touch intervention (Dean and Jayachandran 2019; Makino 2024). Therefore, as secondary outcomes, we first examine the daughters' (or sisters') aspiration toward FLFP and whether they are actually looking for a job at endline $t = 3$. Given that the daughters' (or sisters') attitudes are secondarily affected by the intervention toward their fathers (or brothers), we also examine the daughters' (or sisters') perceptions about change in their fathers' (or brothers') attitudes toward

FLFP at endline $t = 3$. Note that the pre-analysis plan states estimating the impact on the actual FLFP, however, since there are only three girls who work for payment at endline, we decided to drop the actual FLFP from our outcome measures. x_{i1} is the vector of household and daughters' demographic, and socioeconomic characteristics at baseline $t = 1$, namely, unmarried girls' age, completed level of education (either 14 years or 16 years), their fathers' (or elder brothers') age, marital status, literacy, and completed years of education, and the household's wealth quintiles.

As we study the impact of providing religious information concerning FLFP, it is important to control for religiosity. We construct three dimensions separately as proxies for individual religiosity (see Section 2 for construction of the variable). In the main estimation, we use the ritual-based measure since it is known to be the best for capturing individual religiosity. For robustness, we repeat the estimation by including alternative measures, namely, those based on belief and knowledge (see Appendix Table A1). Following Dildar (2015), a patriarchy measure is also included in the estimation equation to examine how it is associated with various FLFP measures. $Patriarchy_{i1}$ measures the internalization of patriarchal norms by fathers (or elder brothers) based on their responses to various statements at baseline $t = 1$ (see Section 3 for construction of the variable). For the specific questions measuring the patriarchy, see the questionnaire section 4 in the Appendix Table A1.

Furthermore, we examine possible heterogeneities in our findings dependent on the religiosity/patriarchy of the household head by the following estimation equation:

$$\begin{aligned} Y_{it} = \alpha_0 + \alpha_1 T1_i + \alpha_2 T2_i + \beta_1 Religiosity_{i1} + \beta_2 Patriarchy_{i1} + \beta_3 T1_i \times Religiosity_{i1} \\ + \beta_4 T1_i \times Patriarchy_{i1} + \beta_5 T2_i \times Religiosity_{i1} + \beta_6 T2_i \times Patriarchy_{i1} + \boldsymbol{x}'_{i1}\gamma + \varepsilon_i, \end{aligned} \tag{2}$$

The difference of $\beta_3(\beta_5)$ and $\beta_4(\beta_6)$ captures the heterogeneity (if any) in the impact of intervention, depending on the level of patriarchal norm and religiosity at baseline, respectively.

4.2 Results

Table 2 shows that immediately after the positive-information intervention (at the earliest, one hour after the intervention), fathers' (or brothers') attitudes toward FLFP in general became more positive (column 1). Note that we present our preferred estimation results in Table 2; however, the estimation results with simple specifications, excluding a covariate or religiosity/patriarchy variables, are presented in Appendix Tables A2 and A3 . The results of simple specifications are not substantially different.

Given that the control mean is 1.18, the positive-information intervention increased fathers' (or brothers') attitudes toward women in general working outside the home by 16%. Although the impact of the negative-information intervention is not significant, its sign is positive, which may seem counterintuitive. Note that we refer to it as "negative" in relative terms; however, it may remind fathers (or brothers) of the importance of FLFP, as it included a passage stating that women can engage in halal work if they are in need and have permission from her guardian (See Section 2.4). This information likely influenced men to become more positive toward FLFP, as they consider only halal jobs combined with females observing the Islamic guidelines of working outside home.

The impact of the positive-information intervention on fathers' (or brothers') attitudes toward their daughter (or sister) working outside the home was even greater (column 2). Given that the control mean is 1.03, the increase was 26%. This is an encouraging and novel finding, as the barrier to FLFP is typically stronger when it concerns their own female household members (Dean and Jayachandran, 2019; Makino, 2024). Fathers (or brothers) often oppose their own daughter (or sister) working outside the home, even if they agree with the statements supporting general FLFP as shown by the different in control means ($p < 0.000$), and reported in existing studies (Makino, 2024). The intervention, whether positive or negative, had no significant impact on fathers' (or brothers') willingness to pay for the organization dedicated to promoting women's paid employment (column 3). This result seems to be consistent with the results shown above, namely the smaller impact of the intervention on fathers' (or brothers') attitudes toward general FLFP compared to their attitudes toward their own female household member working

outside the home.

The intervention, whether with positive or negative information, had no impact on fathers'/brothers' knowledge on Islamic teachings about FLFP (column 4). It shows that men in general have a fair amount of knowledge about FLFP, as indicated by insignificant difference between control and treatment groups. The other possible reason for the insignificant impact can be the construction of the variable on FLFP knowledge with little variation (0 = never studied; 4 = expert); respondents in the treatment groups might have opted for a humble answer as becoming religious expert (known as *Mufti* or *Alim*) requires years of Islamic education. Nevertheless, our main objective of modifying male members attitudes towards FLFP was largely successful.

The impact of the positive-information intervention on fathers' (or brothers') attitudes toward their daughter (or sister) working outside the home remained persistent even after six months (column 5). Given that the control mean is 0.91, the increase was 22% at 0.1 significance level. The impact of the negative-information intervention was also consistently positive, though insignificant. The intervention, whether positive or negative, had no significant impact on fathers' (or brothers') attitudes toward their (future) daughter in-law working outside the home (column 6). Since a (future) daughter-in-law is a more general category than one's own daughter (or sister), this result also seems consistent with the results shown above, i.e., the intervention had a smaller impact on fathers' (or brothers') attitudes toward general FLFP. After six months, the intervention had no significant impact on fathers' (or brothers') attitudes toward general FLFP, even in cases where other women took on household responsibilities (column 8). Alternatively, since daughters-in-law arguably bear the greatest burden of household responsibilities, their participation in paid work may face even greater barriers. This alternative interpretation is likely, given the difference in control means suggests men are less likely to agree to a (future) daughter-in-law working outside the home.

The secondary downstream outcomes after six months of the intervention targeting fathers (or brothers) were also examined. The positive-information intervention to fathers (or brothers) made their daughters (or sisters) more willing to work for pay (column 9).

Given that the control mean was 0.46, the increase in daughters' (or sisters') aspiration was 31%. In contrast to the impact on fathers' (or brothers') attitudes, the negative-information intervention had a negative impact on the girls' attitudes, though this effect was insignificant. This may stem from a subtle nuance in the information provided to fathers (or brothers). The negative information included a passage allowing women to engage in a halal job if they are in need and have permission from their male guardian, and fathers or brothers may only consider such types of work, typically teaching, when they hear about FLFP. However, girls may be more progressive and think about jobs beyond those typically considered halal. We asked the girls who indicated they were willing to work for pay which occupation they had in mind. In fact, while 47% mentioned teaching, a similar 42% of girls mentioned any private jobs, which may include types of jobs their fathers (or brothers) had never considered. Thus, it is expected that the negative-information intervention, which did not allow women to engage in non-halal jobs, had a negative impact on girls' job aspiration.

By contrast, the intervention to fathers (or brothers) had no impact on their daughters' (or sisters') active job search (column 10). Among 306 girls who were not actively looking for a job, about one-third stated they were willing to work for pay, and 60% of these girls answered that pursuing a higher degree was the reason they were not currently searching for a job (Appendix Figure A1). Girls whose fathers (or brothers) received the positive-information intervention were more likely to answer that their fathers (or brothers) had become more positive toward their work participation in the last six months (column 11). Though the impact was insignificant, the difference between the positive and negative interventions, 0.12, was significant at the 0.05 level, representing a 50% increase, given the control mean is 0.24.

To check spillover effects, if any, the endline survey asked about their knowledge of any other household engaged in a similar study. As few of the households knew any other household engaged in such a study, we do not suspect any spillover effects.

For robustness, we conduct multiple hypothesis testing and report p-values adjusted using Romano-Wolf stepdown procedure (Clarke, Romano, and Wolf, 2020, see Appendix

Table A4). The results are robust to multiple hypotheses testing, except for fathers' (or brothers') attitudes toward their daughters' (sisters') labor force participation at endline. We also estimate the impacts reported in column (4)–(10) of Table 2 using the Analysis of Covariance (ANCOVA) estimator, which controls for baseline outcome variables. Note that the outcome variables in columns (1)–(3) and (11) are not available at baseline. The ANCOVA estimator increases statistical power, particularly when the autocorrelation of outcome variables is low—typically in the range of 0.2 to 0.3 noted as a benchmark (McKenzie, 2012). Although the autocorrelation of outcome variables in this study is relatively high, ranging from 0.3 to 0.4, we report the estimation results based on ANCOVA estimator (Appendix Table A5). These results are not substantially different from the main estimation results reported in Table 2.

The heterogenous impacts of the intervention by religiosity and patriarchy are also examined by interacting the treatment status and religiosity/patriarchy indicators as given by Eq. (2). The estimation results are presented in Appendix Table A6. Overall, the results are not significant. One reason may be that the religiosity variable is binary in Eq. (2) for the sake of including interaction terms, which makes it less informative. Another reason is the reduction in statistical power.

By contrast, the secondary downstream impact of the intervention targeting fathers (or brother) on their daughters' (or sisters') willingness to work is consistent with the main estimation results presented in Table 2. The impact is not affected, but rather reinforced, by the inclusion of the interaction terms, with the magnitude increasing by 1.5 times.

4.3 Attrition

The attrition rate of the endline survey is 14%. If there is a selection attrition — such as if those were treated were less likely to attrit — the outcomes may be influenced by those who selectively remained in the sample rather than by the treatment itself. To examine potential selective attrition, we used Eq. (1), replacing the outcome variable with an indicator variable that takes a value of 1 if the household attrited by the endline.

The results are shown in Table 3. While there is no evidence of selective attrition among households treated with positive information, selective attrition is observed among those treated with negative information at the 0.1 significance level. However, since the negative-information intervention had no significant impact in the main estimation results presented in Table 2, this selective attrition does not affect our conclusion. Furthermore, the implications are consistent between the outcomes measured immediately after the intervention and those at endline. Since the outcomes measured in the follow-up survey are not subject to attrition, selective attrition does not seem to pose a serious threat to our interpretation.

5 Conclusion

This study investigates how the religious instructions on FLFP provided to male decision-makers of the households affect their attitude toward FLFP and their daughters'/sisters' work aspiration in the future in the context of urban Pakistan. The instructions provided in our intervention were approved by an Islamic scholar. Positive information about FLFP, which teaches that Islam encourages FLFP had significantly positive impacts both on male decision-makers' attitudes toward FLFP and their daughters'/sisters' work aspiration. Negative information about FLFP also affects positively though being insignificant. Since our "negative" information underscores the restrictions concerning FLFP, such as that women can only work in halal jobs, but does not prevent their work participation itself, it may remind religious households that they can allow their female members to engage in halal jobs, and conditional halal jobs, and thus, has a positive impact.

The study adds to the limited empirical literature on religiosity and FLFP by investigating how the actual and authentic religious teaching causally affects the FLFP and mechanisms leading to FLFP. We consider various measures of religiosity, namely, those based on ritual, knowledge, and beliefs, and confirm that the results are robust to any of these measures.

The limitation of this study is that we cannot investigate the impact of religious instructions on the actual FLFP, given that the target young women are still pursuing higher degrees and the actual participation was observed among only three women at endline. However, it is an encouraging step that provision of positive Islamic information about FLFP to their fathers/elder brothers increased their work aspiration in the future. The impacts on actual FLFP are left for future research.

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Table 1: Summary Statistics and Balance Test

	Positive Information		Negative Information		Control
	Mean (N=169)	Diff. from Control: p-val	Mean (N=172)	Diff. from Control: p-val	Mean (N=166)
Daughter(sister)'s age	23.793	0.837	23.826	0.913	23.861
	(3.084)		(3.037)		(2.995)
Daughter(sister)'s education	1.112	0.768	1.099	0.913	1.102
	(0.317)		(0.299)		(0.304)
Head's age	42.497	0.499	43.349	0.196	41.554
	(12.972)		(12.931)		(12.520)
Head's marital status	0.722	0.919	0.773	0.235	0.717
	(0.449)		(0.420)		(0.452)
Head's literacy	0.917	0.880	0.901	0.509	0.922
	(0.276)		(0.299)		(0.269)
Head's years of education	10.047	0.678	9.610	0.688	9.825
	(5.007)		(5.059)		(4.771)
Wealth	-0.037	0.943	0.065	0.331	-0.030
	(1.031)		(0.806)		(0.980)
Patriarchy	0.040	0.809	-0.104	0.126	0.067
	(0.939)		(0.986)		(1.070)
Religiosity (ritual-based)	3.757	0.033	3.576	0.303	3.392
	(1.416)		(1.575)		(1.701)
Religiosity (belief-based)	1.302	0.770	1.331	0.842	1.319
	(0.543)		(0.563)		(0.551)
Religiosity (knowledge-based)	1.793	0.922	1.831	0.727	1.801
	(0.771)		(0.802)		(0.788)

Note: Daughter(sisters)'s education takes a value of 1 if she completed BA/BSc, and 2 if she completed MA/MSc and higher. Standard deviations are in parentheses.

Table 2: Impacts of Islamic Teaching on FLFP

	Follow-up			Endline							
	(1) Attitude to general FLFP	(2) Attitude to daughter(sister)'s FLFP	(3) Willingness to pay	(4) Knowledge: Islamic teaching on FLFP	(5) Attitude to daughter(sister)'s FLFP	(6) Attitude to daughter-in-law's FLFP	(7) Attitude to general FLFP (resp. constraint)	(8) Attitude to general FLFP (no resp. constraint)	(9) Work aspiration	(10) Actually looking for job	(11) Daughter(sister)'s opinion: father's attitude to her LFP
T(Positive)	0.192**	0.271***	-8.720	0.0341	0.197*	0.152	0.0476	-0.0559	0.141**	0.0491	0.0435
	(0.0914)	(0.0944)	(17.04)	(0.111)	(0.103)	(0.109)	(0.170)	(0.167)	(0.0582)	(0.0541)	(0.0530)
T(Negative)	0.0968	0.121	-9.904	-0.0160	0.101	0.109	0.230	-0.122	-0.0183	-0.0236	-0.0780
	(0.0947)	(0.0963)	(17.68)	(0.115)	(0.104)	(0.111)	(0.170)	(0.166)	(0.0587)	(0.0525)	(0.0494)
Religiosity	-0.0209	-0.000944	-10.34**	0.00269	-0.0387	-0.0208	0.00688	-0.0267	-0.0220	0.00711	-0.00305
Patriarchy	0.0611*	0.0828**	15.24*	-0.0409	-0.00435	-0.0201	0.0496	0.111	0.0141	-0.0353	-0.00920
Daughter(sister)'s age	-0.0561***	-0.0399***	-1.555	0.0147	0.0111	-0.000215	0.0187	0.0228	-0.00902	0.00850	0.00714
Daughter(sister)'s education	0.411***	0.229	7.468	0.0618	0.254*	0.329**	-0.298	-0.258	0.211**	0.188**	-0.0167
Head's age	-0.00670	-0.000981	0.908	0.0141***	-0.00717	-0.00294	-0.00270	-0.00634	-0.000129	-0.000247	0.00224
Head's marital status	0.209*	0.176	-8.934	-0.368***	0.244*	0.175	0.131	0.101	0.00375	-0.0744	0.120*
Head's literacy	0.0808	0.375**	-35.11	0.393*	0.00988	-0.0105	0.108	0.0898	-0.0324	0.0697	-0.0912
Head's years of education	0.00868	0.0142	-0.0621	-0.000289	0.0356***	0.0401***	0.0276	0.0304*	-0.00503	-0.0155***	0.0131**
Wealth quintile (2nd poorest)	0.181	0.230*	-8.861	0.299*	0.0326	0.0591	-0.161	0.00184	-0.148*	0.0285	-0.0374
Wealth quintile (middle)	-0.223*	-0.128	29.32	0.429***	-0.127	-0.0132	-0.174	-0.125	-0.135*	-0.00584	0.0552
Wealth quintile (2nd richest)	-0.0650	-0.0207	39.82**	0.300**	-0.0979	0.0343	-0.240	-0.133	-0.0870	0.0966	-0.0124
Wealth quintile (richest)	-0.222	-0.323**	58.10*	0.685***	-0.0804	-0.0335	-0.211	-0.114	-0.169*	0.0907	0.156*
Constant	2.138***	1.177***	126.1**	1.227**	0.253	0.0647	1.214*	1.554**	0.670***	-0.0750	-0.187
Control mean	1.18	1.03	106.63	2.61	0.91	0.84	1.68	1.99	0.46	0.28	0.24
Observations	507	507	507	431	431	431	431	431	436	436	436
R-squared	0.103	0.103	0.087	0.092	0.089	0.087	0.035	0.048	0.059	0.068	0.100

Note: Robust standard errors are in parentheses. Tehsil fixed effects are controlled. Follow-up indicates at least 3 hours after the baseline (no attrition). Endline indicates 6 months after the intervention. Knowledge on Islamic teaching on FLFP is a Likert scale variable ranging from 0=never studied to 4=expert. Attitude to general FLFP is a variable taking a value of 0 if the father (brother) thinks it is not a good idea for women in general to work outside the home, 1 if he thinks it a good idea only if it is a white collar job, and 2 if he think it a good idea. Attitude to daughter(sister)'s (or daughter in-law's) FLFP is a variable taking a value of 0 if he thinks it is not a good idea for his daughter (sister) to work outside the home, 1 if he thinks it a good idea only it if it a white collar job, and 2 if he thinks it a good idea. Willingness to pay variable is an answer in PKR captured by the Dictator's Game. Attitude to general FLFP(women's responsibility constraint) is a variable of Likert-scale (0=strongly agree, 4=strongly disagree) based on the statement "Women should not work outside but should rather take care of family". Attitude to general FLFP (women's responsibility NOT constraint) is a variable of Likert-scale (0=strongly agree, 4=strongly disagree) based on the statement "Women should not work outside even if other household members (e.g., sisters) can take care of the family". Daughter(sister)'s work aspiration is a binary variable taking a value of 1 if she wants to work after completing education. Daughter(sister) actually looking for a job is a binary variable taking a value of 1 if she is actually looking for a job. Daughter(sister)'s opinion: father's attitude to her LFP is a variable taking a value of -1 if her father's (brother's) attitude toward FLFP became negative in the last 6 months, 0 if no change, and 1 if his attitude became positive. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 3: Regression Results: Attrition

	(1) Attrition
Positive	0.0352
	(0.0351)
Negative	0.0671*
	(0.0366)
Religiosity	0.00665
	(0.00902)
Patriarchy	-0.0327**
	(0.0158)
Daughter(sister)'s age	-0.0127***
	(0.00424)
Daughter(sister)'s education	0.00878
	(0.0474)
Head's age	0.00175
	(0.00164)
Head's marital status	-0.0759
	(0.0476)
Head's literacy	0.127**
	(0.0496)
Head's years of education	-0.00114
	(0.00408)
Wealth quintile (2nd poorest)	0.0391
	(0.0482)
Wealth quintile (middle)	-0.0276
	(0.0436)
Wealth quintile (2nd richest)	0.0784*
	(0.0452)
Wealth quintile (richest)	-0.0858**
	(0.0433)
Constant	0.285**
	(0.132)
Observations	507
R-squared	0.092

Note: Robust standard errors in parentheses. Tehsil fixed effects are controlled. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Figure 1: Timeline of RCT

Appendix

A Power calculation

We had determined the sample size when clustered random sampling was an option. However, a convenient sampling was finally chosen due to the feasibility (pilot) study prior to the survey.

We calculated the minimum samples size to assure 80% statistical power ($\beta = 0.8$). Let us set the null hypothesis ($H_0 : \mu = 0$) and the alternative hypothesis ($H_A : \mu > 0$).

$$Pr(reject \mu = 0 | H_A) \leq 0.8$$

According to the latest ILOSTAT 2019, the rate of college degree women who work outside the home is 25% (c.f., female labor force participation rate is 22%) in Pakistan. We calculate intracluster correlation, $\rho = 0.11$.

We calculate the minimum sample size, using the STATA command *clustersampsi* (allowing the correlation between baseline and outcome for which we use our former survey results in Pakistan). With $\mu 1 = 0.25$ for the control mean, $\mu 2 = 0.34$ for the treatment mean, $sd1 = 0.34$ for the control (and treatment) standard deviation, the correlation between the baseline and outcome being 0.8, the number of individuals per cluster being 10 ($n = 10$), and type I error at 5% level ($\alpha = 0.05$), which gives the minimum sample size per arm around $m = 180$, which is slightly larger than our sample size per arm 170 (the feasible size due to the budget constraint).

However, given that we dropped a clustered random sampling, the required sample size for our study is likely to be smaller than the estimate shown above. For a trial, we recalculate required sample size with $\rho = 0$, and that per arm is 100. Also note that the distribution of outcome to obtain the assumption such as $\mu 1 = 0.25$, is likely to be different in our sample since a random sampling was not taken. These caveats in mid, as there is little social interaction in the urban area compared to the rural area as is represented by no spillover effect, we safely consider the actual sample size per arm, 170, has 80% statistical power.

B Survey and Intervention Protocol

B.1 Baseline survey

1. Main respondent

   Male household members (fathers or any male decision makers such as elder brother, uncle, or grandfather) who has a decision-making power.

   We should arrange the survey to ensure the availability of respondents such as conducting it only on weekends. Doing surveys only on weekends though it perhaps takes more time to complete the whole baseline survey.

2. Unmarried daughter respondent (eligibility)

   Eligibility requires the girl should be unmarried, completed 14 years of education, and is not currently work for pay outside the home.

   We consider that unmarried girls are not eligible if they work full-time and physically work outside the home. If the daughter's income-earning job is not substantially different from working from home (such as teaching as tutors next door in the same community) and just a part-time job, then we consider the girl eligible, i.e., not "working outside the home". If they run their own school as a full-time business even in the vicinity of their home, we can treat them as full-time jobs.

   As for the definition of "white-collar" jobs, we follow the standard definition, i.e., any office work that does not require physical tasks including clerks, data entries, etc. that require basic skills as well as managerial jobs.

3. Independence of the respondents between Sections 1-5, and Section 6:

   Please make the best efforts to remove the influence of father on daughter's responses, and vice versa, i.e., daughter's presence on father's responses. If daughters are unavailable, as for Section 6, it is optional to survey daughters over the phone.

4. Questionnaire to the enumerators

   Please ask a few questions to the enumerators before they conduct the baseline surveys. We prepared the questionnaire to the enumerators as attached.

B.2 Intervention

1. Probability of each arm

   33% probability for each treatment arm.

2. Independence between the baseline survey and the intervention

   In order to ensure the independence between survey and the intervention, we propose the following.

   (a) Conduct the questions up to the section 5 to the male household member, followed by the section 6 to the daughter. Or if the daughter is not available, at the time of main survey, it's fine to conduct section 6 over the phone.

   (b) Detach the intervention and follow-up questions from the baseline survey, and conduct the intervention and follow-up questions independently from the baseline survey. To ensure the independence, the enumerator comes back to the

respondent after completing the next survey in the neighborhood. So there should be three hours difference. In order to keep the respondents interested in the study, please tell them that they can earn up to 1000 rupees in the activity that will be implemented with them after three hours. Therefore, the respondent should stay home to participate in the activity and earn money.

(c) Proceed the donation game (the instruction is in detail below).

(d) Right after the donation game, conduct the follow-up survey to the male respondent. Please record, independently from the baseline survey, at what time the follow-up survey was conducted.

Instructions for Enumerators

Dear enumerators, please note that some of the questions in the baseline and post-intervention surveys are identical. Please do not think that these questions are redundant. In fact, both sets of questions are equally important for our analysis. We want to compare the response from the baseline survey to the post-intervention survey to identify the impact of intervention on choices and behavior. Therefore, please read to the respondents every question in the baseline and post-intervention surveys carefully, and ensure that the respondent also gives full attention to every question.

During the intervention when participants make choices with real money, please ensure them that at the end of the study, the money they donate (if any money they donate) will be transferred to an organization in Lahore that is working to help females find employment. Gallup and researchers of this study will ensure that it happens in a swift and responsible manner.

3. How to proceed the game of donation decision

Mobile Payment Method

Instruction for Surveyors (enumerators)

(a) Handover the tablet to the respondent and instruct him to enter the money he would like to donate to the organization working for the promotion of female labor force participation.

(b) Instruct the respondent to make the decision anonymously, and proceed to the next screen. Please ensure the respondent that the enumerator will not know his donation decision.

(c) After the donation decision has been finalized, please obtain the tablet from the respondent and continue with the survey.

Instructions to Participants

Please note that in this section you need to decide with real money that will be provided to you in the form of mobile credit. On the tablet screen, you can see that you have been assigned 1000 rupees. If you want, you can keep all the money to yourself, which will be provided to you as mobile credit. If you want, you can donate any amount out of these 1000 rupees to an organization working to help women find employment in Lahore.

Please take the tablet in a separate room and enter the money (if any) in the provided space that you want to donate to the organization **working to help women find employment in Lahore**Afterwards, please push the next button. The experimenter will not know your decision, maintaining your privacy.

The money that you decide to donate will be transferred to the organization at the end of this study. The remaining money (1000- amount you donate) will be provided to you as mobile credit on your phone. The mobile credit will be transferred to you within two weeks.

Increase the credibility of their donation

The enumerators need to inform that the money collected at the end of the study for the FLFP organization will actually be transferred to an organization in Lahore. This improves credibility. In addition to the above explanation, we also provide an option to the interested respondents that we can send the picture of the receipt of the final transfer (cumulative of all participants) made to the organization to their smartphone (via whatsapp or any other app).

C Interventions

C.1 Positive Intervention

As a source of knowledge, I would like to share the following Islamic teachings and evidence that supports participation of women in *Halal* income generating activities. These guidelines have been checked and agreed by a religious scholar (*Aalim*).

I would like to start off with Quranic teachings because they are a guiding source for all Muslims.

1. **In Surah An-Nabaa verse 11, Allah says:**

"We have made the day for livelihood"

This verse suggests that one should work/earn in the daytime and this particular verse does not mention any gender therefore, it includes both men and women. Is-

lam does not forbid a woman from working even if she is not in need of money. She is allowed to work for all legitimate reasons such as earning extra money, working for her passion, or doing some community service, etc., provided everything is done within the limits set by Islam.

2. **In Surah Al-Qasas (surah 28, verse 22–23) it is mentioned:**

"And when he arrived at the waters of Madyan, he found a large number of people watering (their animals) and found, aloof from them, two women keeping (their animals) back. He said, "What is the matter with you?" They said, "We cannot water (our animals) until these shepherds take (their animals) back after watering them, and our father is very old man."

The above verses of Quran refer to the scenario where Prophet Musa (AS) went near the well and saw two females waiting for their turn to provide water to their animals. This passage shows that women have historically departed from their houses to perform necessary chores such as grazing animals.

3. **Examples from the life of Holy Prophet Muhammad (Peace be upon him)**

The life of Prophet Muhammad (PBUH) also serves as a role model for Muslims. A closer look at the life of Prophet Muhammad (PBUH) also reveals following interesting elements regarding participation of women in the income generating and other important activities.

(a) The first wife of Prophet Muhammad (PBUH) Hazrat Khadija (RA) was a very successful and well-known business woman. This example provides us

clear evidence that women can take up Halal professions.

(b) Jabir Ibn 'Abdullah (Allah be pleased with them) reported: My maternal aunt was divorced, and she intended to pluck her dates [from palm trees]. A person scolded her for having come out (during her waiting period). She came to the Prophet (PBUH) and he told her: "Certainly you can pluck (dates) from your palm trees, for perhaps you may give out charity or do an act of kindness." (Muslim, Sahih).

The teachings and events mentioned earlier indicate that women can work. A majority of religious scholars and sharia experts (mufti) also approve women's work.

C.2 Negative Intervention

As a source of knowledge, I would like to share the following Islamic guidelines for the participation of women in *Halal* income generating activities. These guidelines have been checked and agreed by a religious scholar (*Aalim*).

1. The work should be out of a need. For example, the female is not having any resource or bread earning member in the family. Similarly, women can also work if they want to support their family or old parents.

2. Women can also work even if she is not in need, provided her work does not hinder her other responsibilities as a wife and mother.

3. Women should seek permission of their guardian (husband or father) to work. If circumstances allow only one of them to work, then men will take precedence.

4. Islam has guided women about their dress code which they must follow all times, including work.

5. The work should not lead women to travel without a mahram or Muslim woman.

6. It is preferable that the societal environment must be either Islamic or friendly towards Muslims.

D Questionnaire

See attached for informed consent, baseline questionnaire, follow-up questionnaire, endline questionnaire, and phone-based follow-up questionnaire.

E Supplementary Tables and Figures

Table A1: Construction of Variables

Variable	Description
Outcome Variables	
Attitude to general FLFP (Follow-up)	0 = Not good idea for women in general to work outside home; 1 = Good idea only if it's a white-collar job; 2 = Good idea
Attitude to daughter/sister's FLFP (Follow-up/Endline)	0 = Not good idea for women in general to work outside home; 1 = Good idea only if it's a white-collar job; 2 = Good idea
Willingness to Pay (Follow-up)	Amount donated (in PKR) to Kashf Foundation
Knowledge: Islamic teaching on FLFP	"How would you rate your Islamic knowledge about female employment? 0 = Never studied; 1 = Bad; 2 = Neither good nor bad; 3 = Good; 4 = Expert"
Attitude to daughter-in-law's FLFP	0 = Not good idea for women in general to work outside home; 1 = Good idea only if it's a white-collar job; 2 = Good idea
Attitude to general FLFP (women's responsibility constraint)	Women should not work outside but should rather take care of family. Scale: 0 = Strongly Agree to 4 = Strongly Disagree
Attitude to general FLFP (women's responsibility not constraint)	Women should not work outside even if other household members can take care of the family. Scale: 0 = Strongly Agree to 4 = Strongly Disagree
Daughter/sister's work aspiration	1 = Wants to work after completing education; 0 = Otherwise
Daughter looking for a job	1 = Looking for a job; 0 = Otherwise
Daughter's opinion: father's attitude to her LFP	-1 = Became more negative; 0 = No change; 1 = Became more positive
Control Variables	
Wealth Index	Constructed using factor analysis of 16 valuable items (1 = Yes, 0 = No): radio, TV, bicycle, motorcycle/scooter, car, electric fan, AC, stove/gas burner/metal pots, wardrobe, washing machine, sewing machine, refrigerator, generator/UPS, wristwatch, wall clock, mobile phone. Divided into five quantiles

Patriarchy Index	Standardized sum of responses to 15 Likert-scale questions (1 = Strongly Disagree to 5 = Strongly Agree). Statements include views on gender roles, education, dowry, decision-making, and employment. Scale reversed so higher scores reflect conservatism. The exact statements are: 1. Household work (like cooking, washing, and cleaning) is the responsibility of all members and not just of women. 2. A woman does not need her husband's permission to visit her friends/relatives in the neighbourhood. 3. A woman does not need her husband's permission to visit outside the neighbourhood. 4. Women should go to cast their own votes. 5. The important decisions in the family should be made only by men of the family. 6. A woman should not argue with her husband even though she disagrees with him. 7. Boys should be more educated than girls. 8. If a girl continues to study up to the Master's level, that increases her chances of finding a better groom. 9. If a girl continues to study up to the Master's level, that decreases the amount of dowry that the parents need to pay. 10. Women should not work outside but should rather take care of the family. 11. Women should not work outside even if other household members (e.g., sisters) can take care of the family. 12. Income earned by a women should be remitted to her husband. 13. A woman should ask her husband for permission if she wants to work outside. 14. If a girl works outside home, that increases her chances of finding a better groom. 15. If a girl works outside home, that decreases the amount of dowry that the parents need to pay.
Religiosity	• Ritual-Based: Frequency of daily prayers (0 = Don't pray; 5 = Prays five times a day) • Belief-Based: Self-declared religiosity (1 = Very religious; 5 = Not at all religious, reversed so higher = more religious) • Knowledge-Based: Overall Islamic knowledge (1 = Expert; 5 = Never studied, reversed) • Religiosity Index: Sum of above three measures; higher = more religious
Note: The first three outcome variables are elicited immediately after the intervention. Attitude to daughter/sister's FLFP and remaining outcomes are from endline. Quran recitation frequency (1 = Daily; 8 = Don't Recite) is used in robustness checks with no change in findings.	

Table A2: Impacts of Islamic Teaching on FLFP (without any controls)

Comparable to Table 2 columns	Follow-up		Endline	
	(1) Attitude to general FLFP	(2) Attitude to daughter(sister)'s FLFP	(5) Attitude to daughter(sister)'s FLFP	(9) Daughter's work aspiration
T(Positive)	0.180*	0.260***	0.191*	0.137**
	(0.0943)	(0.0969)	(0.104)	(0.0579)
T(Negative)	0.0809	0.0920	0.0806	-0.0124
	(0.0972)	(0.0996)	(0.105)	(0.0586)
Constant	1.181***	1.030***	0.912***	0.463***
	(0.0701)	(0.0712)	(0.0723)	(0.0410)
Control mean	1.18	1.03	0.91	0.46
Observations	507	507	431	436
R-squared	0.007	0.014	0.008	0.018

Note The table shows only coefficient estimates that are significant in Table 2. Robust standard errors are in parentheses. Follow-up indicates at least 3 hours after the baseline (no attrition). Endline indicates 6 months after the intervention. Attitude to general FLFP is a variable taking a value of 0 if the father (brother) thinks it is not a good idea for women in general to work outside the home, 1 if he thinks it is a good idea only if it is a white collar job, and 2 if he thinks it is a good idea. Attitude to daughter(sister)'s (or daughter-in-law's) FLFP is a variable taking a value of 0 if he thinks it is not a good idea for his daughter (sister) to work outside the home, 1 if he thinks it is a good idea only if it is a white collar job, and 2 if he thinks it is a good idea. Daughter(sister)'s work aspiration is a binary variable taking a value of 1 if she wants to work after completing education. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3: Impacts of Islamic Teaching on FLFP (religiosity, patriarchy not controlled)

Comparable to Table 2 columns	Follow-up		Endline	
	(1) Attitude to general FLFP	(2) Attitude to daughter(sister)'s FLFP	(5) Attitude to daughter(sister)'s FLFP	(9) Daughter's work aspiration
T(Positive)	0.183**	0.268***	0.184*	0.133**
	(0.0912)	(0.0939)	(0.103)	(0.0582)
T(Negative)	0.0843	0.108	0.102	-0.0206
	(0.0941)	(0.0957)	(0.104)	(0.0585)
Daughter(sister)'s age	-0.0549***	-0.0384***	0.0114	-0.00866
	(0.0131)	(0.0141)	(0.0144)	(0.00848)
Daughter(sister)'s education	0.404***	0.225	0.245	0.206**
	(0.129)	(0.139)	(0.148)	(0.0829)
Control mean	1.18	1.03	0.91	0.46
Observations	507	507	431	436
R-squared	0.097	0.095	0.084	0.054

Note The table shows only coefficient estimates that are significant in Table 2. Robust standard errors are in parentheses. Follow-up indicates at least 3 hours after the baseline (no attrition). Endline indicates 6 months after the intervention. Attitude to general FLFP is a variable taking a value of 0 if the father (brother) thinks it is not a good idea for women in general to work outside the home, 1 if he thinks it a good idea only if it is a white collar job, and 2 if he thinks it a good idea. Attitude to daughter(sister)'s (or daughter in-law's) FLFP is a variable taking a value of 0 if he thinks it is not a good idea for his daughter (sister) to work outside the home, 1 if he thinks it a good idea only if it is a white collar job, and 2 if he thinks it a good idea. Daughter(sister)'s work aspiration is a binary variable taking a value of 1 if she wants to work after completing education. Other controlled variables are the same as those included in Table 2 except for religiosity and patriarchy measures. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A4: Mutilple Hypothesis Testing

	Follow-up			Endline							
	(1) Attitude to general FLFP	(2) Attitude to daughter(sister)'s FLFP	(3) Willingness to pay	(4) Knowledge: Islamic teaching on FLFP	(5) Attitude to daughter(sister)'s FLFP	(6) Attitude to daughter-in-law's FLFP	(7) Attitude to general FLFP (resp. constraint)	(8) Attitude to general FLFP (no resp. constraint)	(9) Work aspiration	(10) Actually looking for job	(11) Daughter(sister)'s opinion: father's attitude to her LFP
T(Positive)	0.192**	0.271***	-8.720	0.0341	0.197*	0.152	0.0476	-0.0559	0.141**	0.0491	0.0435
	(0.0914)	(0.0944)	(17.04)	(0.111)	(0.103)	(0.109)	(0.170)	(0.167)	(0.0582)	(0.0541)	(0.0530)
p-value	0.046	0.005	0.465	0.759	0.057	0.167	0.779	0.738	0.016	0.365	0.412
Romano-Wolf p-value	0.067	0.016	0.605	0.981	0.223	0.496	0.981	0.981	0.040	0.589	0.589
T(Negative)	0.0968	0.121	-9.904	-0.0160	0.101	0.109	0.230	-0.122	-0.0183	-0.0236	-0.0780
	(0.0947)	(0.0963)	(17.68)	(0.115)	(0.104)	(0.111)	(0.170)	(0.166)	(0.0587)	(0.0525)	(0.0494)
p-value	0.371	0.262	0.451	0.889	0.334	0.328	0.177	0.461	0.756	0.653	0.115
Romano-Wolf p-value	0.527	0.427	0.591	0.872	0.735	0.735	0.556	0.735	0.714	0.688	0.254

Note: Other controlled variables are the same as those included in Table 2. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A5: Impacts of Islamic Teaching on FLFP (ANCOVA)

	(5) Attitude to daughter(sister)'s FLFP	(9) Daughter(sister)'s work aspiration
T(Positive)	0.178*	0.132**
	(0.0987)	(0.0541)
T(Negative)	0.114	0.000327
	(0.0982)	(0.0560)
Baseline outcome variable	0.346***	0.367***
	(0.0506)	(0.0478)
Religiosity	-0.0296	-0.00759
	(0.0248)	(0.0144)
Patriarchy	-0.0735*	0.00675
	(0.0406)	(0.0242)
Control mean	0.91	0.46
Observations	431	436
R-squared	0.183	0.173

Note. The table shows only coefficient estimates that are significant in Table 2, and for those of which the baseline outcome variables are available. Robust standard errors are in parentheses. Other controlled variables are the same as those included in Table 2. Attitude to daughter(sister)'s FLFP is a variable taking a value of 0 if he thinks it is not a good idea for his daughter (sister) to work outside the home, 1 if he thinks it a good idea only if it is a white-collar job, and 2 if he thinks it a good idea. Daughter(sister)'s work aspiration is a binary variable taking a value of 1 if she wants to work after completing education. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table A6: Impacts of Islamic Teaching on FLFP (Interaction Terms)

Comparable to Table 2 columns	Follow-up		Endline	
	(1) Attitude to general FLFP	(2) Attitude to daughter(sister)'s FLFP	(5) Attitude to daughter(sister)'s FLFP	(9) Daughter's work aspiration
T(Positive)	0.0969	0.160	0.297	0.222**
	(0.166)	(0.175)	(0.187)	(0.105)
T(Negative)	0.0370	0.0757	0.0454	-0.0273
	(0.179)	(0.183)	(0.186)	(0.106)
Religiosity	-0.184	-0.121	-0.111	-0.0611
	(0.134)	(0.133)	(0.145)	(0.0821)
T(Positive) × Religiosity	0.195	0.181	-0.268	-0.144
	(0.185)	(0.191)	(0.208)	(0.119)
T(Negative) × Religiosity	0.152	0.124	0.0335	0.0350
	(0.193)	(0.199)	(0.209)	(0.120)
Patriarchy	0.0453	0.0551	-0.101	0.0397
	(0.137)	(0.138)	(0.146)	(0.0826)
T(Positive) × Patriarchy	-0.0408	0.0173	0.125	0.0181
	(0.187)	(0.191)	(0.205)	(0.118)
T(Negative) × Patriarchy	-0.0669	-0.0693	0.0613	-0.0249
	(0.193)	(0.198)	(0.211)	(0.121)
Control mean	1.18	1.03	0.91	0.46
Observations	507	507	431	436
R-squared	0.101	0.097	0.101	0.068

Note The table shows only coefficient estimates that are significant in Table 2. Robust standard errors are in parentheses. Follow-up indicates at least 3 hours after the baseline (no attrition). Endline indicates 6 months after the intervention. Attitude to general FLFP is a variable taking a value of 0 if the father (brother) thinks it is not a good idea for women in general to work outside the home, 1 if he thinks it a good idea only if it is a white-collar job, and 2 if he thinks it a good idea. Attitude to daughter(sister)'s FLFP is defined similarly. Daughter(sister)'s work aspiration is a binary variable taking a value of 1 if she wants to work after completing education. Other controlled variables are the same as those included in Table 2. Note that religiosity and patriarchy are binary variables constructed based on median values. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

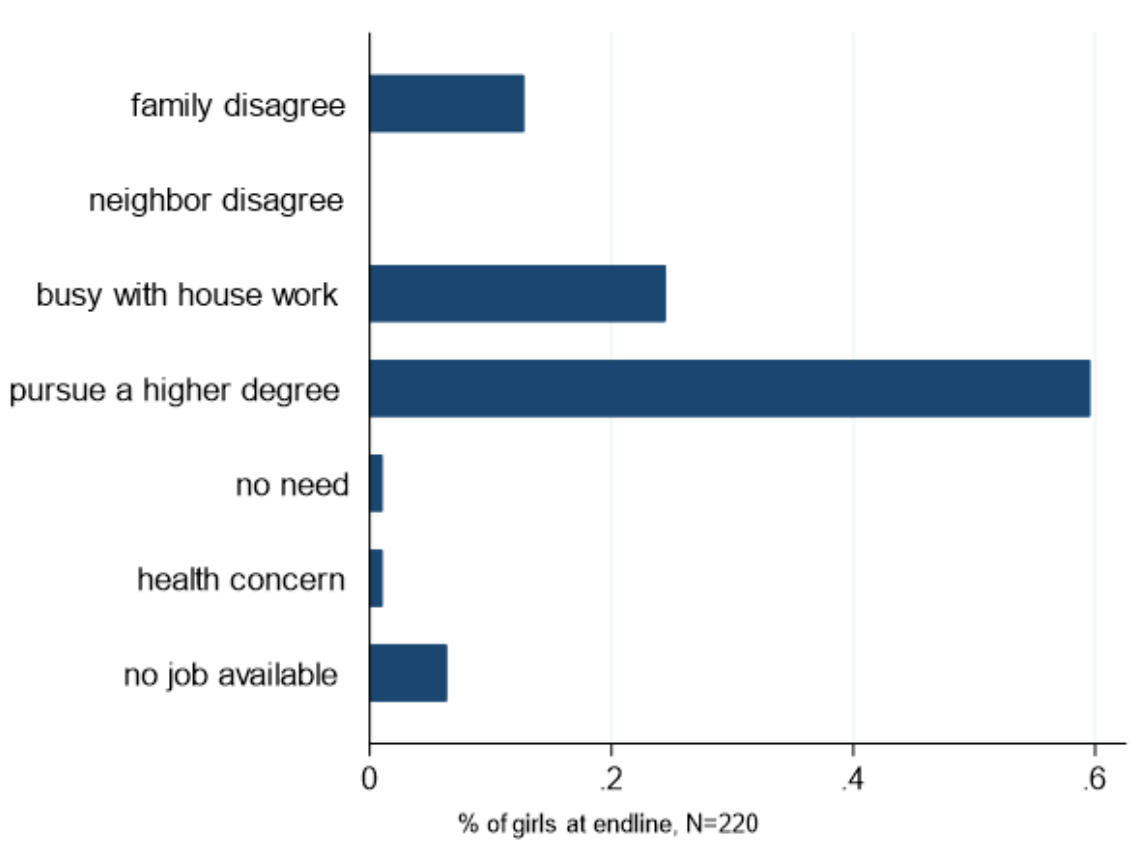

Figure A1: Why not looking for a job? (% of girls who are not currently seeking a job but aspire to work, N=220)