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Study Protocol for a Randomized Health and Social Literacy Intervention to Improve Maternal Health in Pakistan

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Abstract

Many poor and illiterate women in reproductive years in Pakistan live in underdeveloped areas and are solely dependent on free primary health services provided by the state through the Lady Health Worker (LHW) Programme. These women need higher health and social literacy to make informed health decisions and receive inferior services from overburdened LHWs. This project aims to deliver a health and social literacy intervention by integrating Community Social Workers (CSWs) at the primary level to promote maternal health in the country. A 24-month intervention with six health and social literacy modules will be delivered by trained CSWs. Multistage randomized sampling will be used to sample 6 BHUs across six cities from six districts of Punjab, Pakistan. A total of 360 women will be sampled and assigned randomly to the experiment and control groups. Pakistan needs to catch up on its sustainable development goals for maternal health, not just due to the limitations of the existing services, but also due to the low health and social literacy of women, which prevents effective uptake. Each LHW is expected to have an estimated 1,500 women clients for multiple services, which makes support for women's literacy and awareness difficult. Integrating a partner workforce or CSWs to support disadvantaged women for improved maternal health outcomes is critically needed. The results of this intervention will advise policymakers and stakeholders about long-term plans for literacy support of women and the integration of CSWs in the primary healthcare setup.

Keywords

Community social workers
Health literacy
Lady health worker
Maternal health
Primary healthcare
Social literacy

INTRODUCTION

The World Health Organization (WHO) has identified that building an effective primary health structure, with a focus on preventive healthcare, is the best approach to achieving the Sustainable Development Goals (SDGs) for maternal health (Dussault et al., 2018). High-income countries have improved maternal health indicators by strengthening the primary workforce with community social workers (CSWs) (Pivoriene & Bardauskiene, 2016). Countries from the Global North, like Canada and the Nordic nations, have gained favourable health outcomes at primary level for maternal and child health through the integration of social workers, who constitute one of the largest groups of inter professional health workers in supporting women's health and well-being (Larsen et al., 2020; Tadic et al., 2020). The main aim of CSWs has been to identify the social determinants of health and support improved literacy and decision-making of vulnerable groups like women, children, the elderly, and people with disabilities (Jefferys, 1965; Walt et al., 1989; Hesselink et al., 2009; Baum et al., 1997; Wadsworth, 1982; Mitchell & Shortell 2000; Banks, 2020). CSWs have successfully provided relief and improvement for primary health services of women through the following means: (i) Building databases and performing risk assessment; (ii) Directly providing or referring for counselling and therapy; (iii) Assisting in capacity building for financial inclusion of women; (iv) Collaborating with other professions for program development and policy intervention; (v) Improving social and health services through need assessment, liaising and referral; (vi) Developing community linkages and partnerships with community and government resources; and (vii) Providing education, literacy, and skill development to adult women in need (Dhavaleshwar, 2016; Gross et al., 1983; Jordan, 2000; Pawar, 2019; Weiss-Gal & Gal, 2014 & 2020).

Majority of Women in Pakistan are Dependent on Primary Healthcare

Approximately 110 million women in Pakistan depend on primary health services provided free of cost by the government within their community (Goujon et al., 2020). This is due to multiple reasons, such as poverty, unemployment, informal sector employment, and lack of universal health insurance (as cited by Wasi, 2022). Though the government Sehat Sahulat Programme claims to provide universal coverage in the country, its reach is minimal, at 5 million people to date, and it needs to be more focused on maternal health services. It is limited mainly to coverage for hospitalization (Tariq et al., 2021). Because of this,

Pakistan has one of the most significant out-of-pocket healthcare expenditures at 90% (as cited in Malik et al., 2017), with less than 1% of women covered by the private health insurance sector (Malik et al., 2015).

Maternal health indicators are not favourable in the country, with neonatal mortality at 55 per 1,000 live births and maternal mortality ratio at 274 per 1,000 live births (Zakar et al., 2017). Pakistan faces multiple social issues that compromise the health of the mothers, such as cultural traditions that dismiss health-seeking behaviour, lack of permission to visit healthcare providers due to honour and patriarchy, and lack of access to digital technology and information which can provide updated information about health services (Afsar & Younus, 2005; Hafeez et al., 2011). With pluralistic societies like Pakistan, which has immense cultural barriers to uptake of maternal health services for women, the role of the state in delivering culturally appropriate and well-designed primary services is critical (Hutchison et al., 2011).

Pakistan's Primary Level Services for Maternal Health

One of Pakistan's main governance challenges is improving the primary healthcare system (Zain et al., 2021). The total government health expenditure as a proportion of GDP is 0.8% (Malik et al., 2017). From this meager allocation, the primary health sector is known to be allocated the least portion compared to the tertiary sector (Ahmed & Shaikh, 2011). The country needs accurate data about comprehensive maternal health issues and unmet targets (Yaqoob et al., 2017). The primary health workforce for women's health comprises the Lady Health Worker (LHW) programme. LHWs visit women's homes in the community and can also be found at the community basic health units (BHUs). The LHWs are responsible for reproductive and maternal health services, vaccination and immunization, promoting health awareness, referral to the secondary and tertiary sectors, and routine counselling (Lassi et al., 2020). With the coronavirus pandemic, the additional burden of infection control and preventive education has been placed on LHW shoulders (Jafree et al., 2022).

There are currently 4,996 BHUs serving a population ratio of 1:10,000 and 110,000 LHWs serving a population of 1,000-1,500 women clients in the country (World Health Organization, 2017). These ratios reflect the excessive burden on each LHW. Excessive role burden, understaffing and low salaries are significant challenges to the motivation, job commitment, and service quality of LHWs (Hafeez et al., 2011). Furthermore, many women living in underdeveloped regions of Pakistan still need access to BHUs or receive door-to-door visits by LHWs (Habib et al., 2021). LHWs visit the homes of their women clients monthly, but the duration is short, with little time for discussion to improve literacy and awareness (Panezai et al., 2017). One way forward to tackle the work burden of LHWs and service inefficiencies of the BHUs is the integration of local peers and CSWs into the team. CSWs have yet to be utilized to help improve primary health services or support the development of a social policy protection floor for women in Pakistan (Riaz, 2018), as they have successfully done in developed countries (Ashcroft et al., 2018).

Health and Social Literacy

Although several efforts have been made to improve health awareness in Pakistani women, there still needs to be critically low health literacy or the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others (Abdullah & Zakar, 2020). Low health literacy is associated with demographic characteristics such as: illiteracy or limited education, lower income, conservative family structures, and living in underprivileged regions (Hickey et al., 2018). The consequences of low health literacy for women are not just limited to self-care but extend to the care and health management they can provide to children, families and other dependents (Phommachanh et al., 2021). Women are considered primary care providers within the home, so improved health literacy is critical to improving health indicators and family well-being. In addition, there are immense financial and social burdens placed on the healthcare system due to low health literacy in women, making this area a high priority for Pakistan.

Women in Pakistan are also known to be plagued with low social literacy or the ability to interpret

and deal with life situations and challenges (Arthur & Davison, 2000). Social literacy skills and social knowledge are essential for women to understand, communicate and deal with complex situations through emotional intelligence (Az-Zahra et al., 2018). Social literacy can help women resolve differences in opinions and conflict by identifying the cultural context and developing critical thinking (Glennerster et al., 2018). Many high-income countries have included social skills in their educational curriculum to secure development in areas of personal and health well-being (Arthur et al., 2014). Many women in Pakistan are facing multiple challenges related to culture and family, poverty and employment, climate change and environment, and thus, social literacy skills would help them to manage their circumstances and relations to improve their health and well-being.

Significance and Aim of Intervention

Disadvantaged women from developing, conservative, and patriarchal regions like Pakistan, require both health and social literacy skills to negotiate and communicate with family and outsiders in a way that their own and their children's well-being is secured without compromising family traditions and values. By gaining skills in health and social literacy, women can better recognize differences in practices, beliefs, and values, and thus learn how to deal with multiple agents, including in-laws, spouses, and community healthcare providers. For women who have yet to be educated or schooled in a setup that has trained them for health and reproductive education or critical thinking, as in Pakistan (Svanemyr et al., 2015), an intervention for health and social literacy in their adult years is imperative. LHWs regularly complain about the low health literacy and social skills of women clients, who are unable to modify health behaviour for positive health outcomes (Jafree et al., 2020).Thus, in summary, there are two neglected issues affecting maternal health targets in Pakistan. Firstly, uptake by women from disadvantaged backgrounds is not optimal due to low health literacy and low social literacy. Secondly, the quality of primary-level services needs to be improved due to the excessive burden of existing LHWs. Instead of this, the objective of this intervention is to (a) train local peers or CSWs to deliver a 24-month intervention for health and social literacy of women of reproductive years belonging to underserved primary communities and (b) using a pre-post survey, assess the impact in women on three health literacy areas: i. Reproductive and child health; ii. Hygiene, nutrition, and immunity building; and iii. Health-risk behaviour modification) and three social literacy areas i. Mental accounting and savings habits; ii. Attitudes about women's role and knowledge of women's rights; and iiii. Women's critical thinking ability.

METHODS

This is a randomized control trial that uses a pre-post-test design to measure the impact of a health and social literacy intervention delivered to women in reproductive years. The Recommendations for Interventional Trials (SPIRIT) checklist (Chan et al., 2017) has been used to plan this project. All surveys and intervention material have been translated into Urdu by bilingual team members using the forward-backwards method.

Recruitment and Selection Criterion of Data Collectors and Intervention Facilitators

Help from the currently working LHWs and the Punjab primary healthcare department will be taken to recruit local peers and CSWs to deliver social and health literacy interventions. This will help in the following ways:

- LHWs will be able to identify women within the community whom the participants accept as 'insider' members
- LHWs will be able to identify women who are interested in working on the project and staying with it for the next two years
- There will be a higher chance of LHWs and CSWs supporting each other

The selection criteria for CSWs will be i. Married with children; ii. Permanent community residents; and iii. Minimum secondary schooling or 10th grade. As soon as the funding was secured, the recruitment

for participants and intervention facilitators started on June 22, and CSW training was conducted in July 2022. The intervention started in August 2022, following the timeline committed to the funding body.

Training and Fidelity of Intervention Facilitators

The CSWs were trained over one month through online videos and calls, including Skype meetings, Zoom meetings, and a WhatsApp group. These platforms allow the exchange of written text, audio messages, and video calls. The training support and communication will remain through the 24-month study period, and PI will be in daily contact with the CSWs through the WhatsApp group. One or two members of the PIs will be available on WhatsApp during the monthly group literacy sessions to support the CSWs and communicate with the women participants when and if needed. Video tutorials have also been recorded and sent to the CSWs, so they can watch training videos more than once and when needed. CSWs have also been provided laminated content material to use and shared with participants through the intervention period for reinforcement. Continuous communication through online means and periodic visits by different PIs to the site will give a chance for clarification, feedback and troubleshooting of any problems during the intervention. The PIs will also be able to communicate with participants online and answer questions if needed.

Randomization and Masking of Participants for Health and Social Literacy Intervention

The selection criteria for the women participants are i. Women of reproductive years; ii. Women currently enrolled in the LHW programme; and iii. Women who reside in the selected underdeveloped communities (having low literacy and poverty). We will be sampling women from Punjab, the most populated province of Pakistan, with an estimated women population of 55 million [18]. The existing list of female clients enrolled with LHWs will be used to randomly select every third female participant for inclusion in the study. Informed consent will be taken from women participants (see Appendix A), who will then be allocated to a control and experiment group. The experiment group will be sampled from three BHUs across three cities (Lahore, Faisalabad, and Multan) and two CSWs will be recruited in each area to deliver the intervention (Table 1). Three BHUs from three other cities (Islamabad, Gujranwala, and Sialkot) will be sampled to include women in the control group. All six cities in the study are comparable in terms of population size and level of development. The sample size has been derived through the Taro Yamane formulae: n= N/ (1+N (e) 2), where 'N' signifies the population under study. We estimated the female population receiving services from LHWs to be 65.4, as it is reported that 100,000 LHWs work in the country to serve 60% of the female population (Wazir et al., 2013). Based on the formulae and budget limitations, we targeted a final sample of 360 women of reproductive years: 180 in the experiment group and 180 in the control group. The CSW intervention facilitators and the women participants will know which group they are allocated to. However, they will not know the study hypotheses, and in this way, there will be less chance of contamination or biased results.

The Health and Social Literacy Intervention

The health and social literacy intervention will be a 24-month project, starting in August 2022 and lasting till August 2024. The CSWs will deliver their monthly group sessions to 10 women participants and coordinate to include women living closest to each other in each group. Each CSW will be responsible for 30 participants and deliver monthly group sessions at a ratio of 1 CSW:10 women participants. In this way, each CSW will host three monthly group sessions to cover all their allocated participants. In alternative months, a target of 10 female community members and family members, including husbands and mothers-in-law, of the intervention participants will be included in the group sessions. The monthly group session will take place at the most convenient location for the participants, which may include the open space outside the BHU, the home garden or veranda area of the CSW, a volunteer participant from the group, or a volunteer from the community. The choice will depend on permission, convenient distance for all participants, and the space that provides the most privacy. The data and pictures about participant attendance and monthly intervention coverage will be transferred through WhatsApp to the PI, who will save the data on Google Drive.

The Pre-Post-Test Survey

The impact of the intervention will be measured based on the results from a pretest and post-test survey (Appendix B). Each of the six literacy sub-areas will be covered in monthly group sessions comprising 24 points of contact (Appendix D-H), and each literacy sub-area will be covered a minimum seven to nine times (Appendix I). The PIs have prepared the guidelines for the intervention literacy content and include checklists, case studies, group activities, brainstorming sessions, and community social services information (for example, local loan services and insurance providers), which will help to elaborate on the training, promote understanding, reinforce knowledge areas, and help in absorption and retention. This will help to promote the transfer of literacy to practice in the long run. The six sub-areas of the health and social literacy include:

Health Awareness & Literacy: Reproductive and Child Health

We will use the following standardized international survey, with modification and regional relevancy, for the health awareness and literacy intervention for reproductive and child health: "Knowledge and Reported Practices of Women on Maternal and Child Health" (Kanu et al., 2014). The following domain areas will be measured, including: i. Pregnancy and antenatal care; ii. Health knowledge; iii. Accessing health care; iv. Vaccination coverage; v. Child's father/husband's involvement in maternal and child care; and vi. Household factors (e.g., hygiene, water and food preparation, waste disposal, and toilet quality).

Health Awareness & Literacy: Hygiene and sanitation & Nutrition and Immunity Building

The following two surveys will be used to promote health awareness and literacy in hygiene and sanitation, nutrition, and immunity-building interventions, with modifications and regional relevance: i. "National Sanitation and Hygiene Knowledge, Attitudes, and Practices Survey" (Lee et al., 2021) and ii. "The Dutch Nutrition Centre Survey" (Szwajcer et al., 2012). The following domain areas will be measured including: i. Awareness of hygiene and sanitation; ii. Practices for hygiene and sanitation; iii. Knowledge and salience of nutrition; iv. Preoccupation with nutrition and immunity building; and v. Deliberate control of nutrition behaviour.

Health Awareness and Literacy: Health-Risk Behaviour Modification

The following standardized international survey will be used for the health awareness and literacy for health-risk behaviour modification intervention: "Kilifi Health Risk Behaviour Questionnaire" (KRIBE-Q) (Ssewanyana et al., 2018). The following domain areas will be measured including i. Prevention for Injury and Violence; ii. Use of intoxicants; iii. Neglect of chronic disease management; iv. Physical Activity Behaviours; and v. Seeking health consultancy and follow-up.

Social Awareness and Literacy: Mental Accounting and Savings Habits

We will use a Bangladeshi scale to measure women's mental accounting and saving habits (Buchmann et al., 2018). The authors developed these questions with the support of Abdul Jameel Latif Poverty Action Lab. The following domain areas will be measured i. Habits for formal and informal savings; ii. Planning and budgeting according to house and family needs, for short-run and long-run; and iii. Habits for loan repayment and future income-earning possibilities.

Social Awareness & Literacy: Attitudes about Women's Role and Knowledge of Women's Rights

We will use items from a study to measure attitudes about women's role and knowledge of women's rights (Nyqvist & Jayachandran, 2017). Abdul Jameel Latif Poverty Action Lab has also used these items to measure women's role and knowledge of women's rights (Glennerster et al., 2018). The following domain areas will be measured: i. Attitudes about women's roles, compared to men; ii. Attitudes about daughter's roles; and iii. Knowledge of women's rights; and vi. Social Awareness and Literacy: Women's critical thinking ability. Items from two studies will be used to measure women's critical thinking ability (Facione, 2011; Marnı et al., 2020). Abdul Jameel Latif Poverty Action Lab has also used these studies to

measure women's critical thinking ability (Glennerster et al., 2018). The following domain areas will be measured related to skills for: i. Interpretation; ii. Analysis; iii. Evaluation; and iv. Inference.

Data Analysis

The data will be analysed using SPSS and STATA. The pre-post-test results will be used to show the impact of the intervention on women participants' health and social literacy. The dependent variables will be 'health literacy' and 'social literacy' of women respondents, and the independent variables will be the 'socio demographic characteristics' of the women. Multiple linear regression will show higher odds of improvement in participants' intervention. P values of less than 0.05 will be considered significant for this study and confidence intervals will be reported.

Cost Analysis

The PIs have received a grant award of USD 8,030.38 for this project. The budget head for payment to intervention facilitators is USD 2,178.48. The PIs will transfer their allocated share of grant money to pay the CSWs a monthly stipend for their work on the project of USD 30.25 over the two years. The lower allocation of intervention budgets for social science, public health, and women's health research projects is a well-documented problem in Pakistan (World Bank, 2011). The final publications will include a detailed cost analysis to advise policymakers about role allocation and salary expectations of community health workers in Pakistan.

Data Audit

The PI team will conduct the research project and data analysis. The funding body will not be involved in the research stages, data collection or analysis. The project and data will be audited by Forman Christian College University (FCCU), Department of Office of Research, Innovation and Commercialization (ORIC). A six-monthly progress report will be shared with FCCU ORIC, the senior consultants for the project, and the sectoral collaborators for audit, feedback during the intervention and overall assessment at the end of the project.

Data Storage and Sharing

All the project data, including soft copies (Google Drive data) and hard copies, will be stored safely with the team's lead PI (SRJ). Participants' names will be coded and anonymized before datasets are shared with other researchers or publication bodies.

Patient and Public Involvement

This study includes perception-based surveys and literacy interventions, which do not involve clinical interventions or risks to the participants.

Pilot Test

The pretest and post-test survey pilot test were held in July 2022. Two LHWs and approximately 15 women participated. These participants are not part of the final intervention, but the pilot test helped finalize the questions and the translation.

Project Investigators

An interdisciplinary team from the social sciences (sociology, education, economics, public health, and clinical psychology), humanities (mass communications, English language centre), and life sciences (medical physician) will oversee the project. Senior researchers from FCCU will support the project for peer review, consultancy, budget supervision, and audit. Sectoral consultancy and support from LHWs for recruiting CSWs will be provided by The Primary & Secondary Healthcare Department, Punjab, Office of the Director General Health Services, Policy and Strategic Planning Unit (PSPU).

Dissemination

We intend to hold workshops and seminars to disseminate results with key stakeholders, policymakers, and the health sector. We also intend to publish our findings in reputed international, open-access academic journals.

Discussion

The proposed project aims to improve primary healthcare services and preventive health practices for women, specifically related to maternal health. The existing primary healthcare team needs to be more financially funded and efficient. This study aims to partner CSWs to improve service delivery for health and social literacy in women. Health literacy aims to improve awareness and practices for i. Reproductive and child health; ii. Hygiene, sanitation, nutrition, and immunity building; and iii. Health-risk behaviour modification. The social literacy intervention aims to improve awareness for i. financial accounting and savings habits; ii. Attitudes about women's role and knowledge of women's rights; and iii. Women's critical thinking ability. We intend to deliver these six modules of the interventions through CSWs, who are trusted and accepted 'insider' community women. In Pakistan, child health and family health are the responsibility of mothers of the household. Thus, literacy and awareness of women will positively impact children's and families' well-being.This project will build a case for service efficiency at the primary level and add to labour market innovations and demand-side employment in Pakistan. Pakistan is in critical need of strengthening the health workforce (Ariff et al., 2010) and creating jobs for women in the country (Tunio et al., 2021). Our project will provide impetus for the integration of CSWs at the primary level, which can create thousands of jobs per year for Pakistan, help develop both the health sector, and provide opportunities for more health workforce development, like integrating public health officers (Saxe Zerden et al., 2019). In this way, this applied research project will benefit the following two industries of the country (i) Health industry – by building primary health services for maternal and child health and improving preventive behaviours; and (ii) Human resource industry – by creating a demand for CSWs in the heath sector and at the community level.

Pakistan must meet SDGs to establish good health and well-being, reduce gender-based inequality, or build partnerships for goals. Our project intends to address all three gaps by strengthening the primary health service sector, delivering health and social literacy, and adding CSWs to the primary healthcare team. Targeting gender equality in health and social services for disadvantaged women is needed, especially considering that the COVID-19 pandemic has directed policy and budget to infection control and health costs. It is also true that improving maternal literacy and preventive health will help reduce national health costs in the long run, which are estimated at USD 45 billion (Olsen et al., 2011). Models of primary care from the developed world confirm that preventive health services in the primary sector save lives and health costs over time (Rohde et al., 2008).There needs to be more funding and attention to develop social policy in partnership with health policy or expanding preventive health services in the country. The Sehat Sahulat Programme mainly covers hospitalization and has yet to consider service improvement and strengthening of the primary health sector. Overall, interventions at the primary level have tended to focus on satisfying cultural customs by training and supporting TBAs and local midwives (Zakar et al., 2017). This has limitations as there is complete neglect for strengthening human resources at the primary level, and partnering providers with overburdened LHWs (Lakhani et al., 2016). Furthermore, primary healthcare interventions usually assess women participants' satisfaction and neglect to improve the quality of services provided by the primary healthcare team (Budosan, 2011).

Limitations

Community acceptance of primary healthcare providers and social support officers is always a problem in Pakistan due to cultural barriers. Choosing women CSWs from within the community is expected to help with acceptance and participation. To help recruit and reduce the risk of CSWs dropping out from the project, we will recruit CSWs from within the community who are married and permanently settled in the area and through the help of LHWs. The LHWs would be asked to recommend CSWs known to them and who are part of their close community circle, so there is social pressure to complete the study.

There is a risk of violence and abuse against women community health providers in the country (Shaikh et al., 2020). To prevent such a risk, we will be sampling functioning BHUs that serve a population of above 5,000 people so that the area is reasonably populated and where the LHWs program is already operational and accepted. This is another limitation of the study in that we will not be sampling women who do not have access to BHU services.

As LHWs in Pakistan serve a large group of women (up to 1,500 clients), they must travel quite a bit in the community to provide door-to-door services (Lady Health Workers' Strategic Plan, 2022). We will have to include women intervention participants who live close to each other and near the BHU to participate in the monthly group sessions. In this way, women participants who live at a distance and have time restrictions due to family and work commitments may not be part of the final sample. The impact of the study results will be based on perception-based surveys. Though there is planning to prevent contamination yet, there is a risk of biased responses. However, because no clinical interventions are involved, this study has no risks to patient safety. Due to the intervention being planned for 24 months, there is also the risk of dropout of women participants. To mitigate participant dropout risk, we have planned client satisfaction surveys for feedback and intervention modification to suit participants. In addition, there will be family sessions every alternative month to encourage household support for retention. We have also planned to take informed consent from male heads of household so they would be on board for women's active participation in the study. This is a practice that is known to support women participants from conservative regions to comfortably take part in a study that involves visitation and contact over some time.

Declarations

Ethics Approval and Consent to Participate

Ethics approval for this study has been received from the Institutional Review Board of Forman Christian College University (FCCU IRB reference code: IRB-257/04-2021). Anonymity, confidentiality, and the safety of participants will be guaranteed. There is no risk to participants as the study involves no clinical interventions. Informed consent (attached with appendices) will be taken from all participants before data collection and intervention delivery. The study will be performed by considering the ethical policy laid down by the Declaration of Helsinki.

This study has been registered with ClinicalTrials.gov. The identification number is: NCT05389501. It has also been submitted as a pre-print to Research Gate to support information sharing about trials, so other researchers can plan their interventions accordingly.

Competing Interest

The authors reported no potential conflict of interest.

Authors' Biography

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