

BMJ Open Narrative synthesis systematic review of Pakistani women's health outcomes from primary care interventions

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ABSTRACT

Objective Women living in Pakistan have complex health problems including infectious and non-communicable diseases, accident and injuries, and mental health problems. While a majority of these women rely on primary healthcare services for all of their healthcare needs, there has to date been no overview of the extent of their effectiveness. The objective of this review was to (1) synthesise the available evidence regarding the effectiveness of primary care based interventions aimed at improving women's mental and physical health and (2) identify the factors that promote effectiveness for women's health outcomes.

Methods Five academic databases were searched, including PubMed, BMC Medicine, Medline, CINAHL and the Cochrane Library. A search was also made of the grey literature. The quality of included studies was assessed using a standardised critical appraisal tool, and the findings summarised using a narrative synthesis.

Results In total, 18 studies were included in the review. Eight involved evaluations of counselling interventions, three health education and awareness interventions, two social and psychosocial interventions, and five were evaluations of combination interventions. Twelve of the included studies were randomised controlled trials. Of these 14 reported significant outcomes, and 4 further interventions showed partially favourable results. However, interventions mostly targeted women's mental or reproductive health.

Conclusions While the evidence is limited in terms of quality and what has been evaluated, a number of interventions appear to be effective in improving outcomes for women. The three key approaches include the adoption of an active door-to-door and group-based approach; utilisation of community peers who can deliver care cost-effectively and who are more accepted in the community; and the integration of financial vouchers to support uptake in poor populations.

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INTRODUCTION

Creating an effective primary care system for women has not been a priority in Pakistan.¹ One of the difficulties is that a model for an effective primary healthcare setup, for women of different age groups and across the life course has not been agreed on globally,²

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This is the first synthesis of evidence about the effectiveness of primary care-based interventions for women in Pakistan.
- ⇒ The quality of the included studies was appraised using a standardised tool.
- ⇒ The diverse nature of the interventions included in this review and assessment of different outcomes meant that it was only possible to provide a narrative synthesis.
- ⇒ The small number of studies, limited geographical reach, and some studies in the review used patient-reported outcomes only and thereby no objective clinical data, which limits the generalisability of the findings.

or within Pakistan, to date.³ Research suggests that for a comprehensive primary healthcare system for women to be effective in developing regions, service delivery must be led by state efforts and public health policy.⁴ There is also agreement that a primary healthcare model must be developed regionally, based on a nation's historical background, health policies, revenue system and cultural beliefs, and based on a review of existing services.⁵

Despite the inadequate primary healthcare services and low utilisation,⁶ the majority of Pakistani women need to be provided state support for primary healthcare due to critical socioeconomic problems such as poverty and unemployment,⁷ or informal sector employment which excludes women from employer health protection.⁸ There is a need to further support women at the primary care level to reduce maternal mortality,⁹ chronic disease,¹⁰ infectious diseases,¹¹ injury and violence,¹² mental health problems,¹³ and health issues related to ageing.¹⁴ The country also has a number of unmet Sustainable Development Goals, with key issues such as high maternal mortality rates and the absence of universal healthcare services for women.¹⁵

Primary healthcare in Pakistan

Since 2011 responsibility for the delivery of Pakistan's healthcare system has been devolved to the provinces. The Federal Ministry of National Health Service Coordination and Regulation is responsible for monitoring and allocation of the budget to the four provinces of the country including Baluchistan, Khyber Pakhtunkhwa (KPK), Sindh and Punjab. The overall framework and structure for the delivery of primary healthcare services is the same across the country, with services including: reproductive and maternal health; vaccination and immunisation; health awareness; referral to secondary and tertiary sectors; and routine counselling. However, the outreach and implementation varies according to provincial development, with Punjab and KPK provinces performing better, compared with Baluchistan, Sindh and Gilgit-Baltistan.¹⁶

The current state-provided universal healthcare system in the country, the Sehat Sahulat Programme, primarily focuses on payment for hospitalisation, with a capping of US\$1906 per person.¹⁷ This programme is severely limited due to low outreach of less than 0.5% of the national population, and is only accessible to women with a national identity card, excluding thereby the majority of disadvantaged women in the country.¹⁷ Pakistan has a functional primary care setup for women, called the lady health workers (LHW) programme, which was launched by the government of Pakistan in 1994, and delivers door-to-door services to women at their homes.¹⁸ LHWs provide key services for immunisation, family planning, counselling and maternal health services. In addition, there are community midwives (CMWs) trained and then deployed to practice privately in the community for safe delivery services.¹⁹ Primary care services are also provided within the community at basic health units (BHUs) and rural health centres (RHCs), which are allocated a physician or medical officer and a nurse, apart from the LHW. The BHUs and RHCs aim to provide clinical consultancy and basic reproductive health services.

Existing evidence

While a number of studies have reported that the LHW programme and primary setup for maternal healthcare has been successful in improving family planning^{20 21} and mortality rates,²² others have reported that primary healthcare services have not yielded positive outcomes for women's health in Pakistan.^{15 23 24} This reflects the fact that access and outreach remains low for the 110 million women of Pakistan, primarily due to the inadequate ratio of primary care services with regard to LHW/CMW to population ratios; BHU and RHC doctor to population ratios; and bed to population ratios for RHCs.^{25 26} The LHW and CMW programmes have also been criticised in terms of the limited services for family planning.²⁷ During the recent pandemic, the LHWs were additionally assigned responsibility for promoting infection preparedness and prevention, without any additional compensation or staff allocation, contributing to inefficiencies.²⁸

Similarly, the BHU and RHC services have also been criticised due to low quality services, inadequate budget allocation and poor coordination from the centre.²⁹ There is also low utilisation and visitation to BHUs and RHCs by women due to patriarchal traditions preventing mobility, mistrust and distance.³⁰ To date, there has been no systematic review of rigorous evaluations to identify which primary care interventions are effective in improving women's health outcomes in Pakistan. The aim of this review was to systematically review the available literature for studies that have evaluated the effectiveness of primary healthcare services for women, in order to inform future health research and policy.

METHODS

Patient and public involvement

No patients are involved in this study.

Search strategy

A systematic review using a narrative synthesis was undertaken. Electronic databases including Pubmed, BMC, Medline, CINAHL and Cochrane Library were searched. All published data prior to October 2020 was searched. We started the search at the beginning of August 2020 and finished it as the end of October 2020. We were unable to start searching during the dates mentioned in the protocol (January to June 2021) due to a combination of factors such as investigator time constraints, transfer to online teaching for faculty, and COVID-19 social distancing making it difficult for co-authors to meet and coordinate. A search of the grey literature included the following databases: Google, Google Scholar, WHO website and Government of Pakistan Health Ministry websites. Detailed information about the search strategy, search terms, inclusion and exclusion criterion, and methods for this study can be found in the protocol publication.³¹ A summary of the search terms and database search results can be found in online supplemental file 1.

The inclusion criteria were established using PICOS: (1) Population: The population of interest was all Pakistani women, above 18 years of age, and excluding children and adolescent girls; (2) Intervention: all healthcare interventions that are delivered in the primary healthcare sector; (3) Comparator: the review only included studies that used a control or comparison group; (4) Outcomes: All studies that focused on physical or mental health outcomes, were included in the review; (5) Study design: all randomised controlled trials (RCTs) and quasi-experimental study designs that involved the use of a control group. The language was restricted to English.

Initial screening

An initial screening of studies based on titles, was performed by the first author for 109 841 studies. An independent screening was also done by the second author. Discussions about which articles met the inclusion criterion were held. At second step, the abstracts of 543

studies were reviewed by the first and third authors independently. The main reasons for exclusion were that articles were not interventions in Pakistan or exclusively in Pakistan, did not relate to health interventions or primary healthcare outcomes for women, were protocol or feasibility studies, or did not have a control group. The final 18 included articles had a diverse range of interventions and outcomes, which meant that it was only possible to provide a narrative synthesis.³²

Although the protocol refers to two objectives (the primary objective is to identify the effectiveness of the intervention in terms of how successful it was in improving health of women; whereas the secondary aim is to identify barriers and facilitators for delivery of primary healthcare services) this paper only reports the findings of the first of these. The review pertaining to the secondary aim referred to in the protocol paper, will be submitted as a separate manuscript entitled: Barriers and facilitators to the delivery of primary healthcare services for women in Pakistan.

Data extraction

The following information was abstracted, by the first author, from the interventions that met our eligibility criteria in terms of targeting women's health outcomes: study design; setting; participant type; sample size; aim; type of intervention; intervention delivery method and description; outcomes being measured; data analysis technique; results; and complete citation of the study. Extraction of the data was reviewed for consistency by the third author.

Critical appraisal

The included studies were appraised using standardised critical appraisal tools. The RCTs were appraised using the RCT Critical Appraisal Tool,³² and the non-randomised studies were appraised using the Mixed Methods Appraisal Tool.³³ Both appraisal tools score rate studies as being of high, medium or low quality. The quality of the articles was assessed by two reviewers (SRJ and QKM), and group meetings were held to discuss the independent appraisal of articles and to resolve discrepancies. Twelve of the 18 included articles (all the RCTs) scored high on the six evaluation areas of the critical appraisal checklist. Six studies were rated as medium quality due to the failure to use randomisation and inability to administer the intervention as intended. No studies received a low-quality rating or were excluded from the review based on the quality assessment. More information related to the critical appraisal for each study, the description of assessment criterion and the scoring for the included articles in this review has been included in online supplemental file 2.

Data management and synthesis

Studies from databases were transferred into Endnote Software by the first author. After the exclusion of duplicates, studies were transferred to an Excel template for data extraction and organisation. The third author reviewed

this extraction and checked for consistency. Final selection of studies to be included was done independently by the first two authors. Separate tabs were then created for each study for detailed data extraction and summary sheets were also created to organise study characteristics and information for supplementary data files. Due to the high level of heterogeneity across studies in terms of interventions and outcomes, a narrative summary of the findings was necessary.

RESULTS

Included studies

The search results have been reported using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart, presented in figure 1. A total of 135 553 publications were identified, of which 5405 were duplicates. After duplicates were removed 109 841 were selected for further screening of titles. Following a review of the abstracts, the full text of 543 publications were retrieved, and assessed against the selection criteria, and a total of 18 studies were included of interventions assessing the effectiveness of primary healthcare interventions for women's health outcomes. Table 1 lists the interventions including information about the authors, study type, sample, description of intervention and postintervention outcomes with p values. Further details of the characteristics of included studies have been reported in online supplemental file 3.

Study characteristics

The interventions included in this review (table 1) were classified as follows: (1) Eight studies were classified as 'Counselling Interventions'^{21 34-41}; (2) three as 'Health Education and Awareness Interventions'⁴²⁻⁴⁵; (3) two as 'Social and Psychosocial Interventions'⁴⁶⁻⁴⁸ and (4) five as 'Combination Interventions' (eg, vouchers, education, referral and technology).⁴⁹⁻⁵⁵

With regard to the study designs: (1) 12 studies are RCTs (including 7 RCTs and 5 cluster RCTs) and (2) 6 are quasi-experimental studies including 1 non-randomised non-inferiority trial. A majority of the studies (n=9) delivered interventions to pregnant women. Another five studies delivered interventions to women of reproductive years. Two studies targeted women aged 18 and above affected by conflict and another two delivered the intervention to women screened for depression. Overall, therefore, a majority of included studies targeted health outcomes for pregnant women or women of reproductive years.

Nearly all the interventions (n=15) used patient-reported outcomes, with three reporting both patient-reported and clinical outcomes. None of the interventions included a sample from across all the provinces of Pakistan. Six of the interventions were limited to only 1 city or town, 10 to 1 province of Pakistan and 2 studies included samples from 2 or 3 provinces in the country. A small number of interventions were delivered exclusively by

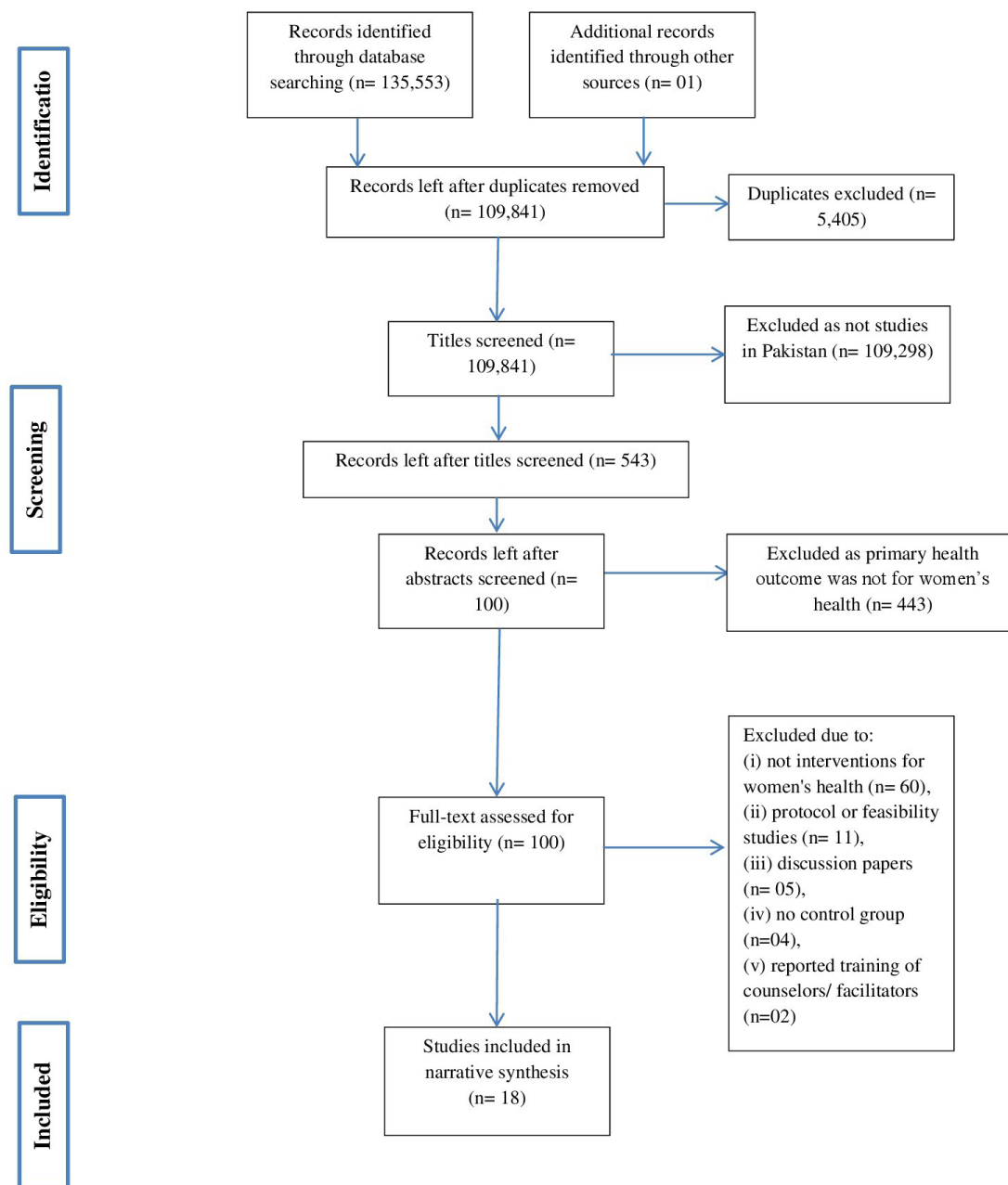


Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analyses flow chart.

LHWs (n=5), and another six interventions were facilitated by a combination of LHWs, community health workers (CHWs), CMWs, traditional birth attendants (TBAs) and laywomen. The remaining interventions were delivered by either laywomen or local peers (n=3); trained healthcare staff, nurses or health educators (n=3) or by CHWs alone (n=1). Fourteen of the included studies showed significant results for primary outcomes and four showed partially favourable results.

Effectiveness of primary healthcare interventions

Due to the heterogeneity in terms of the included study designs and interventions, a narrative report of effectiveness has been provided, organised according to the type of intervention as follows: (A) Counselling

interventions—including one-to-one or group sessions to improve mental health or family planning practices; (B) Health education and awareness interventions—including group or one-on-one educational sessions to TBAs and women of reproductive years about safe maternal practices or malaria prevention; (C) Social and psychosocial interventions—including group social support sessions (peer-support, behavioural activation and problem solving) and one-on-one mental health support; and (D) Combination interventions—group or one-on-one sessions for family planning and contraception use or wider maternal health indicators using a combination of different approaches such as educational outreach, clinical assessment, transport provision and referral.

Table 1 List of included intervention-based studies to review effectiveness on women's health outcomes

Authors	Study type	Sample	Intervention	Results (p value)
Ali <i>et al</i> ³⁴	RCT	Women aged 18–50 years screened for anxiety or depression (Experiment: n=70; Control: n=91)	One-on-one counselling sessions to reduce anxiety and/or depression	A significant reduction was found between the mean anxiety and depression scores of both the intervention and control groups (p=0.000)
Khan <i>et al</i> ⁴¹	Cluster RCT	Women aged 18 or more years affected by conflict (Experiment: n=59 Control: n=60)	Group psychotherapeutic intervention to reduce anxiety and depression in women	Statistically significant decline in PTSD symptoms (p<0.0001) and depressive disorder scores (p=0.0016) of the intervention compared with the control group
Rahman <i>et al</i> ³⁶	Cluster RCT	Women aged 18–60 years affected by conflict (Experiment: n=288 Control: n=290)	Group psychological intervention to improve mental health	A significant lower mean total score of anxiety and depression in women in the intervention group compared with the control group (p=0.0007)
Ali <i>et al</i> ³⁵	Non-randomised quasi-experiment	Mothers, with children 0–30 months, screened for postnatal depression (Experiment: n=62 Control: n=12)	One-on-one counselling to reduce postnatal depression	A significant decline in level of anxiety/depression was found in both the counselled and the non-counselled groups (p<0.001); with a greater decline in the counselled/ intervention group. The counselled group fared better than the non-counselled for (1) recovery; (2) reduction in the rate of recurrence and (3) increase in the duration before relapse.
Sikander <i>et al</i> ³⁹	Cluster RCT	Pregnant women (Experiment: n=283 Control: n=287)	One-on-one and group counselling to reduce perinatal depression	The depression mean scores (p=0.07) and the prevalence of remission (p=0.14) did not significantly differ between the intervention and control groups at 6 months. However, the intervention group, compared with the control group, reported: (1) reduced depression symptom severity (p<0.0001) and disability score (p<0.0001) at 3 months; (2) more likely remission (p=0.002) and recovery (p=0.002) at 3 months; and (3) improvement in perceived social support (p=0.007) at 6 months after childbirth.
Rahman <i>et al</i> ²¹	RCT	Pregnant women (Experiment: n=463 Control: n=440)	Group cognitive behavioural therapy for mothers with depression	The intervention group had lower depression scores at two time points compared with the control group: 1. 6 month point decline (p<0.0001) 2. 12 month point decline (p<0.0001). Intervention group also showed significant improvement at both time points for (1) overall functioning (6 months<0.0001; 12 months<0.0001) and (2) perception of social support (6 months<0.0001; 12 months<0.0001).
Hameed <i>et al</i> ³⁸	Non-inferiority trial without randomisation	Married women using long-acting reversible contraceptive (Experiment: n=1246 Control: none)	Compare active (doorstep and telephonic) versus passive (needs-based) follow-up in sustaining use of long-acting reversible contraceptive	Active follow-up is more effective (compared with passive approach) in sustaining long acting reversible contraceptives than the passive (needs-based) follow-up (p=0.035). Telephone-based follow-up is as effective as the home-based follow-up (compared with passive approach) in sustaining long acting reversible contraceptives (p=0.431)
Sikander <i>et al</i> ⁴⁰	RCT	Pregnant women (Experiment: n=210 Control: n=211)	Cognitive-behavioural counselling to improve rate and duration of exclusive breastfeeding during first 6 months	Increase in exclusive breastfeeding (p<0.001) and decline in the use prelacteal feeds (p<0.001) in the intervention group over the control group.
Jokhio <i>et al</i> ⁴⁴	Cluster RCT	Pregnant women (Experiment: n=10093 Control: n=9432)	Training to TBAs to reduce perinatal and maternal mortality and reduce complications of pregnancy	The intervention areas, compared with the control, had lower odds of: 1. perinatal death (p<0.001) and 2. maternal mortality of (p<0.001).

Continued

Table 1 Continued

Authors	Study type	Sample	Intervention	Results (p value)
Omer <i>et al</i> ⁴⁵	Cluster RCT	Pregnant women (Experiment: n=529 Control: n=541)	Developing community-based communication tools to promote favourable maternal health practices	Women in the intervention communities were more likely to attend prenatal checkups, to stop routine heavy work during pregnancy, to give colostrum to newborn babies, and to maintain exclusive breastfeeding for 4 months. No p values were reported.
Kumar <i>et al</i> ⁴²	Non-randomised quasi-experiment	Pregnant women with children up to 6 months of age (Experiment: n=100 Control: n=100)	Health education intervention for the prevention of malaria in pregnant women with children up to 6 months of age	The intervention group, compared with the control, showed an increase in: <ol style="list-style-type: none"> 1. knowledge score ($p \leq 0.01$), and 2. use of long-lasting insecticide treated bed nets ($p < 0.05$).
Hirani <i>et al</i> ⁴⁶	RCT	Young adult women, 20–45 years (Experiment: n=60 Control: n=60)	Social support intervention, in groups, to enhance resilience and quality of life	Women in the intervention group reported improvements in: <ol style="list-style-type: none"> 1. resilience scale-14 item ($p = 0.022$); 2. the resilience scale for adults ($p = 0.043$). No significant findings were noted in the quality of life scores.
Maselko <i>et al</i> ⁴⁸	RCT	Pregnant women (Experiment: n=206 Control: n=683)	Group psychosocial intervention to reduce maternal depression	Reduced symptom severity and high remission rates were seen across both the intervention and the control group. Significant outcome differences between the intervention and control group were not found.
Azmat <i>et al</i> ⁵⁰	Non-randomised quasi-experiment	Married women reproductive age (Experiment: n=2483 Control: n=2509)	Social franchise programme +a free voucher scheme to promote awareness and use of modern long term contraceptive	Improvement in intervention group over the control group in: <ol style="list-style-type: none"> 1. Awareness of contraception ($p < 0.001$); 2. Ever use of contraception ($p < 0.001$); 3. Ever use of any modern method ($p < 0.0010$); 4. Overall contraceptive prevalence rate ($p < 0.001$).
Azmat <i>et al</i> ⁵¹	Non-randomised quasi-experiment	Married women reproductive age (Experiment: n=1817 Control: n=1075)	Compare two interventions to improve the use of modern contraceptive methods: <ol style="list-style-type: none"> 1. Social franchise model along with free vouchers and 2. Community Midwife Model 	Both the models were effective for the intervention group over the control group. The Social franchising and free voucher model: (1) contraceptive awareness ($p < 0.001$), (2) use of contraceptives ($p \leq 0.0001$), (3) long-term modern method-intrauterine device (IUD) use (< 0.0001). The community midwife model: (1) contraceptive awareness ($p < 0.001$), (2) use of contraceptives ($p \leq 0.0001$) and (3) IUD use (0.0078). The social franchising and voucher approach led to a 35% greater prevalence of contraceptive use in women compared with the CMW model.
Ali <i>et al</i> ⁵⁵	Non-randomised quasi-experiment	Married women reproductive age (Experiment: n=1276 Control: n=1276)	Subsidised multipurpose voucher +family planning counselling to improve contraceptive use, postnatal care and child immunisation	There was no increase in modern contraception use in the intervention area ($p < 0.0001$). However, the concentration index and slope index of inequalities for first-time use of modern contraceptives, knowledge of contraceptives, receiving ANC and delivery at health facilities were negative, indicating that the use of these services was more concentrated among the disadvantaged in intervention areas.
Midhet and Becker ⁵³	RCT	Pregnant women (Experiment: n=1539 Control: n=1022)	Education sessions for safe motherhood practices+TBA training +Emergency transport system to improve maternal and neonatal health indicators	The intervention clusters received prenatal care and prophylactic iron therapy more frequently than pregnant women in control clusters ($p \leq 0.05$). Providing safe motherhood education resulted in significant increase in percent of hospital deliveries ($p \leq 0.05$) and reduction in perinatal mortality ($p \leq 0.05$). There was no impact on the use of skilled birth attendants.

Continued

Table 1 Continued

Authors	Study type	Sample	Intervention	Results (p value)
Qureshi <i>et al</i> ⁵⁴	RCT	Pregnant women screened for pre-eclampsia (Experiment: n=1276 Control: n=1276)	Mobile health assessment +referral+doorstep +educational sessions to reduce all-cause maternal and perinatal mortality and major morbidity	There was no difference between the groups in the primary outcome of composite maternal, fetal and newborn mortality and major morbidity (p=0.31). However, there was a reduction in stillbirths (p=0.03) and no adverse events were reported in the intervention group.

ANC, Antenatal care; CMW, community midwife; PTSD, Post traumatic stress disorder; RCT, randomised controlled trial; TBA, traditional birth attendant.

Counseling interventions

Eight included studies evaluated the effectiveness of counselling interventions. Six of these interventions targeted improvement in mental health; and two aimed to improve family planning or breastfeeding practices.

Mental health

Only one of the six mental health interventions aimed to deliver counselling to all women of any age who had screened positive for anxiety and/or depression. This RCT was conducted with women of a semiurban community in Karachi city and the intervention consisted of one-to-one counselling sessions delivered by briefly trained women from the community.³⁴ The women in the intervention group received eight sessions of counselling, which included supportive, problem-solving and cognitive-behavioural techniques. The results showed a significant reduction in both the experimental and control groups post intervention, this possibly having been due to some women in the control group also receiving counselling.

Two studies involved the delivery of services to women affected by conflict in the Swat district, and who screened positive for mental health disorders.^{36 41} Both interventions were group-based programmes, involving adaptations of the WHO problem management intervention (PM+), and delivered by briefly trained female non-specialists and LHWs. Both cluster RCTs reported a significant decline in anxiety and depression postintervention.

One RCT involved the delivery of one-to-one counselling sessions to mothers with children between 0 and 30 months, screened for postnatal depression.³⁵ This non-randomised quasi-experimental study included women from two underdeveloped colonies of Karachi city and the one-to-one counselling was delivered by briefly trained women from the community. The intervention consisted of supportive, problem-solving and basic cognitive behavioural techniques delivered for 8 weeks in weekly 1-hour sessions. The study found a significant decline in anxiety and depression in both the counselled and the non-counselled groups. This may be because the control group received enhanced social support through regular visits by the counsellors although the number of visits was not described. In addition, the study reported a greater decline in the counselled group, compared with the non-counselled for: (1) recovery; (2) reduction in

the rate of recurrence and (3) increase in the duration before relapse.

Two mental health intervention studies evaluated the effectiveness of cognitive-behavioural therapy (CBT) in supporting women experiencing maternal depression. In a cluster RCT, involving 40 villages from a rural district of Rawalpindi city, pregnant women who screened for positive for depression were recruited to the trial.³⁹ The Thinking Healthy Programme (THP) for perinatal depression was used, which includes a combination of strategies that incorporate behavioural activation, active listening, collaboration with the family, guided discovery and homework, and was delivered by briefly trained volunteer peers from the community with LHWs as facilitators. The intervention consisted of 10 individual and four group sessions, from the third trimester of pregnancy to 6 months after childbirth. The intervention group, compared with the control group, reported significant improvements in: (1) depression symptom severity and disability score at 3 months; (2) remission and recovery at 3 months and (3) perceived social support at 6 months after childbirth.

The second RCT involved the delivery of CBT to women from 40 villages from the rural district of Rawalpindi city.²¹ Pregnant women screened for depression received the THP intervention, in group sessions, delivered by specially trained LHWs. Significantly lower depression scores were reported for the intervention group, at the 6-month and 12-month time points. Additionally, mothers in the intervention group showed significant improvement in overall functioning and perception of social support, at both 6-month and 12-month time points. Both studies were found to be cost-effective for resource-poor nations as they used volunteer peers to deliver the intervention.

Family planning practices

Two included studies used counselling to improve family planning practices. In one non-inferiority trial without randomisation, a comparison was made between active and passive follow-up of existing long-acting reversible contraceptive-use (LARC).³⁸ Married women using long-acting reversible contraception were recruited from 22 rural and urban primary healthcare facilities of Chakwal city. Female health educators delivered one-to-one sessions using an adapted manual for family planning

services based on the Family Advancement for Life and Health Project. Results showed that both the telephone-based follow-up and home-based visits significantly improved the use of LARC, compared with the passive or needs-based follow-up.

The second study, an RCT, evaluated the effectiveness of an intervention to improve temporary contraceptive methods through breast-feeding practices. The intervention was delivered by LHWs using one-to-one cognitive-behavioural counselling sessions aimed at improving the rate and duration of exclusive breastfeeding during the first 6 months of an infant's life.⁴⁰ The results showed a significant increase in the duration of exclusive breastfeeding and also in rates of exclusive breast-feeding at 6 months post partum in the intervention group. The study also reported a decline in the use of prelacteal feeds to infants in the intervention group.

Health education and awareness interventions

Three studies evaluated the effectiveness of health education and awareness interventions. Two of these involved the use of cluster RCTs to improve maternal health indicators and practices. One cluster RCT involved training TBAs, and also providing them with safe delivery kits, across seven subdistricts in Larkana city.⁴⁴ A team of obstetricians and female paramedics trained the TBAs; and LHWs were further trained to provide support to the TBAs in the community. The training involved the use of picture cards about safe practices for antepartum, intrapartum and postpartum care. Additionally, they were trained in how to conduct a clean delivery; use of the disposable delivery kit and when to refer women for emergency obstetrical care. The results showed significantly lower odds of perinatal death and maternal mortality in the intervention group.

A second cluster RCT involved the delivery of educational sessions to pregnant women or mothers with young children about safe maternal practices.⁴⁵ Women from 10 underdeveloped areas from three cities of Sindh province were included and the awareness communication tool was developed in consultation sessions between LHWs and government health officials. It was decided that embroidered pictures on a traditional Sindh fabric (known as *ajrak*) should be used to communicate user-friendly, indigenous and attractive messages to raise awareness about the importance of antenatal check-ups, giving colostrum after birth and not doing heavy work during pregnancy. The intervention group showed an increase in prenatal checkups, stopping routine heavy work during pregnancy, provision of colostrum to newborns and exclusive breast feeding.

The third study evaluated the effectiveness of a health education and awareness intervention aimed at improving malaria net use in pregnant women.⁴² This non-randomised quasi-experimental study included women from two areas of Tarparkar district. LHWs were responsible for providing women with information about malaria prevention and the importance of using

long-lasting in-bed nets (LLIN). Results showed a significant increase in the experimental group's knowledge and use of LLIN.

Social and psychosocial interventions

Two RCTs involved an evaluation of the effectiveness of interventions providing social or psychosocial support to improve resilience and quality of life (QOL), and to reduce maternal depression, respectively. The first study was delivered to young adult women, 20–45 years, in low socioeconomic areas of Karachi city.⁴⁶ Women were provided with social support in 6 weekly group sessions, using a manual that guided women about stress management and coping strategies for stress. Results revealed a statically significant improvement in resilience for the intervention group, but no impact on the QOL indicators.

The second study, assessed the effectiveness of a psychosocial intervention in pregnant women screened for depression.⁴⁸ The intervention was delivered across 40 village clusters of Rawalpindi city by non-specialist volunteer peers who were lay married women living in the same community. Both the intervention and control groups received enhanced usual care from the LHW programme, which consisted of: (1) informing participants about their depression status and ways to seek help for it and also providing them with an information leaflet, (2) informing LHWs about each woman's depression status and (3) training the primary care facility-based physicians in the subdistrict in the management of maternal depression. In addition, the intervention group received a longer-duration, psychosocial intervention, consisting of 18 group-based sessions (from 7 months to 36 months postnatal) that included peer-support, behavioural activation and problem-solving in a culturally sensitive and non-medicalised format.

The findings showed a decline in maternal depression symptoms and remission in both the intervention and enhanced care groups, thereby masking any potential benefits of the intervention.

Combination interventions

Five studies evaluated the effectiveness of combination interventions on (A) family planning and contraception use or (B) wider maternal health indicators. The combined interventions included: (1) Voucher system plus educational outreach, (2) Education sessions for safe motherhood practices, plus TBA training, plus emergency transport system and (3) Mobile health-guided clinical assessment, plus referral to facility for specialised treatment, plus educational sessions.

Family planning and contraception use

Three studies evaluated the effectiveness of family planning and contraceptive use. The first of these was a quasi-experimental study, which included married women of reproductive age from rural and under-served communities of two provinces—Punjab and Sindh.⁵⁰ A social franchise programme delivered by female health visitors,

midwives and nurses, along with a free voucher scheme, was used to promote awareness and use of modern long-term contraceptives. Results showed a statistically significant improvement in the intervention group for (1) awareness of modern contraception, (2) ever use of modern contraceptives, (3) overall contraceptive prevalence rate and (4) uptake of intrauterine devices.

A second quasi-experimental study compared a social franchising and voucher model with educational sessions provided by CMWs.⁵¹ The study included married women of reproductive age from eight districts of three provinces—Sindh, Punjab and KPK. Trained facilitators and CMWs delivered the intervention and results showed a significant increase in contraception awareness, contraception use, and long-term modern method-intrauterine device through both the social franchising and voucher approach and the CMW model. However, the social franchising and voucher approach led to a 35% greater uptake of contraceptive use.

A third non-randomised quasi-experimental study assessed the effectiveness of a subsidised multipurpose voucher plus family planning counselling to improve contraceptive use and postnatal care.⁵⁵ Married women of reproductive age were included from one city each from urban and rural Punjab. The intervention was delivered by community service providers who were trained to provide family planning counselling and supported by local distributing agencies who provided vouchers. Although there was no net increase in modern contraception use there was a low discontinuation rate, and vaccination rates for BCG increased significantly by 14%, and 5% each for DPT, HBV and measles. Furthermore, the use of services was more concentrated among the disadvantaged in intervention areas than the wealthy counterparts, thereby suggesting increased equity.

Maternal health indicators

Two RCTs evaluated the effectiveness of multicomponent interventions on maternal health indicators. The first RCT evaluated the effectiveness of education sessions promoting safe motherhood practices plus TBA training plus an emergency transport system.⁵³ Both pregnant women and their husbands received the intervention across 32 village clusters of Khuzdar city, through the combined efforts of local women and TBAs. Results showed a significant increase in hospital deliveries and a reduction in perinatal mortality in the intervention groups. Additionally, the intervention clusters received prenatal care and prophylactic iron therapy more frequently than pregnant women in the control clusters.

The second RCT involved an evaluation of the effectiveness of mobile health-guided clinical assessment plus referral to a facility for specialised treatment plus educational sessions.⁵⁴ Pregnant women screened for pre-eclampsia were recruited from two cities of the Sindh province. LHWs delivered the intervention and received support from nurses and doctors at primary health centres as and when referrals were made based on need.

While the results showed no impact on the composite measure of maternal health indicators, other benefits of the intervention were found, such as a statistically significant reduction in stillbirths, and no adverse events were recorded for the intervention group.

DISCUSSION

This is the first systematic review to synthesise evaluations of primary care interventions that are aimed at improving women's health outcomes. Such reviews are essential to the development of effective healthcare policy especially in developing regions.² Furthermore, country-specific systematic reviews of this nature are best able to identify regional effectiveness that is central to guiding the developing of such health policy.⁵ Four types of intervention were identified by this review—counselling; health education and awareness; social and psychosocial; and combination interventions (ie, vouchers, education, referral and technology)—and all included studies reported favourable or partially favourable results (ie, on secondary outcomes) pointing to the value of providing such care in terms of improving the health of women in Pakistan. However, most of the included studies evaluated the effectiveness of interventions to women of reproductive years and only four studies evaluated interventions that were not targeting reproductive health or family planning. These findings are consistent with the wider literature, which indicates that interventions for maternal health are given comparative priority, as opposed to health services for other groups such as unmarried women, ageing women and those with special needs or disabilities.⁵⁶ In addition, a large number of health conditions appear not to be addressed as part of primary care interventions including (1) chronic disease and multimorbidity,⁵⁷ and (2) violence and injury.⁵⁸ While the focus of primary healthcare services on women's reproductive health in low-income and middle-countries and conservative climates may reflect the high maternal and child mortality that is present,⁵⁹ the failure to address the wider healthcare needs of Pakistan's population of women, leaves a significant health burden both for the women themselves and society more widely.

With regard to the effectiveness of counselling interventions, nine studies showed evidence of effectiveness in terms of their primary goal of improving mental health, and family planning or maternal health practices. Both one-to-one and group-based counselling sessions were successful in improving women's health outcomes, and the results also showed that an active home or telephone-based follow-up was more effective compared with a passive needs-based approach,³⁸ in terms of reinforcing and sustaining behavioural change,⁶⁰ which is important in a context where a majority of the population are disadvantaged and semiliterate.

The studies of counselling interventions also demonstrated the effectiveness of using low-cost and more acceptable community peers as intervention facilitators,



both important points for a culturally conservative and resource poor country like Pakistan.⁶¹ Furthermore, there were also benefits of awareness building and social support as part of routine visits, which was especially valuable for disadvantaged and semi-literate women who needed reaffirmation and regular care contact.⁶² It is noteworthy that two studies in this review showed improvement in the mental health of Pakistani women impacted by conflict. Given that a large proportion of people in Pakistan are affected by conflict and natural disasters,⁶³ these findings suggest that such interventions should be integrated into routine primary care services.

The three health education and awareness interventions reported effectiveness in improving preventive practices for Malaria, training of existing TBAs, and the development of community-based tools to advance maternal health practices. Training of TBAs and development of culturally acceptable tools is important in terms of the acceptance and uptake of health services for women in a conservative region like Pakistan. In Pakistani society both culture and tradition compel women to seek health services from TBAs as the first line of support,⁶⁴ and as such, the training of TBAs provides an important way of improving the reproductive of health of Pakistani women.

The psychosocial interventions were found to improve resilience and QOL for women, which is important in a patriarchal culture where women face barriers to mobility and access to social support.⁶⁵ Preventive healthcare of this nature is critical in terms of improving the well-being of women and reducing the national health burden.⁶⁶ The group psychosocial intervention served as an effective way of using peer-support and problem-solving in a culturally sensitive and non-medicalised format. Wider research confirms that both group sessions and problem-solving are valuable tools to improve health behaviours and preventive practices in women.⁶⁷

All five combination interventions were focused on reproductive health and family planning. The findings from this group of interventions suggest that educational counselling and door-to-door services need to be coupled with financial interventions, such as free or subsidised voucher schemes. Despite the provision of free community services, optimal healthcare outcomes are only possible when financial support is available for transport, private consultancy and purchase of medicines or other health commodities.⁶⁸ For low-income nations such as Pakistan, free or subsidised vouchers are integral to effective uptake of services and better health outcomes.^{49 51} Though education, awareness and counselling are effective interventions, many poor women are prevented from using them without financial subsidies^{50 55} and the provision of transport services.⁵³

One combination intervention highlighted the effectiveness of delivering awareness and training to husbands, which is important to enable women in

the region to access services, travel for services and return for continued care. The patriarchal climate of the region, with men as primary decision-makers for women's health behaviour and mobility, makes interventions with husbands more effective for women's health outcomes.⁶⁹

Overall, the results support the use of (1) an active approach, (2) delivery by community peers and (3) financial vouchers. A number of studies showed that an active approach involving door-to-door visitation,^{38 52} is also helpful for building general health awareness and social support^{35 46} and improving preventive health.^{42 43} The training of local peers also appears to be a cost-effective and highly acceptable way to support women living in conservative communities.^{21 34 39 44 53} Furthermore, the evidence suggests that locally trained community women can be even more successful in improving health outcomes when they are partnered with existing government deployed LHWs.^{36 41} However, employing briefly trained non-specialists from the community requires fidelity measures and monitoring to ensure effective and consistent delivery of services.^{37 48}

Limitations

The diverse nature of the interventions included in this review, alongside the use of different outcomes makes a comparison of the included interventions difficult. Furthermore, we included seven studies that were not RCTs, and as such cannot be confident that the results of these studies do not reflect a regression to the mean. Overall, the quality of the included studies was good to moderate. The assessment of outcome for all included studies relied on the use of patient-reported outcomes, which is of concern especially in underdeveloped regions with illiterate and semiliterate populations who may not answer the survey or self-report correctly, even with the assistance of data collectors, due to low levels of understanding.⁷⁰ It is now recognised that health intervention assessments must combine patient-reported outcomes with clinical outcomes in order to provide more robust evidence about health outcomes in women.⁷¹

Most of the studies included in this review were conducted in either one city or one province, and as a result of the fact that the cultural climate and behavioural response for each province of Pakistan is unique,⁷² it is not possible to make generalisations about the effectiveness of interventions across Pakistan based on the current evidence. Only when interventions are delivered across provinces and remote locations will it be possible to generalise the findings. This will also ensure that the designing of services and policies are ethnically and regionally appropriate and based on the different needs of diverse population groups.⁷³ As discussed earlier, the studies focused largely on women of reproductive age or pregnant women and the interventions are limited to the delivery of services for family planning and maternal health.

CONCLUSION

Efforts to enhance the nature and quality of women's primary healthcare services in Pakistan must be informed by contextualised evidence. This systematic review found that to date, evidence regarding the effectiveness of primary care services for women in Pakistan remains limited and focused primarily on reproductive or mental health in only one or two provinces. There is, as such, an absence of information about the effectiveness of primary care services for older women, women with special needs, refugees and displaced women and unmarried women. This review has highlighted the effectiveness of a number of primary care-based services and the benefit of active door-to-door and group-based approaches; utilisation of community peers who can deliver care cost-effectively and who are more accepted in the community; and the benefit of integrating financial vouchers to support uptake in poor populations.

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Provenance and peer review Not commissioned; externally peer reviewed.

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Supplementary File 1-

Search Terms and Database Results

Search terms

1. primary health OR community health AND Pakistan AND women
2. primary healthcare OR primary health care OR primary service delivery OR primary health service* OR primary health evaluation OR program* OR polic* AND Pakistan AND women
3. primary health OR community health OR wom#n OR mother OR maternal OR women's health OR maternal health OR reproductive health AND Pakistan AND women
4. primary health OR community health OR evidence based practice OR intervention OR RCTs OR randomi*ed controlled trial* OR cluster randomi*ed controlled trial* OR clinical trial* OR quasi-experimental OR non-randomi*ed OR cross-sectional OR mixed methods OR quantitative OR qualitative OR case-study OR group studies OR evidence based OR cohort studies OR case-control studies AND Pakistan AND women
5. primary health OR community health OR (lady health worker OR LHW) OR (community health worker OR CHW) OR (community midwife OR CMW) OR (traditional birth attendant OR TBA) AND Pakistan AND women

Table:
Summary of results from databases searched, as at August

Search Term	PubMed	BMC	Medline	CINAHL	Cochrane Library	Total
1.	4,074	2,435	207	1,756	1,679	10,151
2.	1,702	1,769	8,088	2,522	2,438	16,519
3.	4,427	2,435	207	2,686	2,597	12,352
4.	5,029	2,436	23,894	7,819	7,688	46,866
5.	5,458	595	52	0	8,340	14,445
6.	5,340	2,435	23,665	1,931	1,849	35,220
	26,030	12,105	56,113	16,714	24,591	135,553

Supplementary File 2: Quality Appraisal of Included Studies

A. RCT Critical Appraisal

Table Key:

Initial critical appraisal screening:

1. Does this study address a clearly focused question?
2. Did the study use valid methods to address this question?
3. Are the valid results of this study important?
4. Are these valid, important results applicable to my patient or population?

The RCT Critical Appraisal Checklist screening questions:

5. Was the assignment of patients to treatments randomized?
6. Were the groups similar at the start of the trial?
7. Aside from the allocated treatment, were groups treated equally?
8. Were all patients who entered the trial accounted for? And were they analysed in the groups to which they were randomised?
9. Were measures objective or were the patients and clinicians kept "blind" to which treatment was being received?
10. Are there suitable measures used to report results and are the estimates of the treatment effect precise?

No.	First author (Year)	Type of Study	1	2	3	4	5	6	7	8	9	10	Score
1	Ali, B. S (2003)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
2	Khan, M. N. (2017)	Cluster RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
3	Rahman, A (2019)	Cluster RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
5	Sikander, S. (2019)	Cluster RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
6	Rahman, A (2008).	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
8	Sikander, S. (2015)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
9	Jokhio, A. H (2005)	Cluster RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
10	Omer, K. (2008)	Cluster RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
12	Hirani, S. (2018)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
13	Maselko, J (2020)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
17	Midhet, F (2010)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
18	Qureshi, R. N (2020)	RCT	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High

Scoring Key: Each assessment criterion was scored (Yes, No, Unclear)

B. MMAT appraisal

Checklist for included studies which fit the criterion, as described in MMAT appraisal as: Quantitative non-randomized studies (Non-randomized studies are defined as any quantitative studies estimating the effectiveness of an intervention or studying other exposures that do not use randomization to allocate units)

Screening Questions

1. Are there clear research questions?
2. Do the collected data allow to address the research questions?

Methodological quality criteria

3. Are the participant's representative of the target population?
4. Are measurements appropriate regarding both the outcome and intervention (or exposure)?
5. Are there complete outcome data?
6. Are the confounders accounted for in the design and analysis?
7. During the study period, is the intervention administered (or exposure occurred) as intended?

No.	First author (Year)	Type of Study								Score	Comments
			1	2	3	4	5	6	7		
1	Ali, N. S (2010)	Non-randomized quasi-experiment	Yes	Yes	Yes	Yes	Yes	No	No	Medium	This was a non-randomized sample from an action research program.
2	Hameed, W (2016)	Non-randomized study non-inferiority trial	Yes	Yes	Yes	Yes	Yes	Yes	No	Medium	Union council areas were sampled randomly. Participants & could not be randomized, (due to the low proportion of LARC users with access to phones)
3	Kumar, R. (2020)	Non-randomized quasi-experiment	Yes	Yes	Yes	Yes	Yes	Yes	No	Medium	Union council areas were sampled randomly. However, women were sampled in a non-randomized manner (as many pregnant women did not consent to participate due to cultural or health issues).
4	Azmat, S. K. (2013)	Non-randomized quasi-experiment	Yes	Yes	Yes	Yes	Yes	Yes	No	Medium	The control sample could not be randomly selected.
5	Azmat, S. K. (2016)	Non-randomized quasi-experiment	Yes	Yes	Yes	Yes	Yes	Yes	No	Medium	Non-randomized sample (as two intervention models were being compared- community midwife model vs. voucher scheme)
6	Ali, M (2020)	Non-randomized quasi-experiment	Yes	Yes	Yes	Yes	Yes	Yes	No	Medium	Union council areas were sampled randomly. Participants were not sampled randomly, but passed on willingness to participate.

Scoring Key: Each assessment criterion was scored (Yes, No, Unclear)

Supplementary File 3:

Characteristics of Included Studies

Table 1: Included intervention-based studies										
No.	First author	Year	Study Design	Setting	Participants	Sample size	Aim	Type of Intervention	Outcome being measured post intervention	Intervention Delivered by
Counseling Interventions										
1	Ali, B. S	2003	RCT	Semi-urban community in Karachi city	Women aged 18 to 50 years, screened for anxiety and/or depression	Experiment: n= 70 Control: n= 91	Assess if counseling sessions reduce anxiety and/or depression	Mental Health Counseling (one on one)	Reduction in the mean anxiety and depression scores	Briefly trained women counselors of community
2	Khan, M. N.	2017	Cluster RCT	Swat rural district	Women aged 18 or more years affected by conflict	Experiment: n= 59 Control: n= 60	Evaluate the feasibility and acceptability of a group psychotherapeutic interventions, based upon cognitive behavioral approach, to reduce anxiety and depression	Mental Health Counseling (in group)	Decline in psychological distress, measured by levels of anxiety and depression, post-traumatic stress disorder (PTSD), and assessment of general psychological profile and levels of functioning	Briefly trained female non-specialists and LHWs
3	Rahman, A	2019	Cluster RCT	Two rural union councils of Swat city (Odigram and Ghalegay)	Women aged 18–60 years affected by conflict	Experiment: n= 288 Control: n= 290	Effectiveness of a group psychological intervention to improve mental health	Mental Health Counseling (group session)	Reductions in symptoms of anxiety, depression, PTSD, and functional impairment, improved social support, and reduced prevalence of depressive disorders 3 months after the intervention	Briefly trained female non-specialists and LHWs
4	Ali, N. S	2010	Non-randomized quasi-experiment	Qayoomabad and Manzoor Colony of Karachi city	Mothers (with children 0-30 months) screened for postnatal depression	Experiment: n= 62 Control: n= 12	Assess the benefits of counseling on reducing postnatal depression	Mental Health Counseling (one on one)	Reduction in the mean anxiety and depression scores	Women from the community
5	Sikander, S.	2019	Cluster RCT	40 village clusters in Rawalpindi	Pregnant women	Experiment: n= 283 Control: n= 287	Aimed to reduce perinatal depression	Mental Health Counseling (one on one and group)	Severity of depressive symptoms and the prevalence of remission 6 months after childbirth	Volunteer peers and LHWs

6	Rahman, A.	2008	RCT	40 Union Council clusters in rural Rawalpindi city	Pregnant women	Experiment: n= 463 Control: n= 440	Provide a CBT intervention for mothers with depression	Mental Health Counseling (group session)	Infant weight and height at 6 months and 12 months and prevalence of maternal depression	Trained LHWs
7	Hameed, W	2016	Non-inferiority trial without randomisation	Twenty-two (16 rural- and 6 urban-based) franchised reproductive healthcare facilities in district Chakwal	Married women using long-acting reversible contraceptive	Experiment: n= 1,246 Control: none	Compare the effectiveness of active (doorstep and telephonic) and passive (needs-based response) follow-up (counseling) in sustaining the use of long-acting reversible contraceptive (LARC)	Family Planning Counseling (one on one)	Sustaining the use of long-acting reversible contraceptive	Female Health Educators
8	Sikander, S.	2015	RCT	40 Union Councils in Manshera city	Pregnant women	Experiment: n= 210 Control: n= 211	Assess the effectiveness of cognitive-behavioral counseling on the rate and duration of exclusive breastfeeding (EBF) during the first 6 months of an infant's life	Family Planning Counseling (one on one)	Increase in exclusive breastfeeding and decline in use prelacteal feeds	LHWs
Health Education and Awareness Interventions										
1	Jokhio, A. H	2005	Cluster RCT	7 subdistricts Larkana city, Sindh province	Pregnant women	Experiment: n= 10,093 Control: n= 9,432	Provide training and other support to TBAs to reduce perinatal and maternal mortality and reduce complications of pregnancy	Health education and awareness	Decline in perinatal death and maternal mortality	TBAS, LHWs and Obstetricians
2	Omer, K.	2008	Cluster RCT	10 underdeveloped areas from three cities in Sindh (Karachi West, Karachi South and Hyderabad)	Pregnant women	Experiment: n= 529 Control: n= 541	Assess the impact of developing community-based communication tools to promote favorable maternal health practices	Health education and awareness	Improvement in prenatal checkups, care during pregnancy, feeding baby colostrum and maintaining exclusive breastfeeding	LHWs
3	Kumar, R.	2020	Non-randomized quasi-experiment	Two Union Councils (UCs) of Tarparkar district, Sindh	Pregnant women with children up to 6 months of age	Experiment: n= 100 Control: n= 100	Effectiveness of a health education intervention for the prevention of malaria in pregnant women with children up to 6 months of age	Health education and awareness	Knowledge of malaria prevention & use of long-lasting insecticide treated bed nets	LHWs

				Province						
Social and Psychosocial Interventions										
1	Hirani, S. S.	2018	RCT	Low socioeconomic areas of Karachi city	Young adult women, 20–45 years	Experiment: n= 60 Control: n= 60	Provide a social support intervention to enhance resilience and quality of life	Social, psychosocial or preventive <i>Social- group sessions</i>	Improvement in resilience and quality of life	CHWs
2	Maselko, J	2020	RCT	40 village clusters in Kallar Syedan, a rural subdistrict of Rawalpindi city	Pregnant women	Experiment: n= 206 Control: n= 683	Assess the effectiveness of psychosocial intervention on maternal depression and child development (group session)	Social, psychosocial or preventive <i>Psychosocial- group sessions</i>	Decline in maternal depression symptoms and remission	Non-specialists peers (lay married women who lived in the same community as that of the women with depression and volunteered their time)
Combination Interventions										
1	Azmat, S. K.	2013	Non-randomized quasi-experiment	Rural and under-served communities of (i) Badin and Dadu-Sindh province, and (ii) Jhang and Khanewal-Punjab province	Married women reproductive age	Experiment: n= 2,483 Control: n= 2,509	Evaluate the effectiveness of a social franchise programme along with a free voucher scheme to promote awareness and use of modern long term contraceptive	Combination	Assess improvement in contraceptive awareness and long-term contraception use	Female health visitors, midwives and nurses at their respective private clinics
2	Azmat, S. K.	2016	Non-randomized quasi-experiment	Eight districts of Sindh, Punjab and KPK	Married women reproductive age	Experiment: n= 1,817 Control: n= 1,075	Provide accessible and affordable long term family planning services through marketing, branding and introducing a voucher scheme	Combination	Increasing awareness about FP methods and use of contraception	Trained facilitators and CMWs
3	Ali, M	2020	Non-randomized quasi-experiment	Faisalabad (urban) & Toba Tek Singh (rural),	Married women of reproductive age	Experiment: n= 1,276 Control: n= 1,276	Assess the effectiveness of a subsidized, multipurpose voucher intervention to enhance the client-provider interaction for improved	Combination	Increase in modern contraception use, knowledge of contraceptives, receiving ANC, and delivery at health	Vouchers and awareness outreach through service providers and distributing

				Punjab			contraceptive counseling, modern contraception methods uptake, continued use, and its impact on equity through better targeting, while increasing uptake of postnatal care and child immunization among women from the lowest two wealth quintiles.		facilities (also child vaccination rates for BCG, DPT, HBV, and measles)	agencies
4	Midhet, F	2010	RCT	32 village clusters in Khuzdar, a rural district of Baluchistan province	Pregnant women	Experiment: n= 1,539 Control: n= 1,022	Assess the impact of education sessions for safe motherhood practices, TBA training, and emergency transport system on maternal and neonatal health indicators	Combination	Reduction of delays in seeking medical care for obstetric complications and reduction in perinatal and neonatal mortality	Local women with secondary school education or above, & TBAs
5	Qureshi, R. N	2020	RCT	Matiari and Hyderabad districts, Sindh Province	Pregnant women screened for preeclampsia	Experiment: n= 20,264 Control: n= 19,182	Assess the impact of combined interventions for pre-eclampsia (Mobile health assessment; referral; doorstep visits; and educational sessions) to reduce all-cause maternal and perinatal mortality and major morbidity	Combination	Reduction in stillbirths, maternal death or morbidity, early or late neonatal deaths and neonatal morbidity	LHWs