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# Increase in institutional delivery and child immunisation coverage through an appreciative inquiry-based community dialogue intervention in Afghanistan

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ABSTRACT

*Objective:* A community dialogue intervention with an appreciative inquiry approach was undertaken to improve institutional delivery and child immunisation coverage in a hard-to-reach province, namely, Kandahar, in Afghanistan. This study aimed to evaluate the intervention's effectiveness in promoting institutional delivery and child immunisation.

*Study design:* A pre-post intervention evaluation study.

*Methods:* An intervention and a non-intervention district were selected in Kandahar. Children aged under 5 years participated in surveys at baseline (October 2018) and follow-up (Post-intervention: November 2019). We analysed age, sex, place of birth, and confirmed immunisation coverage data concerning 1046 and 927 children pre- and post-interventions, respectively. Changes in institutional delivery and confirmed immunisation status were evaluated using net intervention effect and difference-in-difference (DID) analysis.

*Results:* Institutional delivery rates increased from 66.3% to 83.6% ($p = 0.016$) in the intervention district and decreased from 71.3% to 46.7% ($p < 0.001$) in the non-intervention district, with a net intervention effect of 41.9%. Full immunisation coverage among children aged 12–23 months and 24–35 months significantly increased from 26.4% to 76.9% ($p < 0.001$) and from 40.0% to 78.6% ($p < 0.001$), respectively, in the intervention district, whereas coverage significantly decreased in the non-intervention district. The net intervention effects were 59.1% and 44.8% for children aged 12–23 months and 24–35 months, respectively. The DID analysis also revealed significant differences in outcomes after intervention at follow-up. The results concerning antigen-specific immunisation coverage indicated a significant increase in immunisation coverage in the intervention district.

*Conclusions:* The appreciative inquiry-based community dialogue intervention considerably increased institutional delivery and child immunisation coverage, even in a hard-to-reach province in Afghanistan.

## What this study adds

- Multiple health outcomes can be achieved through an integrated community-based health promotion intervention coupled with a routine healthcare programme.
- Various barriers against healthcare services utilisation can be tackled through integrated community-based health promotion interventions.
- A dedicated community-based health promotion workforce is key for achieving favourable health programme goals even in hard-to-reach settings.

## Implications for policy and practice

- A dedicated, feasible, and paid community-based health promotion workforce should be established to bridge the gap between the health system and local communities, to continually work with families,

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and to encourage the utilisation of health services and the adoption of healthy lifestyles and behaviours.
- Comprehensive and integrated community-based health promotion interventions comprised of multiple approaches must be deployed to target more than one health outcomes for one or several programmes in an efficient manner rather than several individual health promotion interventions targeting individual health programme outcome.

## 1. Introduction

Despite significant progress in reducing maternal, under-5, and neonatal mortality globally, accelerated efforts are required to meet United Nations Sustainable Development Goal (SDG) targets by 2030, particularly in countries with high death rates [1,2]. The ratios of maternal, under-5, and neonatal mortality in Afghanistan remain among the highest globally [3]. Many of these deaths could be prevented through increasing institutional delivery and child immunisation coverage. However, in Afghanistan, many women still deliver babies at home, and the utilisation of immunisation services remains low. Afghanistan Demographic and Health Survey (AfDHS) results depicted that only 48% of women gave birth in a health facility, and only 46% of children aged 12–23 months were fully immunised in 2015 [3]. Fig. 1 shows the percentage of children aged 12–23 months receiving all doses of basic vaccines and the percentage of institutional delivery by provinces of Afghanistan. Kandahar province was regarded as a hard-to-reach province where both percentages were particularly low [3].

Public health programme mainly focuses on improving the skills of health personnel, ensuring the availability of supply, and enhancing the quality of healthcare facilities [4]. These factors are important; however, they do not address the most salient barriers to accessing healthcare services in low-income countries [5]. Evidence suggests that demand-side barriers may be as critical as supply factors in preventing individuals from utilising healthcare services [6,7]. Even with the availability of reasonable healthcare services, utilisation may be limited. Knowledge of 'what healthcare service providers offer' and how to best utilise healthcare services is as necessary as physical and financial accessibility to healthcare services [5]. However, policymakers and researchers have paid little attention to mitigating the effects of demand-side barriers on the utilisation of healthcare services [5].

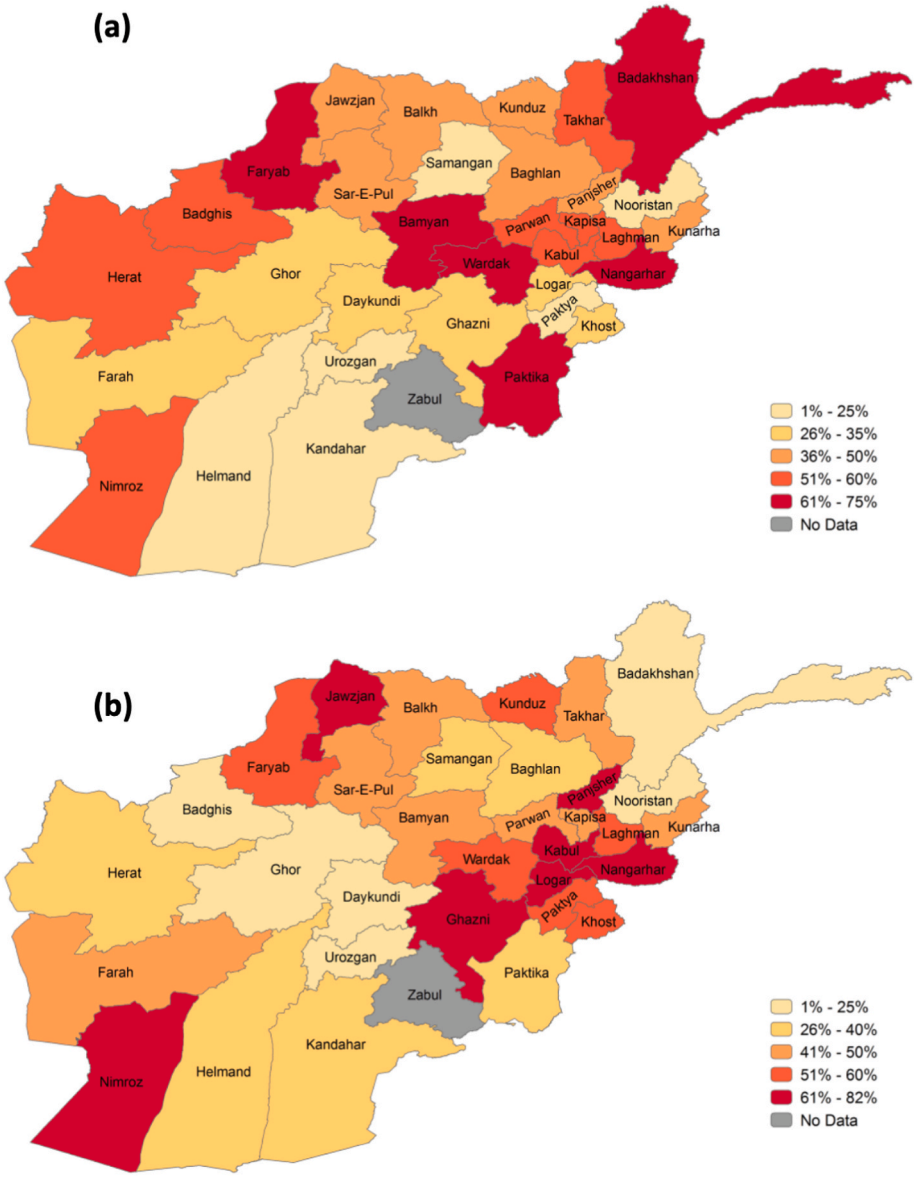


**Fig. 1.** (a) Province-wise immunisation coverage among children aged 12–23 months prior to the 2015 AfDHS, and (b) Province-wise percentage of institutional deliveries of live births in the five years before the AfDHS.

In Afghanistan, evidence of the effectiveness of community-based interventions to overcome demand-side barriers in the uptake of maternal and child healthcare services is scarce. In addition, there is limited evidence on achieving multiple outcomes through implementing community-based health promotion interventions. A combination of several health promotion approaches as a single intervention has not been evaluated, and effectiveness of health promotion intervention in a hard-to-reach setting with low coverage compared to other settings, has not been examined.

According to the existence of a hard-to-reach province, we designed and conducted a theory-driven health promotion intervention and a research study in Kandahar Province. We aimed to evaluate the effectiveness of the intervention on institutional delivery and child immunisation coverage to facilitate evidence-based decision-making.

## 2. Methods

### 2.1. Study design, setting, and sampling procedure

A pre-post intervention study was conducted in Kandahar Province, a hard-to-reach province in southern Afghanistan that is the second largest province after Kabul. Data were collected using multistage random sampling. In stage 1, 50% of polio campaign clusters were randomly selected from an existing list. The total predetermined number of households was then divided by the number of selected polio campaign clusters to determine the number of houses in each cluster. In stage 2, the street and the first house from each target cluster were randomly selected. In stage 3, a systematic sampling method for the houses (every third house in the street) was used. This process was continued until the predetermined number of households in each target cluster was reached. From each targeted household, one caregiver (an ever-married woman or man) who was a resident of the house and who had at least one under-5 child was enrolled in the baseline and follow-up surveys. Data were collected concerning all under-5 children of the study participants. Data on socio-demographic variables, place of birth, and confirmed immunisation status were analysed concerning 1046 and 927 children pre- and post-intervention, respectively.

### 2.2. Study tools and variables

The baseline and follow-up surveys comprised a structured household questionnaire, which had been pretested prior to the start of data collection. The study's outcome variables were institutional delivery and immunisation status. Institutional delivery was dichotomised into 'yes' if a mother had given birth to a child in a health facility and 'no' if she had given birth at home with or without a skilled birth attendant, according to the World Health Organization guidelines [8]. Such categorization is important in promoting childbirth at health facilities with skilled providers and the necessary equipment to ensure that the delivery process is safe and comfortable for both the mother and child. Only children born during the intervention period were included in the analysis of institutional deliveries. Immunisation coverage data concerning children aged 12–35 months who were eligible for vaccination at age 0–23 months, as per Afghanistan's national immunisation schedule, were collected. Immunisation status was assessed based on responses to the question: 'Has your child received any of the routine vaccinations?', which was coded as 'yes' or 'no'. If the caregiver responded 'yes', the response was confirmed by a follow-up question: "Has the child ever had a vaccination card?' or professional reviews (asking probing questions and observing vaccination scars for BCG). Of the vaccination records, 87.9% were confirmed based on the vaccination card and 12.1% were confirmed based on professional reviews.

Immunisation coverage was further categorised into fully, partially, and never vaccinated status. To achieve full immunisation coverage, a child must have received at least one dose of BCG vaccine, three doses of pentavalent vaccines, and one dose of measles vaccine. Children were considered 'partially vaccinated' if they had received some but not all the above-mentioned recommended vaccinations, and 'never vaccinated' if they had not received any of the recommended age-appropriate vaccinations.

### 2.3. Description of the intervention

Study participants were selected from the Panjwai (intervention) and Dand (non-intervention) districts of Kandahar Province. In the intervention district, participants received community dialogue and routine care, whereas in the non-intervention district, participants only received routine care. During this routine care, maternal and child healthcare services, including maternity and child immunisation services, were provided in both districts. The intervention was scheduled for a one-year period. We conducted the baseline survey in October 2018 and the follow-up survey in November 2019 in both districts.

The term 'community dialogue' (CD) refers to the process of people or groups exchanging information in an interactive and participatory manner to reach a shared understanding and agreement on addressing specific issues. The CD approach is based on Paulo Freire's work, according to which group members can engage in critical thinking, challenge assumptions, and develop new visions through dialogue [9]. In addition, the CD approach also acknowledges a community's capacity to solve its problems, seeks out local expertise and diversity, and uses several processes that facilitate analysis, empowerment, and sharing alongside other participatory learning and action approaches [9]. To successfully implement the CD intervention, we first engaged with provincial authorities and those able to support the programme at the district level.

At the start of the intervention, advocacy meetings were held with health authorities and representatives of other relevant sectors and implementing non-governmental organisations (NGOs) at the provincial and district levels to seek support for the successful implementation of the intervention. At the district level, advocacy was conducted with health facility staff, community health workers (CHWs), and health council members.

CD aims to mobilise community dwellers to take necessary actions towards institutional delivery and take their children for routine immunisation to health facilities. An appreciative inquiry (AI) approach was used during the CD [10]. The AI approach involves mobilising local communities and resources and fostering ownership of the health programme through focusing on existing strengths and accomplishments rather than analysing and criticising unmet goals. This strength-based management tool is intended to assist people in seeing themselves as change catalysts through inducing an internal transformation, after which they take on more responsibilities owing to their increased motivation and require less external assistance, supervision, and monitoring to achieve their goals.

The CD involved the following three phases:

I. Pre-dialogue phase: In this phase, an introductory meeting was held with community influencers such as community elders and religious scholars, to establish trust, credibility, and ownership. Event facilitators explained the session's goal and target audience and determined the location, date, and time of the session.
II. Dialogue phase: This comprised the main phase of the intervention, where all community dwellers were invited to a specified location at a predetermined time and date to conduct the CD sessions. Considering the cultural context, dialogue sessions were conducted with male and female community residents separately. The sessions began with recitation of some verses from the Holy Quran. The event facilitator/s then asked the participants about their overall achievements and pride in life, particularly success stories in the health area. Each achievement could be shared with others, such as child vaccination, using soap for handwashing, or accompanying pregnant women from their house to the health facility for

pregnancy-related issues. These achievements were appreciated, and the participants were complimented for their actions. Finally, all participants made a commitment to undertake similar actions, to fully immunise their children, and to accompany pregnant women to health facilities for antenatal, delivery, and postnatal care visits.

Post-dialogue phase: In this phase, house-to-house visits were conducted by the CD project staff and CHWs with at least one visit in each quarter, with more visits conducted among households with poorer maternal and child healthcare project target indicators, to assess child immunisation and care for pregnant women. These visits were undertaken to identify and address reasons why a child had not been vaccinated as per the routine immunisation schedule or why pregnant women were not attending a health facility for antenatal care. Support of and joint work undertaken by CHWs is important to build their capacity and for the sustainability of house-to-house visits and follow-ups after project completion. The post-dialogue phase was adopted from a human-centred design [11] to identify and address obstacles to using healthcare services at each step throughout the caregiver's journey [12], to health and immunisation. If a vaccine-eligible child has not yet been vaccinated or a pregnant woman has not visited a health facility for antenatal care or had not have any intention to give birth at a health facility then considering the caregiver journey steps as explained in Fig. 2, reasons were sought, all necessary advice was provided, and actions were taken. The CD project inputs are presented in Supplementary Table 1.

### 2.4. Statistical analysis

Descriptive statistics were used to summarise the characteristics of the study participants. Chi-square tests were used to compare the statistical differences in institutional delivery rate, full immunisation coverage, and antigen-specific immunisation coverage from baseline to follow-up in the intervention and non-intervention districts. The net intervention effect (NIE) was computed using MS Excel to identify the change between the baseline-to-follow-up proportion difference in the intervention group and the baseline-to-follow-up proportion difference in the non-intervention group for the main variables. The difference-in-difference (DID) analysis was performed to test the effectiveness of the CD intervention by analysing differences in the institutional delivery rate and full immunisation coverage between the non-intervention and intervention groups from baseline to follow-up. The 'group' and 'time' dummy variables were created for the analysis. The 'group' variable had a value of 0 for the non-intervention group and 1 for the intervention group. Similarly, the 'time' variable had a value of 0 for the baseline and 1 for the follow-up. The coefficient on the interaction variable between 'group' and 'time' (group*time)—the DID estimator, was also created and fitted in the regression model. The model was adjusted for socio-demographic variables, including age, sex, education level, employment status of caregivers, and sex of child. Stata Software version 17 (StataCorp. 2021. College Station, TX, USA) was used to analyse data. Statistical significance was set at $p < 0.05$.

## 3. Results

Table 1 shows the demographic characteristics of all under-5 children in this study. Most children were aged 0–35 months and were male.

Table 2 shows the effect of the intervention on the institutional delivery rate and confirmed immunisation status. There was a significant improvement of 17.3% points in the institutional delivery rate, from 66.3% at baseline to 83.6% at follow-up ($p = 0.016$) in the intervention district. However, the institutional delivery rate in the non-intervention district significantly decreased by 24.6% points, from 71.3% at baseline to 46.7% at follow-up ($p < 0.001$). Overall, the net intervention effect on the institutional delivery rate was 41.9% higher in the intervention district. Results of analysis including distinct categories for home deliveries with and without skilled birth attended is presented in Supplementary Table 2.

In addition, the proportion of fully vaccinated and fully or partially vaccinated children also changed significantly in the intervention and non-intervention districts. Full immunisation coverage was significantly increased by 50.5% points, from 26.4% at baseline to 76.9% at follow-up ($p < 0.001$) among children aged 12–23 months in the intervention district. In contrast, full immunisation coverage among children in the same age category decreased by 8.6% points, from 39.1% at baseline to 30.5% at follow-up in the non-intervention district ($p < 0.001$; net intervention effect, 59.1%). Moreover, the proportion of children aged 12–23 months who were fully or partially vaccinated significantly increased by 20.2% points, from 66.7% at baseline to 86.9% at follow-up ($p < 0.001$). In contrast, full or partial immunisation coverage among children aged 12–23 months was significantly decreased by 31.9% points, from 73.4% at baseline to 41.5% at follow-up ($p < 0.001$; net intervention effect, 52.1%).

There was also a significant increase in full or partial immunisation coverage among children aged 24–35 months. In the intervention district, the full immunisation coverage significantly increased from 40.0% at baseline to 78.6% at follow-up ($p < 0.001$), with a 38.6% point positive change observed. Likewise, full, or partial immunisation coverage among children aged 24–35 months was significantly increased by 20.6% points, from 66.1% at baseline to 86.7% at follow-up ($p < 0.001$).

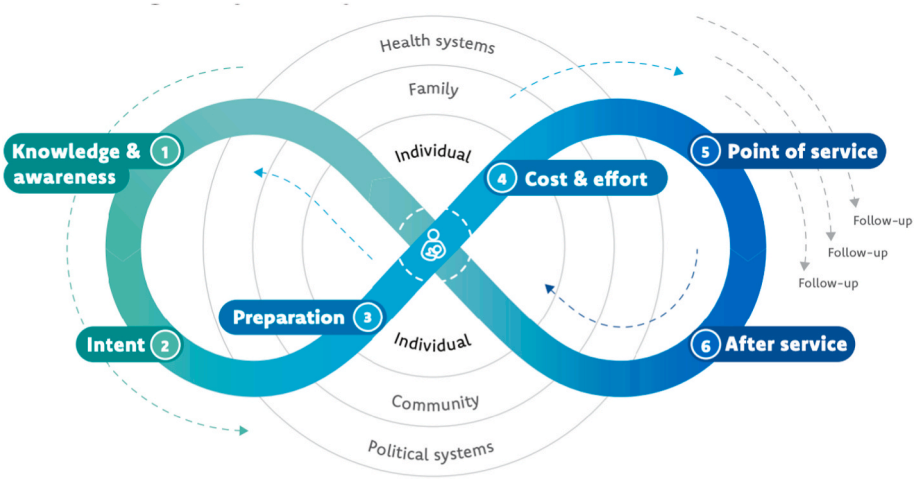


**Fig. 2.** Six points in a caregiver's journey towards health and immunization. [12]

**Table 1**
Demographic characteristics of under-5-year-old children in an appreciative inquiry-based CD study (n = 1973).

| Variables | Total sample n (%) | Intervention | | | Non-intervention | | |
|---|---|---|---|---|---|---|---|
| | | Baseline (n = 536) n (%) | Follow-up (n = 459) n (%) | *P*-value[a] | Baseline (n = 510) n (%) | Follow-up (n = 468) n (%) | *P*-value[a] |
| **Age of child (months)** | | | | | | | |
| 0–11 | 418 (21.2) | 80 (14.9) | 116 (25.3) | <0.001 | 87 (17.1) | 135 (28.8) | <0.001 |
| 12–23 | 399 (20.2) | 87 (16.2) | 130 (28.3) | | 64 (12.5) | 118 (25.2) | |
| 24–35 | 419 (21.2) | 115 (21.5) | 98 (21.4) | | 107 (21.0) | 99 (21.1) | |
| 36–47 | 363 (18.4) | 116 (21.6) | 68 (14.8) | | 99 (19.4) | 80 (17.1) | |
| 48–59 | 368 (18.7) | 134 (25.0) | 47 (10.2) | | 151 (29.6) | 36 (7.7) | |
| Missing | 6 (0.3) | 4 (0.7) | 0 (0.0) | | 2 (0.4) | 0 (0.0) | |
| **Sex of child** | | | | | | | |
| Male | 1079 (54.7) | 287 (53.5) | 260 (56.6) | 0.327 | 268 (52.5) | 264 (56.4) | 0.226 |
| Female | 894 (45.3) | 249 (46.5) | 199 (43.4) | | 242 (47.5) | 204 (43.6) | |

CD, community dialogue.
[a] Chi-square test.

**Table 2**
Effect of the intervention on the institutional delivery and child immunisation status confirmed through vaccination card or professional review at baseline and follow-up.

| Variables | Total sample n (%) | Intervention | | | | Non-intervention | | | | NIE (%) | DID estimates with 95% CI | | *P*-value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline n (%) | Follow-up n (%) | P-value[a] | Difference (PPC) | Baseline n (%) | Follow-up n (%) | P-value[a] | Difference (PPC) | | DID | 95% CI | |
| **Children aged <12 months, n=408[b c]** | | | | | | | | | | | | | |
| Institutional delivery | 275 (67.4) | 53 (66.3) | 97 (83.6) | 0.016 | 17.3 | 62 (71.3) | 63 (46.7) | <0.001 | −24.6 | 41.9 | 0.441 | 0.26–0.62 | <0.001 |
| **Child's immunisation status** | | | | | | | | | | | | | |
| **Children aged 12–23 months, n = 399** | | | | | | | | | | | | | |
| Confirmed as fully vaccinated | 184 (46.1) | 23 (26.4) | 100 (76.9) | <0.001 | 50.5 | 25 (39.1) | 36 (30.5) | <0.001 | −8.6 | 59.1 | 0.558 | 0.36–0.75 | <0.001 |
| Confirmed as fully or partially vaccinated | 267 (66.9) | 58 (66.7) | 113 (86.9) | <0.001 | 20.2 | 47 (73.4) | 49 (41.5) | <0.001 | −31.9 | 52.1 | 0.512 | 0.32–0.70 | <0.001 |
| **Children aged 24–35 months, n = 419** | | | | | | | | | | | | | |
| Confirmed as fully vaccinated | 190 (45.4) | 46 (40.0) | 77 (78.6) | <0.001 | 38.6 | 38 (35.5) | 29 (29.3) | <0.001 | −6.2 | 44.8 | 0.452 | 0.27–0.63 | <0.001 |
| Confirmed as fully or partially vaccinated | 263 (62.8) | 76 (66.1) | 85 (86.7) | <0.001 | 20.6 | 66 (61.7) | 36 (36.4) | <0.001 | −27.3 | 47.9 | 0.467 | 0.29–0.64 | <0.001 |

NIE, net intervention effect % (change between the baseline-follow-up difference in the intervention area and baseline-follow-up difference in the non-intervention area); PPC, percentage point change; DID, difference-in-difference; 'group' dummy takes the value of 0 for the non-intervention and 1 for the intervention group; 'time' dummy takes the value of 0 for the baseline and 1 for the follow-up; DID estimate is the interaction between group and time (group*time); the difference-in-difference model is adjusted for age, sex, education level and employment status of caregivers and sex of child.
[a] Chi-square test.
[b] Includes children born during the one-year intervention period.
[c] 10 missing values due to non-response.

Conversely, in the non-intervention district, the full immunisation coverage decreased by 6.2% points, from 35.5% at baseline to 29.3% at follow-up ($p < 0.001$; net intervention effect, 44.8%). Similarly, full, or partial immunisation coverage in the same age group significantly decreased by 27.3% points, from 61.7% at baseline to 36.4% at follow-up ($p < 0.001$; net intervention effect, 47.9%). The DID analysis showed that the institutional delivery rate significantly improved in the intervention group compared to the non-intervention group, with a DID estimate of 0.441 (95% CI: 0.26–0.62). Furthermore, there was a statistically significant improvement in the full or partial immunisation coverage of children aged 12–23 months and 24–35 months between the intervention and non-intervention groups. After the intervention, full immunisation coverage significantly increased among children aged 12–24 months, with a DID estimate of 0.558 (95% CI: 0.36–0.75), and full or partial immunisation with a DID estimate of 0.512 (95% CI: 0.32–0.70). Similarly, there was an increase in full or partial immunization coverage among children aged 24–35 months, with a DID estimate of 0.452 (95% CI: 0.27–0.63) for full immunisation coverage and 0.467 (95% CI: 0.29–0.64) for full or partial immunisation coverage.

Table 3 shows changes in the antigen-specific immunisation coverage among children aged 12–23 and 24–35 months. Coverage disparities were observed in the intervention and non-intervention districts in baseline and follow-up surveys. Antigen-specific immunisation coverage significantly increased in the intervention district from baseline to follow-up. The coverage significantly increased by 20.2, 45.2, 54.4, 51.6, and 42.4% points for BCG, Penta-1, 2, and 3, and Measles-1 vaccines, respectively. In contrast, there was a reduction in the coverage of antigen-specific vaccination from baseline to follow-up in the district where intervention was not conducted, with a significant reduction of 32.0 and 18.0% points in the coverage of BCG and Measles-1 vaccines.

Among children aged 24–35 months, antigen-specific immunisation coverage significantly increased in the intervention district from baseline to follow-up. The increase in coverage was 18.6, 37.7, 43.0, 44.7,

**Table 3**
Changes in antigen-specific immunisation coverage confirmed through vaccination card or professional review among children aged 12–23 months and 24–35 months at baseline and follow-up.

| Variables | Total sample n (%) | Intervention | | | | Non-intervention | | | | NIE (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Baseline n (%) | Follow-up n (%) | *P*-value[a] | Difference (PPC) | Baseline n (%) | Follow-up n (%) | *P*-value[a] | Difference (PPC) | |
| **Children aged 12–23 months, n = 399** r | | | | | | | | | | |
| BCG | 267 (66.9) | 58 (66.7) | 113 (86.9) | <0.001 | 20.2 | 47 (73.5) | 49 (41.5) | <0.001 | −32.0 | 52.2 |
| Penta-1 | 223 (55.9) | 35 (40.2) | 111 (85.4) | <0.001 | 45.2 | 33 (51.6) | 44 (37.3) | 0.063 | −14.3 | 59.5 |
| Penta-2 | 208 (52.1) | 27 (31.0) | 111 (85.4) | <0.001 | 54.4 | 28 (43.8) | 42 (35.6) | 0.280 | −8.2 | 62.6 |
| Penta-3 | 197 (49.4) | 26 (29.9) | 106 (81.5) | <0.001 | 51.6 | 26 (40.6) | 39 (33.1) | 0.309 | −7.5 | 59.1 |
| Measles-1 | 197 (49.4) | 30 (34.5) | 100 (76.9) | <0.001 | 42.4 | 31 (48.5) | 36 (30.5) | 0.017 | −18.0 | 60.4 |
| **Children aged 24–35 months, n = 419** | | | | | | | | | | |
| BCG | 261 (62.3) | 76 (66.1) | 83 (84.7) | 0.002 | 18.6 | 66 (61.7) | 36 (36.4) | <0.001 | −25.3 | 43.9 |
| Penta-1 | 217 (51.8) | 54 (47.0) | 83 (84.7) | <0.001 | 37.7 | 49 (45.8) | 31 (31.3) | 0.085 | −14.5 | 52.2 |
| Penta-2 | 204 (48.7) | 48 (41.7) | 83 (84.7) | <0.001 | 43.0 | 44 (41.1) | 29 (29.3) | 0.076 | −11.8 | 54.8 |
| Penta-3 | 199 (47.5) | 46 (40.0) | 83 (84.7) | <0.001 | 44.7 | 41 (38.3) | 29 (29.3) | 0.172 | −9.0 | 53.7 |
| Measles-1 | 211 (50.6) | 56 (48.7) | 82 (83.7) | <0.001 | 35.0 | 44 (41.1) | 29 (29.3) | 0.076 | −11.8 | 46.8 |

NIE, net intervention effect % (change between the baseline-follow-up difference in the intervention area and baseline-follow-up difference in the non-intervention area); PPC, percentage point change.
[a] Chi-square test.

and 35.0% points for BCG, Penta-1, 2 and 3, and Measles-1 vaccines, respectively. In contrast, in the non-intervention district, there was a significant reduction of 25.3% points in the coverage of BCG vaccine. There was also a reduction in the coverage of other antigen-specific vaccines in the non-intervention group; however, the changes were not statistically significant.

## 4. Discussion

We aimed to evaluate the effect of health promotion intervention at the community level on improving childbirth in a health facility and the uptake of child immunisation. Our findings indicated that the post-intervention institutional delivery rate and confirmed immunisation coverage increased significantly. The net intervention effect was 41.9% for the institutional delivery rate among children aged <1 year, and 59.1% and 44.8% for full immunisation coverage among 12–23 months and 23–35 months old children, respectively. Our findings are consistent with those in studies conducted in Nepal, Burkina Faso, and Nigeria [13–15].

Previous systematic reviews have revealed effectiveness of community-based health education and community health workers' interventions on increased uptake of childhood immunisation [16,17]. Contrary to community-based health education and community health workers' interventions, during CD intervention, community dwellers are encouraged to make independent decisions to improve their health by fostering more active participation. Our CD intervention was based on evidence that communities have the ability to think and act for themselves and have the capacity to change. The intervention employed facilitated conversations to evoke community strength, increase self-awareness, and stimulate self-confidence and action. The CD project staff supported the community on its path to take ownership of issues relevant to childbirth in a health facility, child immunisation, and their solutions. A simple comparison of outcomes between target mothers and children in district receiving the intervention and those in non-intervention district allowed us to measure the change in institutional delivery and immunisation coverage outcomes attributable to the CD project. While both institutional delivery and delivery at home with skilled birth attendants are promoted, our project focused on enhancing delivery in health facilities. This initiative was taken as families residing in our intervention areas had access to health facilities, and the primary objective of the project was to increase the utilisation of maternal and child services at these facilities. We encouraged expectant mothers to give birth in health facilities under the supervision of competent and trained health personnel. This approach aims to ensure that vital amenities required to handle unfavorable and emergency situations are available, which can save the lives of both mother and child. By opting for this option, expectant mothers can rest assured that their childbirth experience will be facilitated with the utmost care and professionalism. Our study findings indicated that a designated demand-generated workforce and interventions play a key role in increasing institutional delivery and child immunisation coverage, while demand generation was a minor component of healthcare service provision.

### 4.1. Strengths and limitations

Our study had several strengths and limitations. This is the first implementation science study to assess the effects of community health promotion interventions in Afghanistan. Undertaking interventions to improve institutional delivery and child immunisation coverage and related evaluations in a hard-to-reach province in Afghanistan was a further strength of this study. We utilised the DID model, a straightforward tool that produces accurate results, to test the effect of the CD intervention. This involved analysing the differences in outcomes over time between the intervention and non-intervention groups. However, our study had some limitations. The available data did not allow for the identification of specific components of the CD intervention that are associated with improved institutional delivery, child immunisation coverage, or other maternal and child health indicators. Therefore, further research is proposed to evaluate the magnitude of effect of each component of the health promotion intervention. Although there is an argument for delivering at home with skilled birth attendants, careful evaluation should be made from the viewpoints of ethics and safety for mothers and children. Another limitation of our study was the absence of health record confirmation data for children whose caregivers stated that they had not received routine vaccines, which may have led to understating the actual coverage rate in the intervention district.

## 5. Conclusions

Our findings indicated that this community-based health promotion intervention significantly improved the institutional delivery and child routine immunisation coverage in a hard-to-reach province in Afghanistan.

## Ethical considerations

The Institutional Review Board of the Ministry of Public Health, Afghanistan (IRB Approval No: 444797/01092018) approved the study protocol and other relevant instruments. All participants were provided with information concerning the study's objectives and were assured of the confidentiality of the information they provided prior to obtaining their written consent to participate. Efforts were made to conduct individual interviews in an appropriate setting to minimise inconvenience. In addition, all participants were fully informed that their participation in this study was voluntary, and that they could decide not to participate or continue the interview without the need to provide a reason.

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## Declaration of competing interest

The authors have no competing interests to declare.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhip.2023.100436.

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