Acceptability and Use of Clean Home Delivery Kits in Nepal: A Qualitative Study

Monique H. Beun¹ and Siri K. Wood²

¹Independent Research Consultant based in Kathmandu, Nepal and
²Program for Appropriate Technology in Health,
Seattle, WA 98107, USA

ABSTRACT
This research was carried out in rural Nepal to explore how different categories of birth attendants at home deliveries accepted and used clean home delivery kit (CHDK) and its contents, including hand-washing practices, during delivery and preparations for birth. In-depth interviews were conducted to collect information from 51 women—both users and non-users of the kit. The respondents were interviewed within one month of their most recent delivery. Results of the interviews showed that the attendants who used the kit perceived it as hygienic and convenient, affordable, and culturally acceptable. The razor blade and thread were the most useful items, and the purpose of the plastic coin was understood. Despite its perceived usefulness, awareness and use of the kit were low, and common reasons for non-use included not knowing about the kit or difficulty in procuring a kit locally. In addition, the kit had limited influence on general hygiene practices. The authors explore the importance of evaluating promotional efforts re-targeted to individuals who hold decision-making power regarding the use of the kit. They recommend that kit promoters emphasize hand-washing and single use of the kit.

Key words: Delivery; Safe motherhood; Delivery kit; Traditional birth attendants; Midwifery; Hygiene; Nepal

INTRODUCTION
Tetanus and sepsis, which result primarily from unhygienic deliveries and lack of clean birth implements, are two of the leading causes of maternal and neonatal deaths and illness in Nepal (1). In Nepal, an estimated 90% of births occur at home and are attended by people with little or no training (1). Due to lack of hygienic precautions during births at home, infants of women delivering alone, or those attended by family members or untrained traditional birth attendants (TBA) are at particular risk of infection. International agencies have identified clean delivery education programmes and the presence of skilled attendants at birth as priorities to improve maternal health worldwide (2).

The clean delivery kit is one component of integrated safe motherhood programmes that contributes to a hygienic birthing environment. When introduced as part of maternal and neonatal health programmes, it provides a convenient source of clean birth supplies and may reduce rates of sepsis and cord infection. Kits come in various forms and can be produced locally, nationally, or ordered through United Nations agencies. They are most often used by mothers, TBAs, midwives, and occasional birth attendants such as relatives (2).

To address the problem of unhygienic delivery practices and high perinatal infection in Nepal, Maternal and Child Health Products, Ltd. (MCHP) developed a disposable clean delivery kit. Since 1994, MCHP has produced and sold more than 500,000 kits in Nepal. The clean home delivery kit (CHDK), known as Sutkeri Samagri in Nepal, provides materials that ensure a clean delivery surface (plastic sheet), a clean cutting instrument (new razor blade and plastic disc to cut on), clean ties for the cord (cord ties), and clean hands for the birth attendant (soap). The kit is accompanied with a pictorial
insert designed to educate its users on hand-washing, immediate wrapping of the newborn, proper tying of the cord, immediate breast-feeding, and burial of the waste. These supplies address four of the six clean delivery principles defined by the World Health Organization (WHO), which states, "the use of simple, disposable delivery kits will help achieve as clean a delivery as possible" (3). Due to the scarcity of research on the use of delivery kits in various settings, researchers and programme managers recognize that it is difficult to prove that kits have a beneficial impact independent of other interventions. Nevertheless, WHO and others recommend providing disposable delivery kits to women and community birth attendants (4).

Program for Appropriate Technology in Health (PATH) and Save the Children-U.S. conducted a quantitative study in Nepal in 1998 (5). Results of the study showed that the use of CHDK reduced simple cord infection when compared with deliveries performed with unclean cord-cutting instruments and unclean cutting surfaces. In this study, users of the kit had less than half the infection rate (0.45; 95% confidence interval, 0.25-0.81) of non-users of the kit who did not use a new or boiled blade and clean cutting surface. In addition, a 20-year study among the Maasai of Kenya demonstrated that a culturally-adapted health-promotion programme that included single-use birth kits and hygiene education dramatically reduced total mortality rates and neonatal tetanus rates (6). The study did not, however, control for impact of the kit alone compared to effects of the accompanying educational intervention (6).

In addition, little research has been conducted to explore whether single-use delivery kits are culturally acceptable and how they are being used. PATH is currently conducting a study on the use of kits in Tanzania, and preliminary data suggest that kits are appropriate and highly acceptable to mothers in rural areas if made available at an affordable cost (7). Results of previous research on birth practices revealed that the Nepalese generally believe that preparing for a child's birth is a bad omen (8), but few researchers have studied the influence of this belief on the use of CHDK. Similarly, the effectiveness of radio advertisements, information shared during pregnancy check-ups, promotion through women's groups, and non-formal education classes that seek to raise awareness of the kit's availability has not been assessed.

In 2001, PATH initiated a qualitative study to understand the influence of CHDK on maintaining cleanliness during home deliveries. PATH and Save the Children have provided technical assistance to MCHP since the inception of CHDK in 1994 to support its promotion. The present study sought to assess the acceptability and use of CHDK and its contents among different types of birth attendants in rural Nepal.

**MATERIALS AND METHODS**

**Setting**

The research was conducted from January through June 2001 in the rural areas of Siraha and Udayapur, two districts in Nepal. Siraha is a district in the eastern lowlands, and Udayapur is situated in the mid-hill area. Both government and non-governmental organizations (NGOs) promote clean deliveries, mainly through trained TBAs and female health volunteers in the villages. Recently, the Government has started to train auxiliary nurse midwives and has employed them in district health posts. Still, the vast majority of women are attended by untrained family members, untrained TBAs, or give birth alone (1).

**Study design**

The research consisted of in-depth interviews with different categories of birth attendants within one month of delivery. The interviews were designed to explore issues, such as preparations before delivery, how the kit and its components are regarded by users and non-users of the kit, how women learn about the importance of using a clean razor to cut the umbilical cord, and which factors determine whether and when attendants wash their hands and use soap. During the interviews, both users and non-users of the kit were asked to demonstrate or describe their most recent delivery through role-play, using props provided by the interviewers. The interviewers used a topic guide that included an observation checklist to gather basic data on the demonstration. The study team cross-checked information through background interviews with government and NGO health workers.

As the study team found the rate of CHDK use to be low (approximately 10%) during initial visits, they seeded kits (that is, distributed them to pregnant women free of charge just before their delivery) prior to the last interview period in both the districts. While seeding provided the study with more kit users, this technique also limited the ability of the study team to assess the natural process and motivations that lead to the use of CHDK. After analysis of the interviews with spontaneous
kit users and seeded kit users, it was evident that seeding kits did not influence the opinions of the respondents and use of the kit aside from how they procured it.

**Sample size and characteristics**

Users and non-users of kits were the two main groups of respondents. Within each group, four categories of respondents were identified for comparison: (a) women who delivered alone, (b) trained TBAs, (c) untrained TBAs, and (d) women who were assisted by a family member while giving birth.

The interviewers were women who are fluent in Maithili and Nepali and are highly experienced in conducting interviews and focus groups. Two teams of two female interviewers each conducted the interviews. They were given specific training to gain familiarity with the interview topic guides and demonstration checklist. The interviewers identified the respondents by enquiring in villages throughout the districts about any births within the two weeks prior to the interview period and the type of assistance received. Respondents who were eligible for one of the four categories above were selected at random. Although ethnic background plays a role in customs and practices of birth attendants, caste and ethnicity were not selection criteria as the differences in the use of CHDK by the categories of birth attendants were of primary interest.

**RESULTS**

The study team interviewed a total of 51 women, of whom 15 had received seeded kits. Distribution of the respondents across study categories is summarized in the table. Across the three attendant categories, the age of the birth attendants ranged from 25 to 65 years. Women delivering alone were younger than other respondents as two-thirds of them were aged less than 25 years. None of the women delivering alone was having her first child. Only eight of the 51 women were literate. In Siraha, the majority of the respondents were women of low-caste and untouchable-caste from the Terai. In Udayapur, the study participants came from three groups: hill-tribe people (Magar, Tamang, and Rai), Bahun/Chhetri people, and untouchable hill castes.

**Birth preparedness**

During the study, several respondents indicated that pregnant woman should not know about any delivery preparations. In contrast, the women who received the seeded kits did not express any direct objection to having the kits in advance. The study interviewed nine women who had purchased and used CHDK on their own initiative during a recent delivery.

Women who bought the kit of their own volition said that they bought it at the time they would otherwise buy a razor blade and thread, generally less than one week before delivery. In contrast, respondents who did not use the kit either said that (i) they did not know about it, (ii) vendors who carried the kit were far away, or (iii) they had to wait for the weekly market and, therefore, could not purchase it in time.

When asked what preparations were made for delivery during pregnancy, half of the respondents said that nothing was done. The respondents would often only describe activities at the immediate time of delivery. After the interviewers probed more deeply, the respondents, however, described other preparations, such as those involving food or medicine, that were carried out 4 to 6 weeks before the expected delivery date. The majority of the respondents claimed that they bought razor blades and thread one week before the birth at the weekly village market. However, in one-third of the cases, the interviews reflected that these items were sent only at the onset of labour pains.

<table>
<thead>
<tr>
<th>Category of respondents interviewed</th>
<th>Udayapur (n=14)</th>
<th>Siraha (n=37)</th>
<th>Total (n=51)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Non-users of kit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untrained TBAs</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Trained TBAs</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Family member attendants</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Women delivering alone</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total non-users of kit</td>
<td>8</td>
<td>19</td>
<td>27</td>
</tr>
<tr>
<td><strong>Kit users</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Untrained TBAs</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Trained TBAs</td>
<td>0</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Family member attendants</td>
<td>2</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Women delivering alone</td>
<td>4</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Total kit users</td>
<td>6</td>
<td>18</td>
<td>24</td>
</tr>
</tbody>
</table>

TBAs=Traditional birth attendants.

Many people stated that they had access to village shops where the items would be immediately available and, therefore, did not perceive a need to purchase a razor blade and thread ahead of time. Instead, they planned to send someone to buy these supplies at the time of labour or delivery. Only a few respondents stated that purchases and preparations were made in advance to prevent scorn and laughter by their neighbours should they have to rush at the time of delivery.
Perception and awareness of the kit

Users of the kit identified the convenience of having all birth-related tools available in one place as the main positive attribute of the kit. Many reported that they used CHDK because its components are clean and hygienic, and contribute to the prevention of illnesses. For TBAs, an important motivation for using the kit was their fear of being blamed for the disease or death of the children they deliver, as their professional reputations are at stake.

Although the respondents indicated that significant amounts of money are spent on birth-related activities, such as name-giving ceremonies, some respondents perceived the kit’s cost of 25 rupees (US$ 0.34 at the time of research) as expensive, especially for poor people. Some respondents mentioned that they would rather spend 25 rupees on oil for massaging the mother and baby than on the CHDK. Many people felt that the cost of the most important contents did not add up to the kit’s full price. In addition, they considered the kit an ‘extra’ rather than an ‘essential’ item for delivery. A few individuals felt that the kit was wasteful because the contents must be thrown away after use.

Users of the kit obtained it from pharmacies, female community health volunteers, and community-based distributors. Overall, the data suggest that awareness of the kit was low, despite social marketing efforts. Many respondents who had not used the kit and about half of the seeded kit users did not know about the kit prior to the interview. These individuals reported that they had not heard of the kit, had not seen it, or could not say where it was available. In addition, results of the interviews indicated that a constraint to kit use is that most components are more readily available individually than the kit itself.

Kit contents

Untrained users of the kit (i.e. all but trained TBAs) identified the razor blade and thread as the most useful kit items. This is consistent with the perception of most non-users that the cutting tools (specifically the blade and thread) are the most important items for delivery. Both users and non-users of kits had used a razor blade to cut the cord. Two non-users used an old blade without boiling it.

The trained TBAs who used kits viewed the plastic sheet as the most helpful item as these women were more aware of the importance of a clean birthing place and felt that they could get clean cutting tools elsewhere. Four kit users who delivered alone mentioned that they could not use the plastic as the delivery had happened too quickly to put it in place.

The plastic disc included in the kit as a clean cutting surface was easily accepted and used as a substitute for a real metal coin. The non-users of kits used unclean coins; the plastic disc, therefore, appears to be useful for hygiene purposes. Despite this, two TBAs mentioned that they kept the plastic disc and the plastic sheet for re-use with people who could not afford to buy the kit. They, however, said that they would wash the disc in water, keep it, and dip it in boiled water at the next delivery, steps which would not ensure the chance of a hygienic delivery.

Many women did not understand why the kit contained three cord ties. Generally, both trained and untrained TBAs tied the cord with three ties. Family member attendants were likely to use only one or two tie(s), especially if they were non-users of kits.

The soap in the kit generated opposing opinions among the respondents. Some said that soap is available at home and can easily be bought, so it is superfluous in the kit. Others stated that soap might not always be available, in which case, having it in the kit enables the birth attendant to access it immediately. However, the majority of the respondents in both the groups were not aware that the soap is intended first and foremost for washing hands during delivery, not to bathe the baby.

Decision-makers

Results of the interviews indicated that decision-making power to use a kit often lies with the mother-in-law or husband, rather than the actual kit user or delivering woman. Most TBAs indicated that they were dependent on the delivering woman's household for all preparations for birth and that they can advise, but not obligate, a pregnant woman or her mother-in-law to purchase the kit. TBAs mentioned that the household often was not willing or able to spend money on a kit. Some TBAs, however, stated that they would not attend a delivery unless the kit was used. Results of the interviews also indicated that the attitudes of TBAs towards the kit were decisive in their promotion of the kit in that TBAs who did not perceive the kit as a useful tool to ensure a clean delivery would not encourage its use.

Information obtained through background interviews also indicated that many health centre staff prescribed
and used CHDK during deliveries on their premises. Notably, this group of kit users has a considerable decision-making power. Health-post nurses are called on to perform home deliveries, for which they bring along their own extensive delivery kits. However, they also ask women to purchase CHDK and use its clean cord ties and the plastic sheet. This population has access to other clean cutting instruments; therefore, the clean cord ties and the plastic sheet were the most useful kit components for them.

**Hygiene and hand-washing**

About half of the respondents were aware that dust and dirty hands might cause disease in the baby or its mother. The respondents often explicitly mentioned tetanus and, in a few cases, infection. Sometimes, people were not able to tell which disease presented a risk. Overall, the respondents’ understanding of the concepts of hygiene appeared weak.

Both users and non-users of kits reported high re-use of items during delivery. Two TBAs mentioned that they kept the plastic disc and plastic sheet for use with people who could not afford to buy the kit. After washing it with water, about half of the respondents put the used razor blade aside for use in daily tasks. Other respondents reported that it could only be re-used in the case of another delivery. Only a few respondents were aware of the risks of contracting disease by re-using the razor blade or other materials from the kit.

Although many respondents were aware that dirty hands can transmit disease, results of the interviews indicated that hand-washing during and after delivery carries the meaning of ritual cleansing (because delivery is considered a polluting process) rather than a deliberate intent to reduce infection. Some TBAs who were generally better informed about hygiene and disease than other respondents indicated that water alone (without soap) should be enough to eliminate the risk of contamination.

Most respondents felt that if they had washed their hands once, there was no need to wash them again immediately before cutting the cord. Only a quarter of both users and non-users of kits (mostly TBAs) claimed to wash their hands twice during delivery as recommended. Half of the non-users and users reported that they did not wash their hands, except after completing the delivery. Actual hand-washing observed in demonstrations was less common than stated by the respondents in the interview. Thus, hand-washing appears not to be an integral part of clean delivery practices for most individuals.

**DISCUSSION**

The findings of this qualitative study provide important information about the use and perception of CHDK in Nepal. The locally-produced kit was acceptable to most kit users, but was not seen as an essential tool in clean delivery by non-users. The users found it to be convenient and hygienic, and TBAs felt that the kit helps them maintain their professional reputation by preventing illness during births.

Despite efforts to promote CHDK in Nepal over the past seven years, lack of its awareness and its real or perceived availability may constitute constraints to its use. Its distribution via commercial channels remains challenging in self-subsistent communities and in areas that have a low density of shops. TBAs and female community health volunteers often obtain kits at a reduced rate via the health system channels (either from the Government or from NGOs). The actual use of the kit appears to be largely dependent on their own motivation. In addition, women who are aware of its existence may not necessarily have a complete understanding of its potential to reduce the risk of neonatal infection.

The findings of the study indicate that birth preparedness was low among the women interviewed. Cultural taboos, poverty, and an underestimation of time needed to assemble birth supplies prevent the timely purchase of clean delivery materials, including CHDK. These results are generally consistent with those of the 1998 quantitative evaluation which revealed that almost half of the respondents in Siraha waited until less than one week before the delivery to buy the kit. In a quarter of all cases of kit use documented in that study, the attendant brought the kit at the time of labour. Lack of knowledge about basic hygiene practices and the importance of the kit’s implements for preventing neonatal infection appear to be additional limiting factors for kit use.

Although half of the respondents were aware of the link between dirt and disease, their hygiene practices did not reflect this. The importance of hand-washing in preventing disease and infection is often obscured by cultural perceptions of ritual pollution and purity. Hand-washing during delivery is a topic that still requires
attention in promotion of clean birth as the connection between hygiene and infection is not well-understood.

Traditional perceptions of the causes of illness and death influence women’s priorities in preparing for birth. Keeping the mother warm with oil massage at delivery, for example, was perceived as much more important for her and the baby’s health than protecting them from infection. The cost of the kit is, therefore, seen as an extra expense, or as a lesser priority than other materials or activities such as name-giving ceremonies.

Results of the interviews indicated that mothers-in-law (or husbands in nuclear families) are the people who determine the purchases made for delivery. Yet promotion of clean delivery and CHDK by health personnel and other training resources is targeted to educate pregnant women and TBAs. The most relevant and compelling information may, therefore, not reach the decision-makers of the delivering households. The shyness of pregnant daughters-in-law appears to inhibit their ability to discuss pregnancy and delivery requirements with mothers-in-law (8). For example, even if a pregnant woman is aware of the kit, she may not tell her mother-in-law. This seems to be particularly true among certain ethnic groups in the hill areas (Rai, Tamang, and Limbu), where delivering alone is the norm; it also may play an important role in other communities where daughters-in-law are subordinate. As TBAs are often called upon only at the time of delivery, their recommendations for obtaining a kit may come too late.

Use of razor blades as a clean cord-cutting implement has been promoted in Nepal for the last 20 years and has contributed to a high awareness of the need for a new blade for a birth. In Siraha, the cord was traditionally cut by a weed-cutting tool (khurpi) on a piece of clay tile or pot. This tradition has diminished, and razor blades are generally used now. Razor blades are now more widely available, culturally acceptable, and perceived as sharp and suitable for cutting the cord. In Udayapur, the cord was traditionally cut with either a sickle and no cutting surface or a straight fodder-cutting tool (kachia) and a silver coin or bangle; this tradition still appears to be in practice. The study data do not suggest that the common use of new or boiled blades during births was related to publicity about the kit.

Although this type of qualitative research does not allow for widespread generalization, the results provide important insight into the use of kits in low-resource settings and provide recommendations for future activities. This information will be a resource for future education and kit promotion efforts in Nepal and in other countries that are developing delivery kits.

Because limited knowledge about the kit and weak perception of its usefulness among household decision-makers appear to be constraints to kit-use, promotional efforts need to be re-targeted to individuals who hold decision-making power about the use of kit. Peer education through community-based organizations may be an effective tool for promoting CHDK. This is particularly true in mountainous areas among secluded populations, where promotion and distribution of kits are challenging.

Kit promotion activities should emphasize hygiene and the role of all kit contents (including the plastic sheet and soap) in preventing disease. The plastic disc that serves as a substitute for the traditional coin should continue to be included in CHDK in Nepal as hygiene may not otherwise be maintained. Inclination of the respondents to dispose of apparently useful kit items that had been dirtied during delivery seemed to be discouraged for poverty. Consequently, the reasons for disposing of the blade, plastic disc, and other items need to be highlighted.

Factors influencing the use of kits and their purchase in advance of delivery are deeply culturally rooted. As demonstrated by higher use rates in areas where the kit has been promoted the longest, only slow and gradual change is possible. Consequently, in promoting clean delivery kits, it is important to set realistic goals and make a concerted effort to integrate local kits into other birth preparedness efforts.

A clear need remains for tools that can help improve cleanliness and hygiene during home deliveries. Single-use delivery kits are one intervention that can contribute to realizing clean delivery when used correctly and consistently. The cultural appropriateness of kit contents, price, pictorial instructions, distribution points, and the target audiences of promotional strategies need to be carefully considered.

ACKNOWLEDGEMENTS

MCHP developed the kit with funding from the United States Agency for International Development, United Nations Children’s Fund, and United Nations Population Fund, with technical assistance from PATH and Save the Children Alliance. The Bill & Melinda Gates Foundation funded the present qualitative research which
was carried out by PATH in cooperation with Save the Children–U.S. and MCHP.

REFERENCES