



# Afghan Family Health Book Final Report

September 17, 2004 – September 16, 2005

**Deliverables Report for Purchase Orders HHSP23200400712P & HHSP23200500350P**

## ***Background***

The Afghan Family Health Book (AFHB) was designed to allow individuals without formal education to acquire Health Education information through interactive electronic picture book pages linked to local language recordings of related health messages. The book is intended to provide useful and practical information on disease prevention and health promotion, and to increase individual knowledge about healthy behaviors to ensure wellness and reduce the risk of disease.

During the period January-June 2005, International Medical Corps (IMC) conducted a field evaluation of the AFHB in household settings in two provinces of Afghanistan. The General Objective of this project was to characterize the differences in health knowledge and practices between families who received the AFHB and families who did not receive the AFHB. Specific objectives are as follows:

- Determine health-related knowledge and practices in the two groups, intervention and control.
- Determine the extent to which changes in health knowledge and practices can be attributed to the use of the AFHB.
- Determine, through a supplementary user survey and anecdotal reports, who is using the book and under what conditions it is being used.
- Identify a large-scale distribution strategy for the remaining 17,000 books.

Toward these ends, IMC conducted a baseline KAP survey of 4,000 households in two provinces (Kabul and Laghman) in Afghanistan between January and February 2005. Follow-up surveys were completed between April and June 2005. .

IMC submitted the KAP survey, and its project proposal to HHS and the Western Institutional Review Board in October 2004. It was approved, with one minor revision to the consent statement, on December 16, 2004. The revised survey was subsequently translated into Dari and Pashto in Kabul.

In December 2004, IMC hired and trained 31 surveyors and 5 supervisors on the use of the AFHB, KAP survey techniques, and the use of Personal Data Assistants (PDAs). Two surveyors were recruited from

each district to manage the data input from questionnaires into PDAs and transmission from the PDAs to the Global Relief Technologies (GRT) Virtual Network Operations Center (VNOC).<sup>1</sup>

IMC, in consultation with local leaders and other key stakeholders, had selected one Intervention and one Control District each in Kabul and Laghman Provinces. However, the distribution of 900 AFHB erroneously began before the baseline survey was conducted in one of these districts (i.e., Qarghayi District) of Laghman Province. Alingar District was then selected to replace Qarghayi as the intervention district for Laghman Province. In January and February, surveyors conducted the baseline survey in the following four districts using paper questionnaires and the follow-up survey between April and June.

## Methodology

### *Study design*

IMC conducted a clustered sampled, follow-up and baseline panel survey design to ascertain the effectiveness of the AFHB versus Community Health Workers in changing health knowledge and practices. This was measured using a four-cell design, in which two areas were selected to serve as the intervention group, and the other two areas to serve as the control group. The intervention group was exposed to health messages through the CHWs, and received the AFHB, one per family. The control group was exposed to health education through the CHWs but without the AFHB.

The study involved two Dari-speaking districts in Kabul Province and two Pashto-speaking districts in Laghman Province. Although these sub-populations are not entirely representative of the country, the results will reflect a significant cross-section of the Afghan population. Kabul residents are generally less conservative than those in Laghman, and women in Laghman are generally less educated than those in Kabul. Samples of these sub-populations will likely represent a range of socio-economic status, ethnic backgrounds, and levels of formal education.

The study districts were located within catchments of IMC-supported health facilities, and where women community health workers (CHWs) are active. Two districts in each Province were selected non-randomly to represent the intervention (AFHB) and control (CHW) groups, were located in two discrete, geographically separated districts in each province to minimize “cross-fertilization.” Efforts were made to match the two districts in terms of size, demographics, and access to health services. The control and intervention districts were selected in consultation and collaboration with local leaders, the Ministry of Health, and other key actors in the health sector.

	<b>Intervention</b>	<b>Control</b>
<b>Kabul Province</b>	District A	District B
<b>Laghman Province</b>	District C	District D

Within each randomly selected village, maps, with each household represented, were drawn with the assistance of the village elders. The number of study households within each village was selected using random, proportional sampling. Each village was then sampled using systematic random sampling. Within each cluster, study households were selected randomly to ensure that: a) the sample was representative of the populations of the sampled districts in Kabul and Laghman provinces; and b) the sample was representative of the distribution of Dari and Pashto-speaking families. Each selected household received one AFHB in either Dari or Pashto, according to the language spoken in the home.

<sup>1</sup> IMC detailed these training activities in the Afghan Family Health Book Deliverables Report: Recruitment and Training of Surveyors, Survey Supervisor and Community Health Workers in a report submitted to HHS on April 19, 2005.

### **Sample Size**

Sample size for this study was determined by estimating a change/improvement in health care knowledge and by setting a desired margin of error. We assumed a change in knowledge of 0.50, a margin of error of +/- .05% at a 95% confidence level. The sample size required given these conditions was 1067 households. However, our sample design included two levels of clustering, and we therefore assumed a design effect of 2 and thus the calculated sample size was 2000. A total of 2,000 AFHB units were distributed for this evaluation project, and all 2,000 recipient households surveyed twice—once at baseline, and again after six months. Two thousand control households were also identified. The total sample size was approximately 4,000 households.

### **Subjects**

The IMC team interviewed person per selected household. This person was either a married woman of reproductive age or male head-of-household. Males were interviewed to see if there is a change in family knowledge passed down from the women who are given the AFHB. A female or male respondent was selected randomly from each household interview. In most instances, if only one adult, male or female, was present at the time a household was visited, that person was interviewed.

All study participants were selected using a combination of cluster and systematic random sampling to obtain a representative, proportional sample in each of the 98 villages among four districts and two major Provinces. For each village, the village elder that knew the local population well helped researchers determine the extent of the village. Houses were chosen randomly in each village at an interval that completely sampled the village. A sampling interval (n) was calculated by dividing the number of households in the village by the number of interviews to be conducted within the cluster. A starting household was determined by random number generation and each n<sup>th</sup> household was interviewed until each the entire village had been sampled.

We randomly sampled 98 clusters in each of 4 different districts of Laghman and Kabul Provinces. Overall, the sample was comprised of 7.04% of the total population in the 4 Districts and 0.76% of the total population in the two sampled Provinces. Villages were excluded if they were primarily industrial, market, or agricultural areas, or were deemed unsafe by local authorities or had lack of clearance of mines and unexploded ordinance at the time of the survey.

### **Instrument**

The survey contained 116 questions on respondent demographics, knowledge assessment of health care topics including immunizations, micronutrients, hygiene and sanitation, diarrhea, malaria, tuberculosis, acute respiratory infections, sexually transmitted diseases, safety, first aid, mental health, female reproductive anatomy, prenatal care, birth and neonatal care, postpartum care, birth spacing, and breastfeeding and child nutrition. In addition, questions were asked regarding the use of the AFHB. Regarding health care knowledge, respondents were asked a series of yes or no questions under each topic of health care. Opinions were assessed by a response of "agree" or "disagree" to statements concerning the use of the AFHB.

The questionnaire was written in English and translated into *Dari and Pashto* and the accuracy of the translation was checked by back-translation into English. Three regional and medical experts reviewed the questionnaire for content validity. Interviewers administered the survey in *Dari* and/or *Pashto* depending on the language spoken in the home. The survey was pilot tested among 20 Afghans and the resulting suggestions regarding clarity and cultural appropriateness were incorporated.

### **Interviewers**

The survey interviews were conducted by 31 surveyors, of whom 6 were female and 25 were males. They were trained and supervised by the IMC field supervisors and five trained Afghan research team leaders. Researcher training consisted of 2 days of classroom teaching and role-play followed by several days of field observation and continuous supervision.

All baseline interviews were conducted between January and March of 2005. Follow-up interviews were completed between April and June 2005. Interviews with participants lasted approximately 20-30 minutes and were conducted in the most private setting possible. All questionnaires were reviewed for completeness and for correctness of recording after the interview by the interviewers, then by the Afghan research team leaders, and finally, the IMC field supervisor at the end of each day.

### **Human Subjects Protections**

This research proposal was reviewed and approved by Western Institutional Review Board and conducted in accordance with the Declaration of Helsinki, as revised in 2000.<sup>2</sup> All data was kept confidential. Individual houses and villages were assigned codes that were kept in a locked cabinet in Kabul. No other identifiers were made on either the surveys or the households for follow-up. Verbal informed consent was obtained from all participants. Participants did not receive any material compensation.

### **Statistical Analysis**

To control for clustering and design effect, data were weighted by the number of districts sampled from each province, the number of villages sampled per district, and the number households in each village. Complex survey variance estimates were calculated using Taylor series linearization. All errors are nominal errors due to the inability to sample every sector randomly. For 2x2 cross tabulations containing cells with expected frequencies of fewer than 5, statistical significance were determined using Fisher's exact test; Yates' corrected chi square was used for all others. For cross tabulations with greater than 2 rows, statistical significance was determined using the Pearson chi square statistic. Analysis of variance (ANOVA) was used for statistical comparison of means. For all statistical determinations, significance levels were established at  $p < 0.05$ . Differences between baseline and follow-up knowledge of health care topics were assessed by evaluating those who were able to answer all the questions correctly in a module. The proportional change from baseline was also assessed and the statistical differences analyzed between groups those who answered all questions correctly at baseline and the change (improvement in knowledge) at follow-up.

### **Data Entry and Analysis**

The data from the completed questionnaires were entered using GRT's electronic data collection system based on a handheld PDA (Personal Digital Assistant) interface and managed through their Virtual Networks Operation Center (VNOC). Efforts were made to select surveyors from among third year students of the Kabul Medical Institute, Nanagarhar Medical Institute, or students at the Institute of Health Sciences in Kabul and Jalalabad. Additional surveyors were recruited from doctor's wives and vaccinators and those who had conducted previous health surveys for IMC and/or for other nongovernmental organizations who provide health services in Afghanistan. Due to their training and education, these students were expected to have a good understanding of the health concepts in the AFHB and questionnaire, as well as experience using computerized systems.

Province	Intervention District	Control District
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<sup>2</sup> United States Department of Health and Human Services. Title 45 CFR Part 46 Protection Of Human Subjects. Available at: <http://ohsr.od.nih.gov/mpa/45cfr46.php3>. Accessed April 4, 2003.

Kabul	Qarabagh	Shakerdera
Laghman	Alingar	Mehterlam

In mid-January, surveyors began transferring survey responses from the completed questionnaires to the PDAs, and from the PDAs to the VNOC via satellite phone. By March, they had completed this process for all 4,000 baseline survey questionnaires, but more than 1,300 records, primarily those transmitted from IMC's Jalalabad office, were found to be missing or incomplete when Global Relief Technologies shared with IMC the report of data received in April. The field and GRT collaborated to identify the missing data and IMC field staff re-sent the missing data in May and June. IMC completed the process of resending the missing baseline data and the Follow up Survey data by June 30, 2005. Other data entry and analysis issues were found at the time of the analysis of baseline data including the inability to use VNOC as a means for data analysis, missing variables, and incorrect database formatting.

## RESULTS

### Characteristics of Respondents

A total of 4,288 households were sampled. Seventy-three did not make criteria for inclusion in the study and eleven households refused to participate. Of the 4,226 eligible households sampled, 3,947 households participating in the study (92% response rate), 450 or eleven percent of households were lost to follow-up, 257 did not have a baseline survey and thus could not be part of the complete study, 47 were assessed after only one month of exposure to the intervention and 71 household had multiple entries for the baseline survey or the follow-up survey leaving a total of 3,379 households.

Demographics of the respondents are presented in Table 1. The sample consisted of 75% men (2549/3377) and 25% women (828/3377). The mean age was  $30 \pm 9$  years (range, 15-65 years) for males and  $29 \pm 8$  years (range, 15-49 years) for females. The majority of the participants sampled were married (2547/3370, 76%). Education was low for both men ( $5 \pm 4.8$  years (range, 0-19 years) and women ( $1 \pm 2$  years (range, 0-16 years). Eighty-three percent (675/811) of women had no years of education. Seventy-three percent (1835/2517) of men and only 19% (154/816) of women reported they worked outside the home. Close to half of households (1568/3372, 46%) reported they had food shortages over the last year; and 69% (1458/2126) of respondents reported that these shortages affected health care decisions.

### Knowledge of Basic Health Care Topics

Table 2 presents the detailed initial analysis of differences in knowledge improvement among participants who were given an AFHB and those who did not receive the book but were followed by CHWs. On average, there was a 42% increase from baseline knowledge among those who used the AFHB and 12% among those who were followed by CHWs only.

#### Immunizations

Baseline knowledge of immunization topics was high for both case and control groups. The proportional change in this knowledge improved only with the AFHB. There was no significant change in knowledge of the population whose health education was limited to informational sessions with CHWs.

#### Micronutrients

Knowledge increased significantly in both the AFHB and CHW group, although the change in the AFHB was more than double the CHW instructional group.

### Hygiene and Sanitation

Initially, the AFHB respondents had less knowledge regarding hygiene and sanitation than the CHW respondents; however, the proportional change in knowledge in hygiene was more than double in the AFHB group.

### Diarrhea

Both the AFHB and the CHW groups had little baseline knowledge about diarrhea. The proportional change in knowledge increased significantly with the AFHB compared with the CHWs.

### Malaria

Malaria was one of three topics where less than a third of participants were able to answer all the questions correctly. Although knowledge increased significantly in both groups, the increase in knowledge among those with the AFHB was more than double the baseline.

### Tuberculosis

Less than half of participants had significant knowledge about Tuberculosis despite the high rates of this disease in the country. The AFHB more than doubled baseline knowledge compared with CHW health messages.

### Acute Respiratory Infections

There was no change from baseline knowledge among participants followed by CHWs and a significant change among those with the AFHB.

### Knowledge Regarding Sexually Transmitted Diseases

Low baseline knowledge of STDs was similar among other related health care topics such as postpartum care, female reproductive anatomy and birth spacing. Although knowledge increased in the AFHB group, the proportion of change was not as high as in other modules.

### Safety

The AFHB increased safety knowledge. No change was noted among participants followed by CHWs.

### First Aid

Knowledge regarding first aid nearly doubled in the AFHB group but also improved in the CHW group. However the proportion of change in the CHW group was less than half the change seen in the AFHB group.

### Mental Health

There was a significant difference in baseline knowledge between the case and control group. The control groups had much higher baseline knowledge. This notwithstanding, the proportional change in knowledge during the period of the study was much greater among participants using the AFHB.

### Female Reproductive Anatomy

One of the lowest baseline knowledge modules, female reproductive health knowledge improved significantly in both groups, however, the increase in this knowledge do not reach more than 80% as seen in other modules.

### Prenatal Care, Birth and Neonatal Care, Postpartum Care, Birth Spacing

Less than 50% of participants were able to answer all questions regarding prenatal care correctly. Although both groups had an increase in knowledge, the AFHB group doubled its knowledge in these modules.

### Breastfeeding/Child Nutrition

Among the women's health modules, breastfeeding and child nutrition was a topic where baseline knowledge was better than other women's health modules. However, despite higher baseline knowledge, improvement in this knowledge was minimal for both groups, yet still statistically significant.

### **Opinions and Beliefs Regarding Use of the Afghan Family Health Book**

Overall, survey respondents found the book to be too complicated, did not understand the words used and did not enjoy using the tool. Women were more cynical regarding the book than men. Of the participants surveyed, they do not believe that behavioral health changes improve health. The Afghan Family Health Book was used by less than 10% of household members over the 3-month study. Neither men (7%) nor women (3%) would plan or had changed health practices based on what they learned in the Afghan Family Health Book. Both men and women prefer/believe that health is better taught by Community Health Workers than the Afghan Family Health Book.

However, anecdotal information reported by the surveyors and by the co-investigator who made household visits to those using the AFHB indicated that the users perceived the books as useful and valuable, that the books were used as reference tools when families had questions about health issues and that male and female household members of all ages used the books several hours per week. On two occasions in the province of Laghman, village elders sought out the survey supervisor and the program manager/co-investigator to tell them how useful these books were in their own household and how important they were for the education of the people in their locale. They also stressed the fact that the books were more useful to the family than educational sessions by the CHWs because they were always available in the household and could be accessed any time. Families from households who did not receive AFHB also sought out surveyors and supervisors in the project to request that their families have the opportunity to learn from the AFHB.

From a cultural perspective, it is not surprising that survey respondents who had access to instruction by CHWs preferred CHW-facilitated sessions to time spent learning independently from the AFHB. Afghans place a high value on personal contact and interaction. Moreover, Afghans in rural areas who have little or no schooling (as Table 1 indicates is the case with many of the survey respondents in this study) and no access to television learn new behaviors primarily from observing and interacting with others. They have little or no experience with learning from books or electronic forms of media. For most Afghans, schools are the places in which they are introduced to learning from books.

Survey respondents preference for interaction with the CHWs, even though knowledge improves from using the AFHB indicates that incorporating the AFHB with CHW facilitated health education sessions would be more attractive to Afghan users from a cultural perspective and could increase health education knowledge more rapidly than using the AFHB independently.

### **Gender Differences in Knowledge Improvement among Households with the AFHB and Households with Community Health Workers (CHWs)**

Data from this subgroup analysis is not shown<sup>3</sup>. With regard to gender the differences in knowledge gain were more apparent with the AFHB than with CHWs (15% vs. 5%,  $P < .0001$ ).

Females gained the most knowledge when using the AFHB however, in certain topics, such as, female reproductive anatomy, breastfeeding, immunizations and sexually transmitted diseases, men gained the most knowledge. It is not surprising to see this gain among men since these are topics that are more

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<sup>3</sup> ANOVA

familiar to women who have the most experience (reproductive anatomy and breastfeeding) or are the ones more likely to express the consequences of /more likely to seek help for (sexually transmitted diseases) or are more familiar as they have the charge for children (immunizations).

Among households with CHWs, females also had a greater increase in knowledge with the exception of sexually transmitted diseases, mental health, birth and neonatal care, and first aid. In many of the basic health care topics, there were no knowledge gains for either men or women. Only 9 of 17 topics showed a knowledge gain difference based on gender.

### **Language Differences in Knowledge Improvement among Households with the Dari and Pashto versions of the AFHB**

Data from this subgroup analysis is not shown<sup>4</sup>. With regard to language differences, mean knowledge gain higher in households using the Dari version of the AFHB than households with the Pashto version of the AFHB. (46% vs. 37%,  $P < .001$ ).

Households using the Dari version of the AFHB gained the most knowledge when using the AFHB however, in certain topics, such as, female reproductive anatomy, sexually transmitted diseases, and postpartum care, households with the Pashto version of the AFHB gained the most knowledge.

Pilot testing with the different versions of the AFHB revealed that the Pashto version was in a Kandahar dialect. This version of the AFHB was used in the Eastern region of Afghanistan where this dialect is not as understandable. The Dari version, per anecdotal information, was understandable by the majority of Dari speakers. User data revealed that those with the Pashto version (96%) found the words to be too complicated as compared with households using the Dari version (96% vs. 89%,  $P < .001$ ). Although, it appears, in general, the words used in both books may not have been at a level suitable for the level of education among households in the areas surveyed. Some of the knowledge gain differences may be due to these discrepancies.

### **Limitations**

The results cannot be generalized to all of Afghanistan. The results are limited to generalization to the districts surveyed. Because of the disproportionate distribution of books among women and men, it will be difficult to assess differences by gender as the power may not be similar in both groups. The high loss to follow-up and the loss of data due to data entry error or methodology errors had little effect (high degree of significance) on the outcome of analysis, however, the power (calculated at 95%) may be somewhat less especially among the subgroup analyses. By not analyzing these data as repeated measures but instead as dichotomous (those who answered all the questions correctly or not) values, we have underestimated the degree of statistical significance and our power. However, given the high degree of significance obtained, analysis as repeated measures might not be of value.

### **Conclusion**

Knowledge improves more among those who used the AFHB and among women for the majority of topics. Topics that are less familiar to men does show improvement with the AFHB and more consistently than with a CHW alone. There was a greater improvement in knowledge among household using the Dari version of the AFHB. The Pashto version may not have been translated to the dialect of Pashto familiar in the Eastern regions of Afghanistan and the words used to explain the health topics appears to be too high a level for the education levels in the households sampled. Because the vast majority of participants preferred the contact with CHWs, combining the two modalities may be the most effective and cost-effective modality for increasing health care knowledge in the community.

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<sup>4</sup> ANOVA



## Lessons Learned

### Data Loss

This was the first IMC attempt in Afghanistan to implement a formal evaluation study with Afghan national staff who, though they are experienced in Rapid Assessment surveys and distribution projects, have no formal exposure to the rigors of formal research and evaluation. Despite two days of formal training and in-country oversight from an expatriate program manager, Afghan surveyors made independent decisions in the field that impacted the data generated by the study in terms of gender balance among the respondents and loss of data.

- Immediately after training all surveyors on the methods of surveying and the steps in the evaluation process, the expatriate program manager went on home leave. In their eagerness to get the Afghan Family Health Books (AFHB) distributed by the original target date of mid-January 2005, the Laghman Province Surveyor Supervisor ordered distribution of the books in the designated intervention district before the baseline survey was completed. Over 900 books had been distributed before the Program Manager was aware of the error. A new intervention district had to be designated. *Lesson learned:* For workers used to distribution projects, it is not self-evident that a baseline survey should precede distribution. Hence, the program manager must forcefully stress the sequence of activities.
- Although the Afghan Project Officer and surveyors were aware that the target groups for the survey were women of child bearing age (and their husbands), they initiated the baseline survey with all male surveyors in Laghman Province, repeatedly protesting that it was too difficult to find female surveyors. Since Afghan men are not allowed to speak alone to women other than their wives and female relatives, the male surveyors could only interview women. The program manager finally stopped the baseline survey at the midpoint until female surveyors were hired and able to target female members of the identified households. *Lesson learned:* The program manager cannot give in to protests that female surveyors cannot be found. In fact, there have been studies completed by the IMC Principal Investigator in Afghanistan during Taliban years where there were no problems hiring female surveyors or including females in large population-based studies. If females are to be equally represented in a survey, equal numbers of female and male surveyors must be hired.
- Training of the surveyors included special attention to the follow up survey questions for the intervention districts. Moreover, follow up survey forms were separately printed and released to the field at the end of the learning period. Nevertheless, many surveyors independently chose to skip these questions in the follow up survey or unilaterally decided not to perform a baseline survey, distributed the book and then completed follow-up, which was an incomplete dataset. *Lesson learned:* If surveys are too long and surveyors don't perceive the importance of new questions in eliciting new information, they will opt for the familiar questions that can be completed within constrained time frames. The program manager and supervisors have to be more rigorous in ensuring that all the questions are asked, checking surveys daily and assessing for quality control at each step of the project.
- Surveyors in the IMC Eastern Region Office in Jalalabad conscientiously transmitted data from their Personal Data Assistants (PDAs) each day. These staff members, unlike the Kabul-based data transmitters, were not in email contact with the Global Research Technology (GRT) were, so they were unaware that their data were not being received. Ultimately, the slow rate of transmission resulted in less than half the data reaching the GRT VNOC. Once the loss of data

was discovered, the surveys were re-transmitted. Again, the most of the data transmitted from the Eastern Region Office were not received. However, data from surveys taken to the Kabul Office were received at the VNOC. *Lesson learned:* The Kabul-based program staff members need to understand the limitations of regional offices and make certain that data transmitted by the staff from those offices are being received.

- The platform used with GRT VNOC was not capable of supporting a scientific study (clustered or otherwise). The VNOC system does not have statistical analysis capability, nor can raw data be viewed and assessed on a regular basis leading to errors in data entry and process. Each inquiry into the data had to go through a process, which required a few days before a simple Excel spreadsheet could be generated for review. Because of this platform and even with data loss due to transmission and surveyor error, a significant portion of data had to be hand entered at a later date into a translated spreadsheet, then translated to the statistical analysis format and analyzed separately. *Lesson Learned:* VNOC is not mature enough nor designed to be used for epidemiologic or scientific studies.

#### Other issues impacting the results of this study

- Language use in the AFHB and in the survey did not match the language use levels of the participants.

During their training sessions, Afghan surveyors warned that the language used by the narrators on the books and in the survey forms was too sophisticated for the uneducated people who would be surveyed. They were correct in their predictions. Afghan Americans who translated the text of the books from English used language unfamiliar to many of the Pashto speaking participants and to some of the Dari speaking participants. The choice of Kandahar Pashto for the AFHB was also unfortunate. This dialect of Pashto prevails in southern Afghanistan, but not in the Central or Eastern Regions. For security reasons, the evaluation study could not be conducted in the Kandahar area. Hence, most Pashto-speaking participants were confused by the narrator's information.

IMC Afghan staff who translated the surveys into Pashto and Dari also had difficulty simplifying the vocabulary to match that of the study participants.

*Lesson learned:* The use of Afghan Americans as informants in the language selected for the AFHB was a mistake. Many of them are well educated and come from the middle and upper classes of Kabul society and left Afghanistan after the reign of Zahir Shah. Moreover, they had little contact with uneducated people during the time that they lived in Afghanistan. In future studies of this kind, demonstration models of products like the AFHB should be reviewed by people currently living in the country who have frequent contact with members of the target group and should be piloted with a small group of the target population before they are produced in the thousands.

- The lack of donor coordination with Ministry of Public Health in the design phase of Afghan Family Health Books and the launching of the evaluation study was problematic.

The arrival of 20,000 *Afghan Family Health Books* in Afghanistan with a DHHS mandate to conduct an evaluation study was an unpleasant surprise to MOPH officials. In order to implement the DHHS contract with DHHS, IMC as an implementing agency was placed in a defensive negotiating position with MOPH. Because of a strong working relationship with MOPH in the implementation of Basic Package of Health Care Services, IMC was able to overcome MOPH opposition to the evaluation study by educating the MOPH Public Information Office about the AFHB and promising to work in partnership with MOPH on the distribution phase. *Lesson learned:* Product development of a Health Education tool to be

distributed countrywide should not take place without early involvement of Ministry of Public Health Officials. Not only is MOPH politically critical, it might prevent mistakes in product development (such as the language mismatch referenced above) that impact the value of the product for the target population.

- Assumptions made about internet capability for transmitting field data from Afghanistan were overly optimistic

Global Research Technologies (GRT) assumed that PDAs would transmit data from anywhere in Afghanistan. This proved not to be the case. Field surveyors did not have satellite phones to transmit data from PDAs. Instead, surveyors had to bring PDAs to offices with Internet connections and transmitted data by connecting with computers.

Because very conservative, uneducated people often don't trust technology that they don't understand, the field implementers decided to collect data first on paper copy forms and input data from the forms. The implementers were also skeptical about the reliability of collecting data in PDAs and transmitting it from rural areas of Afghanistan. The decision to complete paper surveys saved the data that were collected for the evaluation study. Without the paper surveys as back up, much of the survey data would have been lost and errors in inputting data could not have been detected. *Lesson learned:* Check out the infrastructure of the target area (not just the capital city of a country) for reliable Internet transmission before using PDAs again. Make certain that surveyors are comfortable using this technology in low stakes situations before trying them out on a large study. Finally, have hard copy back up forms for surveys whenever possible

## Tables

Table 1: Demographic Characteristics of Respondents (N=3377)

Characteristic	Respondents*
Participants, n=3377	
Male	2549(75)
Female	828 (25)
Age of respondent (years), mean $\pm$ SE (range)	
Male	30 $\pm$ 9 (15-65)
Female	29 $\pm$ 8 (15-49)
Marital status, N = 3370	
Married	2547 (76)
Never married	811 (24)
Widowed	12 (1)
Highest year of education	
Male	5 $\pm$ 5 (0-19)
Female	1 $\pm$ 2 (0-16)
Works outside the home	
Male, N=2517	1835 (73)
Female, n=816	154 (19)
Food Shortages in the Last 12 months, N=3372	
Yes	1568 (46)
No	1804 (54)
Food Shortages Affected Decisions About Health Care, N=2126	
Yes	1458 (69)
No	668 (31)

\* Values are number (percent) unless stated otherwise., includes cases and controls.

Table 2: Changes In Health Care Knowledge Using the Afghan Family Health Book (AFHB) In Comparison to Community Health Workers (CHW).

Modules	Baseline Knowledge*	Follow-up Knowledge	Percent Change†	P-Value
Immunizations				
AFHB	1319 (74), N=1744	1700 (97), N=1747	.25	<.0001
CHW	1403 (83), N=1619	1426 (84), N=1620	.01	0.28
Micronutrients				
AFHB	967 (60), N=1518	1675 (98), N=1705	.38	<.0001
CHW	1185 (71), N=1545	1282 (90), N=1427	.19	<.0001
Hygiene and Sanitation				
AFHB	1029 (59), N=1567	1696 (98), N=1728	.39	<.0001
CHW	1316 (82), N=1539	1272 (89), N=1390	.07	.0001
Diarrhea				
AFHB	1058 (68), N=1514	1696 (98), N=1725	.30	<.0001
CHW	1139 (69), N=1520	1161 (73), N=1424	.04	.001
Malaria				
AFHB	565 (32), N=1576	1668 (96), N=1717	.64	<.0001
CHW	618 (29), N=1494	929 (56), N=1351	.27	<.0001
Tuberculosis				
AFHB	711 (42), N=1481	1672 (97), N=1717	.54	<.0001
CHW	879 (46), N=1495	960 (56), N=1380	.10	.0009
Acute Respiratory Infections				
AFHB	830 (51), N=1460	1664 (96), N=1717	.45	<.0001
CHW	1062 (64), N=1517	1013 (64), N=1369	0	0.20
Sexually Transmitted Diseases				
AFHB	347 (22), N=1635	933 (40), N=1717	.18	<.0001
CHW	475 (27), N=1479	607 (36), N=1417	.09	<.0001
Safety				
AFHB	1168 (69), N=1596	1689 (97), N=1724	.27	<.0001
CHW	1361 (88), N=1561	1277 (82), N=1483	-.06	.0005
First Aid				
AFHB	867 (53), N=1521	1661 (98), N=1704	.45	<.0001
CHW	1025 (62), N=1496	1216 (83), N=1409	.21	<.0001
Mental Health				
AFHB	790 (46), N=1558	1646 (97), N=1700	.51	<.0001
CHW	1092 (73), N=1619	1223 (83), N=1423	.10	<.0001
Female Reproductive Anatomy				
AFHB	386 (27), N=1526	1461 (80), N=1686	.57	<.0001
CHW	540 (30), N=1494	1010 (67), N=1339	.37	<.0001

Prenatal Care				
AFHB	685 (45), N=1494	1645 (96), N=1704	.51	<.0001
CHW	787 (48), N=1417	924 (60), N=1277	.12	<.0001
Birth and Neonatal Care				
AFHB	734 (47), N=1487	1645 (96), N=1704	.49	<.0001
CHW	824 (49), N=1447	924 (60), N=1277	.11	0.003
Postpartum Care				
AFHB	541 (37), N=1540	1657 (96), N=1714	.59	<.0001
CHW	603 (30), N=1512	878 (57), N=1349	.27	<.0001
Birth Spacing				
AFHB	585 (39), N=1514	1659 (96), N=1717	.57	<.0001
CHW	845 (47), N=1503	844 (42), N=1461	-.05	.0004
Breastfeeding and Child Nutrition				
AFHB	762 (47), N=1608	1096 (50), N=1713	.03	<.0001
CHW	941 (57), N=1619	929 (62), N=1541	.05	<.0001

\* Values are number (percent) unless stated otherwise

† Percent change refers to the change in the number of individuals able to answer all questions within a module correctly before and after the Afghan Family Health Book or visits with a Community Health Worker.

Table 3: Opinions and Beliefs Regarding Use of the Afghan Family Health Book (AFHB)

Characteristic*, N=2,194	Male	Female	P-value
Gender	1,578 (72)	615 (28)	-
Age (mean ± SD, range)	31 ± 8.6, 15-49	29 ± 7.6, 15-49	.003
Years of education (mean ± SD, range)	4 ± 5.3, 0-16	0.3 ± 1.5, 0-12	<.001
Working outside the home	1344 (85)	186 (30)	
Reported food shortages in the last 12 months	887 (56)	269 (44)	<.001
<b>Use of the Afghan Family Health Book</b>			
Enjoyed using AFHB	125 (8)	24 (4)	.001
AFHB was too complicated to use	1463 (93)	588 (96)	.01
Believed words the AFHB used were too difficult to understand	1467 (93)	588 (96)	.03
<b>Health Education</b>			
Believe Community health workers (CHWs) teach health the best	0149 (67)	556 (91)	<.001
Believe the AFHB helped family to better understand health	265 (17)	40 (7)	<.001
Learned more about health issues from CHWs than the AFHB	1088 (69)	416 (68)	.51
Learned more about health issues from the AFHB than CHWs	114 (7)	28 (4)	.02
Agreed that everyone in the family used the AFHB and learned health issues	150 (9)	57 (9)	.85
Men learned the most from the book	110 (7)	22 (4)	.003
Women learned the most from the book	106 (7)	10 (2)	<.001
Children learned the most from the book	111 (7)	28 (5)	.03
<b>Health Practices</b>			
Believe that changing practices can lead to better health	101 (6)	18 (3)	.001
Plan to change practices because of what was learned from the AFHB	107 (7)	20 (3)	.001

Have change practices because of what was learned from the AFHB	110 (7)	19 (3)	.001
<b>Health Behavioral Changes</b>			
Because of the AFHB, now wash with soap and water after latrine use	109 (7)	20 (3)	.001
Because of AFHB, now take children to be immunized	108 (7)	20 (3)	.001
Because of AFHB, now eat more fruits and vegetables	109 (7)	19 (3)	.001
Because of AFHB, now sleep under a bed net	107 (7)	19 (3)	.001
Because of AFHB, now the children sleep under a bed net	108 (7)	19 (3)	.001
Because of AFHB, women have gone to the clinic for antenatal care	107 (7)	19 (3)	.001
Because of AFHB, women received tetanus vaccination	101 (6)	17 (3)	.001
Because of AFHB, women gave birth in clinic	107 (7)	17 (3)	.001
Because of AFHB, women talked with health care provider about timing and spacing	107 (7)	18 (3)	.001
<b>Health Care Information Dissemination</b>			
Talked to friends or neighbors about what was learned in the AFHB	107 (7)	18 (3)	.001
Encouraged friends or neighbors to change health care practices for better health	107 (7)	18 (3)	.001

Number (Percent) unless otherwise stated