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Prevalence And Correlates Of HIV, Syphilis, And Hepatitis Knowledge Among Intrapartum Patients And Health Care Providers In Kabul, Afghanistan

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Abstract

Little is known about blood-borne infection awareness and knowledge among obstetric populations and health care providers in Afghanistan. HIV and hepatitis B awareness and knowledge are described among 4452 intrapartum patients completing an interviewer-administered questionnaire and whole blood rapid testing and 123 obstetric care providers completing a questionnaire between June and September, 2006. Participants were enrolled from three Kabul public maternity hospitals. Most participants were aware of HIV (50.8% of patients and 95.9% of providers) and hepatitis (72.1% of patients and 91.1% of providers). Correct transmission knowledge (defined as naming 3 correct routes and no incorrect routes) was lower for both groups (HIV: 19.4% for patients and 59.7% for providers; hepatitis B: 1.90% for patients and 33.9% for providers). Correct HIV transmission knowledge among providers was independently associated with level of education (AOR=1.75, 95% CI: 1.20–2.55). While HIV and hepatitis B awareness is common, correct and comprehensive knowledge is not. Continuing education for providers and health communications strategies should address identified knowledge gaps.

Introduction:

In the effort to slow and reverse the global HIV epidemic, prevention programming plays a key role. One component of prevention programming is imparting correct HIV knowledge. International indicators assessing efficacy of prevention efforts include measuring comprehensive knowledge of HIV (knowledge of sexual HIV transmission, knowledge that

condoms prevent transmission, and knowledge that HIV cannot be detected by sight). (UNICEF 2007) Targeted education interventions among women of reproductive age and their health care providers have been shown to increase uptake of HIV testing and facility-based delivery in an effort to prevent maternal-child transmission in several high prevalence settings.(Piwoz *et al.* 2007, Igumbor *et al.* 2006, Creek *et al.* 2007)

Hepatitis B is also vertically transmitted and is more likely to result in chronic hepatitis, hepatic failure, and hepatocellular carcinoma in those infected as neonates than those infected as adults.(ACOG 1998, Mast *et al.* 2004) Testing for hepatitis B surface antigen is recommended during pregnancy and rapid testing may be done at the time of delivery to ensure timely delivery of prophylaxis.(ACOG 1998, Grosheide *et al.* 1995) Interventions among providers have improved antepartum screening for hepatitis B in low prevalence settings, but there have been no focused interventions to improve patient awareness and uptake of testing in high prevalence settings.(Giles *et al.* 2006, Takayama *et al.* 1999) However, incorrect provider knowledge may reduce antenatal screening and infant vaccination for hepatitis B, without regard to level of resources.(de la Hoz *et al.* 2005, Freed *et al.* 1993)

Data are limited regarding awareness and knowledge of blood-borne and sexually-transmitted infections among the general population in Afghanistan. An assessment of Kabul antenatal patients in 2002 indicated that both HIV awareness (36%) and correct knowledge (19%) were low.(von Egmond *et al.* 2004) An assessment of knowledge, attitudes, and practices among several groups of variable risk, including returned refugees, university students, and medical providers, was undertaken in Afghanistan in 2005.(Foran *et al.*, 2007) Medical providers, students, and returnees were more likely to be aware of HIV than other surveyed groups (e.g. injection drug users, sex workers, truck drivers), but all groups had significant gaps in knowledge. The purpose of this study is to assess prevalence and correlates of intrapartum patient and provider knowledge of HIV, syphilis, and hepatitis in Kabul, Afghanistan. To date, there has been no assessment of hepatitis or syphilis knowledge among medical care providers or among a representation of the general population in Afghanistan; this assessment was undertaken within a larger study assessing prevalence and correlates of HIV, syphilis, and hepatitis B and C among antenatal patients in Kabul, Afghanistan.

Methods:

Kabul, the capital of Afghanistan, has a population of approximately 2.5 million, with an estimated facility-based delivery rate of 85.2%.(CSO 2007, MoPH/JHU/IIHMR 2006) Four public maternity hospitals, several private hospitals, and numerous private clinics provide obstetric care locally and serve as regional referral centers. Study enrollment was performed at the three public maternity hospitals (Mallalai, Rabia Balkhi, and Khair Khana) with the largest delivery volumes the previous quarter. Consecutive enrollment was conducted between June 15 to September 23, 2006; enrollment at Malalai Hospital was conducted from June 15 to August 5 and enrollment at Rabia Balkhi and Khair Khana Hospitals was conducted from August 6 though September 23.

Eligible patient participants were pregnant women with gestational age greater than 20 weeks admitted for any obstetric indication in stable medical condition; women with conditions requiring urgent medical intervention (e.g. eclampsia, hemorrhage), imminently delivering (cervical dilation > 8 cm), or unable to provide informed consent were excluded. All women presenting for admission were assessed for eligibility; age, parity, and decision to decline of reason for ineligibility were recorded. Prior to initiation of study enrollment, approval was obtained from international and domestic institutional review boards.

Following training, female study representatives, who were medical providers (midwives and physicians) not employed by any of the hospitals involved in the study, enrolled the patient participants. Study representative training included instruction in human subjects research, questionnaire administration, pre and post-test counseling, and whole-blood rapid testing. At least one trained study representative was present at all times (24 hours) during the enrollment period at the respective hospitals. Following medical evaluation and admission by hospital staff and assurance of eligibility, women stating interest in participation were invited to accompany the study representative to a private setting for informed consent. Following the informed consent process, patient participants were assigned a study number, the sole identifier for all study materials. This number was confined to study use only and was not entered in the hospital records or disclosed to hospital staff.

Obstetric care providers of all cadres (attending physician, resident, midwife, nurse, cleaner, or student in training) were recruited by a separate trained study representative to participate in a study assessing provider knowledge, attitudes, and practices with respect to HIV, hepatitis B, and syphilis in pregnancy. Provider enrollment occurred simultaneously with patient enrollment. Interested providers were invited by the representative to receive study information in a private office and written informed consent was obtained. Following informed consent, providers received a number code to uniquely identify all study materials related to their participation.

Questionnaires for both patient and provider participants were developed by the investigators with input on content and accuracy throughout the development process from a local advisory board. Pilot testing was conducted at Malalai Hospital and final instruments were reviewed by all investigators with inclusion determined by knowledge-value of the question and absence of order-effect. Questionnaires were translated and back-translated to ensure accuracy of translation.

The patient participant questionnaire assessed demographics, health care utilization history, infection knowledge, and care attitude questions. Awareness of a given infection was measured with the question, "Have you ever heard of HIV (hepatitis B/ syphilis)?" Those aware of the specific infection were then asked for their source of this information.

The chief outcomes of interest in this paper were correct HIV and hepatitis knowledge. Transmission knowledge was assessed with both an open-ended question requesting a list of transmission routes, followed by four multiple choice questions about transmission, diagnosis, and/or prevention for each HIV, hepatitis, or syphilis. Correct transmission

knowledge was defined as three correct routes of transmission listed with no incorrect routes named. The knowledge questions were individually scored with the possible answers of yes, no, don't know, and no reply; measurement of comprehensive HIV knowledge was not possible but knowing that condoms prevent HIV and that HIV is sexually transmitted were combined as a knowledge variable.

For patient participants, pretest counseling was conducted with whole blood rapid testing performed following questionnaire administration. Following provision of results, participants received post-test counseling and were escorted back to the labor ward. Participants who were too uncomfortable to undergo counseling and testing following consent were excused from the study (n=3); those who completed testing but did not complete the questionnaire due to discomfort were seen for follow up after delivery. No compensation was offered for study participation.

Provider participants completed a self-administered questionnaire instrument over a thirty minute period, where possible. Providers unable to read/ comprehend the questionnaire completed the questionnaire through study representative interview. The questionnaire assessed demographics, level of care provided, experience, clinical utilization, and awareness and knowledge of HIV, hepatitis, and syphilis infections. Methods for assessing awareness and source of knowledge were identical for both patients and providers.

As with patient participants, the chief outcomes of interest were correct knowledge of HIV and hepatitis B. Methods for assessing correct transmission knowledge were identical for patients and providers. Specific knowledge of each infection was measured with twelve multiple choice questions about transmission, diagnosis, and prevention, listed in Table 3. Comprehensive HIV knowledge, a variable created with the combined answers to whether condoms prevent HIV, HIV is sexually transmitted, and HIV cannot be detected on sight, was also assessed for provider participants.

Data were entered and cleaned using EpiData 3.1 (EpiData Association, Odense, Denmark). Following cleaning, the data were analyzed with Stata 8.0 (Stata Corp, College Station, Texas). Analysis was performed separately for patient participants and for provider participants; these groups were never directly compared in analysis. Descriptive demographic variables (e.g. age, age at marriage, education level, tribal identity) and infection awareness and knowledge source statistics were separately generated for the patient and provider participants. Correlates of HIV and hepatitis transmission knowledge and comprehensive HIV knowledge among both patients and providers were assessed using univariable logistic regression analysis. Multivariable logistic regression analysis was used to analyze all significant variables from univariable analysis maintaining p 0.05 in likelihood ratio testing.

Results:

Of 5,784 women admitted for obstetric indications during the study period, 20.4% (n=1179) were not eligible for study entry, largely due to imminent delivery (62.9%) or need for emergent operative intervention (22.5%). 4,452 patient participants consented to study entry

and 153 declined participation. Participants differed from ineligible patients by age (mean 25.74 participant vs. 27.70 ineligible, $p<0.001$), and parity (mean 2.09 participants vs. 3.41 ineligible, $p<0.001$).

Generally, patient participants were young, originated from Afghanistan, and had little or no formal education (Table 1). Nearly half of husbands also had no formal education and the majority had not attended college or university. Provider participants were somewhat older than patient participants and the majority had originated from Afghanistan and had completed more than 12 years of education. Approximately one-third of both patient and provider participants had lived outside Afghanistan in the last five years (Table 1). Most providers were direct care providers (midwives 49.6% and doctors 40.7%), with a mean experience level of 6.3 years (IQR: 1 – 5 years). Remaining providers were comprised of cleaners (7.3%) and students (1.6%).

Approximately half (52.5%, $n=2336/4449$) of patient participants were aware of HIV. Usual sources for this information included television (56.9%, 1744/3066; total answers>2336 as multiple answers allowed), friends (23.5%, 719/3066), newspaper (13.5%, 415/3066), medical providers (4.7%, 145/3066), and other sources (1.4%, 43/3066). While 66.3% ($n=1549$) of those aware of HIV claimed knowledge of HIV transmission routes, only 19.4% ($n=453$) of those aware of HIV could name three correct routes with no incorrect answers provided. Identified correct transmission routes were sexual relations ($n=702$; $n>1549$ as multiple answers allowed), blood-borne transmission ($n=596$), vertical transmission ($n=186$), tattoo needle ($n=204$), contaminated medical equipment ($n=41$), and breastfeeding ($n=25$). Incorrect transmission routes, including hugging or kissing, aerosol transmission, and living with or sharing dishes with an infected person, were stated by 5.8% ($n=91$) of those claiming transmission knowledge. Patient participants with knowledge of three correct HIV transmission routes were marginally more likely to have been born outside of Afghanistan ($p=0.084$) (Table 2).

Specific knowledge of HIV was measured through multiple choice questions, largely assessing routes and frequency of transmission. The majority of those aware of HIV correctly stated that one could get HIV from previously used needles and syringes (88.6%, $n=1996$), that one could not get HIV from hugging or kissing (55.0%, $n=1239$), and that condoms prevent HIV (63.3%, $n=1423$); however, few knew that vertical transmission does not occur in every case (2.4%, $n=54$). Participants were not asked whether HIV may be recognized by sight so comprehensive knowledge could not be assessed; however, only 20.0% ($n=450$) of participants aware of HIV knew that HIV was sexually transmitted and that condoms prevent HIV transmission.

Many (72.1%) patient participants were aware of hepatitis (*zardee*), with the most frequent source of information being friends (80.0%, $n=2564$). Other sources of hepatitis information were the newspaper (21.4%, $n=687$), television (18.2%, $n=584$), medical providers (8.2%, $n=264$), or other sources (2.7%, $n=86$). Of participants aware of hepatitis, 60% ($n=1879$) stated knowledge of transmission routes. However, very few (1.90%, $n=70$) could list 3 correct routes and no incorrect routes, with the most common correct responses being blood-borne routes ($n=858$), used needles and syringes ($n=605$), vertical transmission ($n=231$),

shaving blades and tattoo needles (n=101), and contaminated medical equipment (n=69). One third (35.9%) of those stating knowledge of hepatitis transmission provided at least one incorrect response, the most common of which were eating too much oil or fatty food and hot weather.

There were no significant correlates of correct hepatitis knowledge identified in univariable analysis (data not shown). Specific hepatitis knowledge among patient participants was mixed. The majority of those aware of hepatitis responded correctly to the statements that vertical transmission was highly probable (83.9%, n=2693), that there are no medicines to cure hepatitis (81.5%, n=2614), and that used needles and syringes transmit hepatitis (74.7%, n=2396). However, 39.5% (n=1268) incorrectly believed that mosquitoes can transmit hepatitis.

Very few patient participants (5.2%, n=233) were aware of syphilis; only 90 stated knowledge of transmission routes. Correlates of correct transmission were not assessed due to lack of statistical power. For those aware of syphilis, specific knowledge was fairly high; the majority knew that syphilis could be sexually (75.4%, n=175) or vertically (65.1%, n=151) transmitted. However, only two-thirds (66.0%, n=153) agreed that syphilis could not be detected on sight and only half (52.6%, n=122) knew that medication could cure syphilis.

Of provider participants, the majority had heard of HIV (95.9%), hepatitis (91.1%), and syphilis (81.3%). Correct transmission knowledge was most frequent for HIV, as 59.7% of those aware of HIV knew three correct transmission routes and stated no incorrect routes. Correct HIV transmission knowledge was associated with increasing education level and inversely associated with years of experience as a provider in univariable analysis (Table 2). Level of education (AOR=1.75, 95% CI: 1.20–2.55) was independently associated with correct HIV transmission knowledge in multivariable logistic regression analysis while provider experience remained negatively associated (AOR=0.27, 95% CI: 0.11–0.64). Only 11.3% of providers had comprehensive HIV knowledge; no variables were independently associated with comprehensive HIV knowledge (data not shown). The percentage of direct care providers (doctors and midwives) with specific HIV knowledge is displayed in Table 3, with correct responses ranging between 13.5% and 99.2%.

Only one-third (33.9%) of providers aware of hepatitis demonstrated correct transmission knowledge and only 5.0% of providers aware of syphilis reported correct transmission knowledge. Correct hepatitis transmission knowledge was negatively associated with agreement with the statement that patients trust providers to keep medical information confidential (OR=0.56, 95% CI: 0.36–0.90) in univariate logistic regression analysis. In multivariable logistic regression analysis, both agreement that patients trust providers to keep information confidential (AOR=0.55, 95% CI: 0.34 – 0.88) and possessing four or more years clinical experience (AOR=0.45, 95% CI: 0.21 – 0.99) were negatively associated with correct hepatitis knowledge. Specific hepatitis knowledge was variable, with correct responses ranging between 27.4% and 100% for questions in Table 3.

The majority (81.3%, n=100) of providers were aware of syphilis, though only 12.0% of those aware identified both sexual and vertical transmission routes. Correct syphilis

knowledge ranged between 21.0% and 92.0% of the 100 providers aware of syphilis (Table 3).

Discussion

To our knowledge, this study is among the first published assessments of blood-borne and sexually-transmitted infection knowledge among both obstetric patients and providers in Kabul. The level of HIV awareness among patient participants has increased since the measurement in 2002 and is similar to that reported by female participants in the recent national KAP survey conducted by ActionAid.(van Egmond *et al.* 2004, Foran *et al.* 2007) The level of HIV knowledge among medical providers is also similar to that measured in 2005 by ActionAid.(Foran *et al.* 2007) The increasing awareness levels among the general population (patients) may be attributable to greater media coverage, as more than half of those surveyed stated they learned of HIV from the television. Media coverage is rising in Afghanistan, with a 2005 survey noting that 87% of households surveyed owned a radio and 37% owned a television.(Altai Consulting 2007) The media was perceived to be a legitimate source for health information, with the radio being the most trusted source for health information (54%), television being second (39%), and medical experts being third (32%). (Altai Consulting 2007)

As expected, providers were more likely to be both aware of and have correct knowledge of HIV and hepatitis than patients, though significant gaps in knowledge were evident in both groups. The low percentage of providers with comprehensive HIV knowledge, correct hepatitis transmission knowledge, and the association between more years of experience as a provider and lower HIV transmission knowledge underscore the need for inclusion of blood-borne and sexually-transmitted infection and screening information in continuing education programming, as well as the appropriateness of including content on HIV, hepatitis, and syphilis in pre-service education. Relatively few participants reported receiving information about HIV or hepatitis from medical providers; continuing education programming should address relaying information during prenatal care or pretest counseling sessions.

More concerning is the high level of misinformation among both patients and providers about hepatitis B, which is a more pressing health issue for this population due to a measurable prevalence of 1.53% among our patient participants. Lack of correct information about hepatitis B may potentially affect the fledgling infant vaccination program introduced in 2006. Lack of completion of a vaccine series may be attributable to lack of knowledge about disease prevention; the hepatitis B series is currently given in conjunction with diphtheria-pertussis-tetanus (DPT), whose vaccination completion rates for Kabul urban areas in 2005 were estimated at 28.6% (95% CI: 22.7 – 35.4).(MoPH/JHU/IIHMR 2006) A study done among Vietnamese immigrants in the United States assessing whether children between the ages of 3 and 18 years had completed hepatitis B vaccination found that vaccination was more likely among those whose parents were aware of hepatitis B.(Jenkins *et al.* 2000) However, correct knowledge was not associated with completion of the hepatitis B vaccination series.(Jenkins *et al.* 2000) Other studies done in the United States and Italy also found that parental knowledge and attitudes were not associated with likelihood to complete vaccine coverage.(Hughart *et al.* 1999, Angelillo *et al.* 1999)

Lack of HIV, syphilis, and hepatitis B awareness or knowledge among patients did not appear to affect willingness to have intrapartum testing, as the refusal rate of eligible women was just 3.3%. Studies in other settings have established the high acceptability of intrapartum HIV and hepatitis B testing, with acceptance attributed to desire to prevent neonatal infection as interventions were available.(Homsy *et al.* 2006, Bulterys *et al.* 2004, Petermann *et al.* 1995) Provider perceptions of time constraints have been identified as barriers to implementation of intrapartum HIV testing; however, the effect of provider knowledge on utilization of intrapartum testing has not been assessed.(Bulterys *et al.* 2004, Petermann *et al.* 1995)

The negative relationship between correct hepatitis B knowledge and agreement that patients trust providers to keep medical information confidential may be related to a lack of rapport between recent health professions school graduates and their patients, such that those with the most updated knowledge are less likely to agree with this statement. The independent negative association between years of experience and correct hepatitis B knowledge supports this theory. Alternately, providers with correct hepatitis information may perceive that the public health import of disclosing medical information to the family to prevent further illness may outweigh individual rights to privacy. This insight may be especially true for Afghan obstetric care providers, where culture dictates the need to obtain family permission for any patient intervention, despite women being legally empowered to provide their own consent. The concept of patient confidentiality should be further assessed in this context to ensure that post-test counseling instruction is culturally-relevant in any interventions to improve provider knowledge of HIV, hepatitis, and syphilis.

This study has important limitations that must be considered. First, patient participants were women accessing care in public hospitals, who may not be representative of the general population. Additionally, approximately 20% of the intrapartum patients presenting during the study period were not eligible for enrollment, largely due to imminent delivery, and may have differed from those who were enrolled. Socially-desirable response may have occurred in this interviewer-administered survey for the patient participants. Further, as the questionnaire was administered during labor, there may have been some truncation of responses due to discomfort. We attempted to minimize this by conducting all interviews in a private setting with a medically trained female interviewer. However, interviewer-administered questionnaires were the only feasible means of data collection, due to low literacy and the prohibitive cost of audio computer-assisted self-interview (ACASI). Questionnaires were administered only with the participant's assent; if discomfort was evidently preventing response or attention, the participant was offered the option of resuming the questionnaire following delivery. Last, by using multiple choice questions for some knowledge questions, there may have been a proportion of providers or participants who answered correctly by chance with actual knowledge levels being lower. We attempted to counter this by having patient participants and provider participants list transmission routes for each infection.

In conclusion, while the majority of antenatal patients and providers are aware of HIV, syphilis, and hepatitis B, significant gaps in knowledge exist among both groups. Hospital or media-based, non-written programming to address these gaps should be considered for the

general population with intensive education efforts for antenatal care providers. The time of admission for childbirth presents an opportunity for verbal communication about blood-borne and sexually-transmitted infections from medical providers, perhaps in combination with antenatal testing or birth-dose hepatitis B vaccination.

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Table 1.

Descriptive Characteristics of Intrapartum Patients and Obstetric Care Providers in Government Hospitals in Kabul, Afghanistan between June and September, 2006 (n=4452 and n=123).

Variable:	Patients (n=4452)	Providers (n=123)
Age:	Mean: 25.74	Mean: 31.43
	Median: 24 years	Median: 32 years
Age at Marriage:	Mean: 19.49	Not assessed
		Median: 18 years
Variable:	Number, (%)	Number, (%)
Ethnic Group:	(n=4444)	(n=121)
Tajik	3158, (71.1)	81, (66.4)
Pashtun	339, (7.6)	26, (21.5)
Hazara	923, (20.8)	7, (5.8)
Other	24, (0.5)	7, (5.8)
Educational Level:	(n=4447)	(n=121)
No formal education	2996, (67.4)	7, (5.8)
1 –2 years	179, (4.0)	2, (1.7)
Finished primary school	404, (9.1)	1, (0.8)
Some secondary school	326, (7.3)	0, (0)
Finished secondary school	349, (7.9)	2, (1.7)
Some university	113, (2.5)	60, (49.6)
Finished university	80, (1.8)	49, (40.5)
Educational Level of Husband:	(n=4448)	Not assessed
No formal education	1937, (43.6)	
1 –2 years	97, (2.2)	
Finished primary school	400, (9.0)	
Some secondary school	505, (11.4)	
Finished secondary school	905, (20.4)	
Some university	225, (5.1)	
Finished university	379, (8.5)	
Country of Birth:	(n=4448)	(n=123)
Afghanistan	4420, (99.3)	122, (99.2)
Iran	11, (0.3)	0, (0)
Pakistan	17, (0.4)	1, (0.8)
Province of Birth:	(n=4422)	(n=121)
Kabul & surrounding	3492, (79.0)	104, (86.0)
Northern	406, (9.2)	7, (5.8)
Central	299, (6.8)	2, (1.7)
Eastern	172, (3.9)	2, (1.7)
Western	25, (0.6)	2, (1.7)
Southern	28, (0.6)	4, (3.3)

Variable:	Patients (n=4452)	Providers (n=123)
Lived Outside Afghanistan in the Last 5 Years:	(n=4348)	(n=122)
Yes	1650, (37.1)	79, (64.8)
No	2798, (62.9)	43, (35.3)
Ever Lived in a Refugee Camp:	(n=4440)	Not assessed
Yes	289, (6.5)	
No	4151, (93.5)	

Table 2.

Univariable correlates of correct HIV transmission knowledge among intrapartum patients aware of HIV in Kabul, Afghanistan between June and September 2006 (N=2336).

Variable	% Correct Knowledge (n)	OR	95% CI
Age:		1.11	0.90 – 1.37
<24 years	18.4% (180)		
>25 years	20.1% (273)		
Ethnic Identity (Milat):		0.97	0.86 – 1.10
Pashtun	18.3% (75)		
Tajik	20.0% (344)		
Hazara	16.4% (31)		
Age at Marriage:		0.99	0.80 – 1.22
<18 years	19.5% (184)		
>19 years	19.3% (269)		
Level of Education:		1.01	0.96 – 1.07
No formal education	18.8% (239)		
1–2 years formal education	18.5% (22)		
Completed primary school	21.7% (57)		
Some secondary school	21.0% (49)		
Completed secondary school	17.6% (49)		
Some university	22.0% (22)		
Finished university or higher	20.0% (15)		
Husband's Level of Education:		1.03	0.98 – 1.08
No formal education	18.4% (150)		
1–2 years formal education	16.1% (10)		
Completed primary school	19.9% (47)		
Some secondary school	19.0% (44)		
Completed secondary school	20.1% (108)		
Some university	20.7% (30)		
Finished university or higher	20.7% (64)		
Country of Birth:		0.44	0.18 – 1.12
Afghanistan	19.3% (446)		
Other	35.0% (7)		
Prior residence in refugee camp:	22.7% (29)	1.23	0.80 – 1.88
Lived outside Afghanistan in last 5 years:	20.8% (211)	1.17	0.96 – 1.44
Weekly Frequency of Eating Meat:		1.02	0.90 – 1.15
None	17.6% (26)		
1 Time	19.6% (179)		
2 Times	19.4% (162)		
>2 Times	19.7% (86)		
Last birth attended:	19.1% (240)	0.88	0.65 – 1.20

Variable	% Correct Knowledge (n)	OR	95% CI
Ever use birth spacing method:	19.6% (123)	1.02	0.80 – 1.28
Prenatal care this pregnancy:	19.7% (387)	1.12	0.84 – 1.50
Prior facility-based delivery:	20.1% (275)	1.33	0.89 – 1.98
Therapeutic injections from medical provider in last year:	20.7% (142)	1.12	0.90 – 1.40
Source of HIV Knowledge:			
Newspaper	18.8% (78)	0.90	0.69 – 1.19
Television	19.8% (345)	0.94	0.73 – 1.19
Medical Providers	17.2% (25)	0.82	0.53 – 1.28
Friends	19.4% (139)	0.94	0.75 – 1.17
Other sources	20.9% (9)	1.06	0.50 – 2.22

Table 3.

Specific knowledge about HIV, syphilis, and hepatitis B among obstetric care providers in Kabul, Afghanistan (n=119).

Question	Correct	Incorrect	Don't know/ No answer
<u>HIV</u>			
HIV is infectious forever (n=111)	103 (93.6%)	3 (2.7%)	5 (4.5%)
You can tell someone has HIV by looking at them (n=111)	87, (78.4%)	16 (14.4%)	8 (7.2%)
There are medicine to cure HIV (n=111)	80 (72.1%)	17 (15.3%)	14 (12.6%)
Used needles/ syringes transmit HIV (n=111) 111 (96.4%)	3 (2.7%)	1 (0.9%)	
HIV can be transmitted through donated blood (n=111)	108 (97.3%)	2 (1.8%)	1 (0.9%)
HIV can be transmitted through mosquito Bites (n=111)	57 (51.4%)	39 (35.1%)	15 (13.5%)
HIV caused by lack of hygiene (n=111)	70 (63.1%)	37 (33.3%)	4 (3.6%)
HIV transmitted by sex (n=111)	110 (99.1%)	1 (0.9%)	
HIV transmitted by kissing or hugging (n=111)	91 (82.0%)	19 (17.1%)	1 (0.9%)
Condoms reduce chance of getting HIV (n=111)	93 (83.8%)	15 (13.5%)	3 (2.7%)
All babies born to HIV infected women will have HIV (n=111)	16 (14.4%)	90 (81.1%)	5 (4.5%)
<u>Hepatitis:</u>			
Hepatitis is infectious forever (n=106)	91 (85.8%)	11 (10.4%)	4 (3.8%)
You can tell someone has hepatitis by looking at them (n=105)	40 (38.1%)	61 (58.1%)	4 (3.8%)
There are medicines to cure hepatitis (n=106)	30 (28.3%)	65 (61.3%)	11 (10.4%)
Used needles transmit hepatitis (n=106)	100 (94.3%)	6 (5.7%)	
Hepatitis can be transmitted through donated blood (n=106)	106 (100%)		
Hepatitis can be transmitted through mosquito bites (n=106)	60 (56.6%)	36 (34.0%)	10 (9.4%)
Hepatitis caused by lack of hygiene (n=106)	47 (44.3%)	55 (51.9%)	4 (3.8%)
Hepatitis transmitted by sex (n=106)	61 (57.5%)	40 (37.7%)	5 (4.7%)
Hepatitis transmitted by kissing or hugging (n=106)	56 (52.8%)	49 (46.2%)	1 (0.9%)
Condoms reduce the chance of getting Hepatitis (n=105)	64 (61.0%)	30 (28.6%)	11 (10.5%)
All babies born to hepatitis infected women will have hepatitis (n=106)	102 (96.2%)	4 (3.8%)	
<u>Syphilis:</u>			
Syphilis is infectious forever (n=96)	20 (20.8%)	69 (71.9%)	7 (7.3%)
You can tell someone has syphilis by looking at them (n=98)	65 (66.3%)	28 (28.6%)	5 (5.1%)
There are medicines to cure syphilis (n=98)	68 (69.4%)	20 (20.4%)	10 (10.2%)
Syphilis can be transmitted through mosquito bites (n=98)	69 (70.4%)	20 (20.4%)	9 (9.2%)
Syphilis caused by lack of hygiene (n= 98)	32 (32.7%)	58 (59.2%)	8 (8.2%)
Syphilis transmitted by sex (n=98)	91 (92.9%)	4 (4.1%)	3 (3.1%)
Syphilis transmitted by kissing or hugging (n=98)	80 (81.6%)	14 (14.3%)	4 (4.1%)
Condoms reduce chance of getting syphilis (n=98)	77 (78.6%)	15 (15.3%)	6 (6.1%)
All babies born to syphilis infected women will have syphilis (n=98)	21 (21.4%)	67 (68.4%)	10 (10.2%)