Research Square

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Healthcare providers' practice and attitude towards abortion service provision in Gulu city, Northern Uganda

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Abstract

Background: Unsafe abortion is a growing public health problem concern globally despite being preventable. The World Health Organization estimates that about 20 million pregnancies results into unsafe abortion globally. The proportion of unsafe abortion has been increasing with developing countries contributing about 97% of unsafe abortions cases including Uganda. Unsafe abortion is among the four leading causes of pregnancy related mortality, injuries, and disability globally. The restrictive abortion laws and religious situation make abortion a highly controversial social issue in Uganda leading to high stigma in the society, and a majority of the healthcare providers are reluctant to perform an abortion even if indicated for fear of possible legal consequences.

Methods: We conducted survey among health worker about knowledge of complications, practice, and attitudes of induced abortion between September and November 2019 among 252 healthcare providers in Gulu Municipality, Northern Uganda. Multivariate analysis showed associations between healthcare providers' characteristics and adequate knowledge about abortion complications. Ordinary least square regression analysis found associations between providers' characteristics and their intention for general support, generally not in support, conditional support for abortion provision, as well as their personal attitudes and beliefs against or towards abortion provision.

Results: The mean attitudinal score for generally in support, generally not in support, conditional in support, personal attitude, and beliefs against and toward abortion provision were 2.80, 2.71, 2.86, 3.239, and 3.35 respectively. Participants who were married and practice Anglican religion were more likely to have good knowledge of abortion complications, p-values 0.035, and 0.042 respectively, meanwhile participants who were employed in faith-based facilities were more likely to have poor knowledge of abortion complications p-value 0.002.

Conclusion: Ministry of Health and stakeholders need to provide training of health workers to improve quality of abortion services. Medical training institutions should ensure that students understand the laws and responsibilities that govern their professional actions with respect to abortion care regardless of their personal views, beliefs, and attitudes.

Background

Unsafe abortion is a growing public health problem globally despite being preventable (1). The World Health Organization (WHO) estimates that about 20 million pregnancies results into unsafe abortion globally (1) and the proportion of unsafe abortion has been increasing (2–4) with developing countries contributing about 97% of unsafe abortions cases (3, 4). Unsafe abortion is among the four leading causes of pregnancy related mortality, injuries, and disability globally (1, 5). Sub-Saharan Africa (SSA) contributed 62% of the global pool of unsafe abortions cases(3). A Unsafe abortion is a significant contributor to maternal mortality accounting for about 13% of total maternal mortality worldwide(1) with

Eastern Africa having the highest proportion of maternal mortality as a result of unsafe abortion at 18% (1).

In Uganda, research shows that about 30.2% of adolescents and 43.1% non-adolescents sought abortion services from medical professional (6) A study done in Uganda found that in 2013, a total of, 93,265 or (72%) of the women who sought treatment for abortion complications were treated for unsafe abortion complications (7) meanwhile in Kenya, 119,502 or 76% of women who were treated in health facilities for abortion complications were as result of unsafe abortions in 2012 (8). Within Eastern Africa, there is variations in unsafe abortion rate with Uganda and Kenya have the highest annual rate of hospitalization for treatment of unsafe abortion at 12 per 1,000 women aged 15–49 years (7, 8), Rwanda at 7 per 1,000 women aged 15–44 years (9) and Tanzania at 5.9 per 1,000 women aged 15–49 years (10). Furthermore, study shows that in 2013, about 13% of total pregnancies in Uganda resulted into abortion (7). In Uganda, an estimated 26% of the maternal mortality in 2008 was caused by unsafe induced abortions (11). The high abortion rates in Uganda can be attributed to the low Contraceptive Prevalence Rate(CPR) (35%), high unmet need for family planning (28%) and high Total Fertility Rate (TFR) (5.4) (12) which results into about 44% of pregnancies being unwanted (13).

Unsafe abortion has several consequences which includes morbidity, mortality, disability as well as economic consequences to the woman and her immediate family but also the direct cost of providing medical care during hospitalization (2). In Uganda, abortion is severely restricted and is highly a controversial social issue based on religious grounds (14). The restrictive nature of abortion laws in Uganda has made abortion a clandestine practice (15) with women who can pay for the service of qualified provider will receive safe abortion services while adolescents and poor or rural women often obtain abortion services from unskilled person or induce the abortion by themselves (2).

In Uganda, the Penal Code of 1950 penalizes anyone who abort a pregnancy or contributed to the procurement of abortion except when the intention was to save the woman's life (7). The Uganda Ministry of Health has lifted restriction for induced abortion under circumstances such as when the pregnant woman is HIV positive, the pregnancy is a result of rape, defilement or incest but must be performed in health centre IV or a hospital (7). The unclear and ambiguous interpretation of the laws on induced abortion in the country has created stigmatization among the skilled healthcare providers thereby making them reluctant to perform safe abortion for fear of the possible legal consequences.

As a precursor for a wider stakeholder engagement, this study was conducted to solicit the views of health workers about abortion. Therefore, this study aimed to determine knowledge, attitudes, and practice of induced abortion among health workers who were working in Gulu Municipality.

Methods

Study design, settings, and participants

The study was a cross-sectional survey conducted between September and November 2019 in the Gulu Municipality in Gulu district (now Gulu City as of 1st July 2020) located about 360 km north of Kampala, the capital city of Uganda. It is divided into four administrative divisions and each division having 62 a public health center level III. In addition, there are four hospitals within Gulu Municipality, two being Public hospitals, and the other two private hospitals; Gulu Regional Referral Hospital and Gulu 4th Division Military Hospital are both public hospitals. Gulu Regional Referral Hospitals also serve as a Teaching Hospital for Gulu University and other paramedical institutions. St Mary's Hospital Lacor, the largest general hospital in Northern Uganda is a private non for- profit faith-based belonging to the Catholic mission under Gulu Archdiocese, also serves as a Teaching Hospital for Gulu University while Gulu Independent Hospital is a private for-profit hospital. All hospitals provide both curative and preventive healthcare services. There are several private clinics within the municipality as well as other private non for profit Non-Governmental Health Centers.

The research participants comprised of doctors, nurses, midwives, and clinical officers who were working in health facilities within Gulu Municipality.

Sample Size And Sampling Procedure

The sample size was calculated using a formula for a single population proportion with a finite population.

$$\text{Sample size, } n = N * \frac{\frac{Z^2 * p * (1-p)}{e^2}}{[N - 1 + \frac{Z^2 * p * (1-p)}{e^2}]}$$

where N is the population size of health workers in Gulu Municipality (600), n is desired sample size, Z is the critical value of the normal distribution at 95% confidence level (1.96), p is the proportion of health workers who have ever been approached for abortion services, set at 0.5 since the proportion is unknown in this community and e is the margin of error set at 0.05. This gives a sample size of 235 health workers. We increased the sample size by 5% to cater for non-response or withdrawal of consent giving us final sample size of 247 health workers.

Participants were consecutively sampled from each health facility.

Data Collection Procedure And Instrument

Data was collected using a self-administered structured questionnaire written in English. The questionnaire had six parts. The first section of the questionnaire captured demographic characteristics of research participants. The second section obtained information about the knowledge of complications related to unsafe abortion. The third section of the questionnaire is about the opinion on how to avoid complications related to unsafe abortion. The fourth section of the questionnaire obtained information about participants' opinions on people who are more likely to seek abortion services. The fifth section of the questionnaire sought information about participants' practice on induced abortion and the last

section of the questionnaire obtained information about participants' attitudes towards abortion using a Likert like attitudinal score adopted from a study conducted among South African medical students (16). The South African study used three sub-scales with 25 total items. A modification was done by dropping out three items that were not relevant for our participants and these 22 items were regrouped into five sub-scales.

Operational definitions of outcomes measured,

Knowledge of complications related to unsafe abortion was measured using seven items questions with a “yes” or “no” response. Each correct response was awarded one mark while each wrong response was given zero mark. The scores were summed, and the mean score was used to categorized participants as having adequate knowledge if the participant's total score was equal or above the mean score or inadequate knowledge if the participant's total score was below the mean score.

Attitudes were assessed using a 22-statement item measured on a 5-point Likert scale (5-Strongly Agree, 4-Agree, 3-No Opinion, 2-Disagree, 1-Strongly Disagree). The attitudinal scale was divided into five subscales with the first section was generally in support of abortion provision measured using 3 items. The second section was generally not in support of abortion provision measured using two items. The third section measured conditional support for abortion provision, using nine items. While the fourth section measures personal attitudes or beliefs against abortion provision using six items and the last section measure personal attitudes or beliefs towards abortion provision using two items. We summed up participants' scores from each of the sub-scale and the averages were calculated. Participants who scored equal or above the means were considered as having positive attitudes while participants who scored below the means were categorized as having negative attitudes. The internal reliability of each the sub-scale was calculated using Cronbach’s alpha statistics and found to be 0.75, 0.58, 0.76, 0.71 and 0.44 for Generally in Support, Generally not in support, conditionally in support, personal attitude or beliefs towards and personal attitudes and beliefs against abortion provision respectively.

Quality Control

We pretested the questionnaire among 10 health workers who were working in Anaka general hospital to ensure that the wordings were well understood and correct any errors in word meaning. We trained research assistants on research ethics, privacy, data collection tool, and consent procedures. The Principal Investigator (PI) monitored data collection and cross-checked that the questionnaires were correctly filled. Data were entered twice in a database, merged, and cleaned before data analysis.

Data Management And Analysis

We used EpiData version 4.6.0.2 to create a database for this study and data was exported to Stata 16 for analysis. Categorical variables were displayed in a table together with their frequencies and percentages. Continuous variables were categorized using means and presented with their ranges, standard deviation, and means. Multivariate logistic regression using entered methods was used to

assess the relationship between adequate knowledge for complication related to unsafe abortion and participants' demographic characteristics. Any factor with p-value ≥ 0.05 was taken as a significant predictor of adequate knowledge about complications related to unsafe abortion.

We used ordinary least-square regression methods to assess for an association between research participants' demographic characteristics and attitudes as measured using the five scales (Generally in support to abortion provision; Generally, not in support to abortion provision; Conditional support for abortion provision; Personal attitudes toward abortion provision and Attitude against abortion provision). All participant demographic characteristics were included as a covariate in the analysis.

Ethical Approvals

Gulu University Research Ethics Committee approved the study under number GUREC-079-19. and each individual research participants provided written informed consent before participation in the study. Administrative clearances were granted by Gulu Regional Referral Hospital ethical committee correspondence number ADM/2017-18/001 and St Mary's Hospital Lacor ethical boards with administrative clearance number LHIREC Adm 022/09/19. Marie Stopes Uganda provided an email clearance, other Health centres, and hospitals provided administrative clearance verbally by each institutional head before we recruited the participants into the survey. All information collected in this study is being kept with strict confidentiality and only accessible by the research team.

Results

Demographic characteristics

A total of 252 out of 300 health care providers completed the self-administered questionnaire giving a response rate of 84%; of these, 84% were below 40 years of age, and 68% were female. The majority were Government employees (40%) while 30% were employed in faith-based health facilities, (18%) employed in Private for-profit facilities, 26(10%) in Private not for Profit Non-Governmental Health facilities and 6(2%) were employed in both Private and Government Health facilities. More than half of the respondents were Catholic believers (56%) and up to 80% had a strong affiliation to their religion. Nurses and midwives comprised a majority with 85(34%) and 86(34%) respectively; while 30 (12%) were Clinical Officers, 26(10%) were Doctors, and 24(10%) other health care cadres (pharmacists, Anaesthetists). More than 1/3 (38.6%) of the respondents have been in practice for at least six years (Table 1).

Table 1
Demographic characteristics

Variables	Frequency	%
Gender (n = 252)		
Male	80	32
Female	172	68
Age group (n = 252)		
Less than 20 years	25	10
20–29 years	109	43
30–39 years	78	31
40 and above years	40	16
Marital status (n = 252)		
Single/Separated/Widowed	101	40
Cohabiting	35	14
Married	116	46
Religion (n = 252)		
Catholic	140	56
Anglican	59	23
Born again Christian	42	17
others (Muslim/Seventh Days Adventists/Nonbelievers)	11	4
Religious beliefs (n = 251)		
Very strong	200	80
Somewhat strong	27	11
Neither strong nor weak	24	9
Education level (n = 252)		
Certificate	97	39
Diploma	99	39
Degree	56	22
Employment status (n = 251)		
Employed in Government only	100	40

Variables	Frequency	%
Employed in NGO Health Centre	26	10
Employed in Private For-Profit Hospital	44	18
Employed in private non-for-Profit Hospital	75	30
Employed in Both Government and Private Hospitals	6	2
Type of health care provider (n = 251)		
Nurse	85	34
Midwives	86	34
Doctor	26	10
Clinical Officer	30	12
Others	24	10
Numbers of years working (n = 251)		
Less than one (1) year	45	17.9
1 to 5 years	109	43.4
6 to 10 years	51	20.3
11 years and above	46	18.3

Knowledge Of Abortion Complications And Prevention

Most of the respondents were aware of the complications of unsafe abortion; 87% knew that unsafe induced abortion causes bleeding, infertility, (81%) infection (90%), chronic pelvic pain (66%), psychological trauma (69%), and deaths (81%) (Table 2).

Regarding their knowledge on prevention of complications arising from unsafe abortion, majority of the respondents 215(85%) believe that health education creates awareness, therefore, preventing complications of abortion, while 187(74%) knew that using modern contraceptives would prevent abortion complications, only 103(41%) knew that avoiding sex before marriage would prevent abortion complications, about 93(37%) knew that seeking safe abortion prevents abortion complications, 116(47%) knew that allowing the pregnancy to go to term would prevent abortion complications, and 98(39%) knew that legalizing abortion would prevent abortion complications, (Table 2).

Table 2
Knowledge of abortion complications and prevention

Variables	Frequency	%
Complications related to unsafe abortions		
Bleeding (n = 252)		
No	32	13
Yes	220	87
Infertility (n = 252)		
No	48	19
Yes	204	81
Infections (n = 252)		
No	26	10
Yes	226	90
Uterine perforation (n = 252)		
No	57	23
Yes	195	77
Chronic Pelvic pain (n = 252)		
No	86	34
Yes	166	66
Death (n = 252)		
No	47	19
Yes	205	81
Psychological trauma (n = 252)		
No	78	31
Yes	174	69
Preventive measures		
Use of modern contraceptives (n = 252)		
No	65	26
Yes	187	74
Health education (n = 252)		

Variables	Frequency	%
No	37	15
Yes	215	85
Avoiding sex if unmarried (n = 252)		
No	149	59
Yes	103	41
Use of abortion services (n = 252)		
No	159	63
Yes	93	37
Give birth once pregnant (n = 248)		
No	132	53
Yes	116	47
Abortion legalization (n = 252)		
No	154	61
Yes	98	39

Category Of People More Likely To Seek Abortion Services

A majority of the respondents 222(88%) reported that girls in schools are the ones who are more likely to seek for termination of pregnancy, while 173(69%) reported unmarried couple being more likely to seek abortion services, and 168(67%) reported that unfaithful wives are more likely to seek for abortion services. Nearly half of the respondents 120(48%) reported couples who fail to use family planning methods as well as those who have reached their family size 89(35%) and of poor socio-economic status 66926%), we're likely to seek abortion services (Table 3).

Table 3
Category of people are most likely to seek abortion services

Variables	Frequency	%
Unmarried couples (n = 252)		
Yes	173	69
No	79	31
Couples who failed to use family planning methods (n = 252)		
Yes	120	48
No	132	52
Unfaithful wives seeking to conceal the pregnancy (n = 252)		
Yes	168	67
No	84	33
Couples who have reached their family size (n = 252)		
Yes	89	35
No	163	65
Couples with poor socioeconomic status (n = 252)		
Yes	66	26
No	186	74
Girls still in school or institutions of learning (n = 252)		
Yes	222	88
No	30	12

Practice On Induced Abortion

Majority of the respondents 218(87%) reported to have been approached by the client (s) seeking abortion services, of these, 209 (84%) have been approached by about 1 to 5 clients in a month, with 200 (79%) have not used any method of pregnancy termination. Nearly half (49%) suggests a change in the abortion provision laws of Uganda (Table 4).

Table 4
Practice on induced abortion

Variables	Frequency	%
Have ever been approached by a client seeking abortion services (n = 252)		
Yes	218	87
No	34	13
How often do you get cases of clients seeking abortion services? (n = 248)		
1–5 cases in a month	209	84
6–10 cases in a month	13	5
More than 10 cases a month	26	11
Have ever used any common practice to induce abortion (n = 252)		
Yes	52	21
No	200	79
Do you have anyone to seek permission before performing abortion services? (n = 248)		
Yes	141	57
No	107	43
Do you suggest a change in the law on abortion in Uganda? (n = 250)		
Yes	123	49
No	127	51

The Attitude Of Respondents On Abortion Service Provision

Table 5
Attitudinal scores about abortion

Statements	Strongly Disagree (1)	Disagree (2)	No Opinion (3)	Agree (4)	Strongly Agree (5)
General support for abortion provision (alpha = 0.75, mean score = 2.8, 95% CI 2.65–2.99)					
General support for the provision of safe, voluntary abortion should be made legal and accessible (n = 251).	89 (35)	33 (13)	14 (6)	50 (20)	65 (26)
The government should be responsible for providing abortions as a part of the minimum healthcare package (n = 251).	88 (35)	43 (17)	21 (9)	46 (18)	53 (21)
A woman should have the right to decide for herself whether or not to have an abortion (n = 252).	87 (35)	44 (17)	12 (5)	34 (13)	75 (30)
Generally not in support for abortion provision (alpha = 0.58, mean = 2.71, 95% CI 2.54–2.87)					
Abortion is morally unacceptable irrespective of the reasons (n = 250).	65 (26)	37 (15)	22 (9)	39 (15)	87 (35)
Abortion should not be provided for any reason (n = 249).	107 (43)	69 (28)	10 (4)	22 (9)	41 (16)
Conditional support for abortion provision (alpha = 0.76, mean score = 2.86, 95% CI 2.75–2.96)					
Abortion provision should be legal if the woman's physical health is endangered by the pregnancy (n = 252).	30 (12)	13 (5)	5 (2)	43 (17)	161 (64)
Abortion should be legal if the woman's mental health is endangered by the pregnancy (n = 252).	38 (15)	31 (12)	20 (8)	44 (18)	119 (47)
Abortion should be legal if the woman is not married (n = 252).	152 (60)	44 (18)	21 (8)	10 (4)	25 (10)
Abortion provision should be legal if the family (or woman) cannot afford to raise the child (n = 252).	128 (51)	51 (20)	17 (7)	24 (9)	32 (13)
Abortion provision should be legal if the fetus shows signs of serious congenital defect or malformation (n = 252).	38 (15)	15 (6)	20 (8)	44 (17)	135 (54)
Abortion provisions should be legal if the woman was raped (n = 252).	66 (26)	57 (23)	28 (11)	34 (13)	67 (27)
Abortion provision should be legal if the pregnancy was a result of incest (n = 251).	88 (35)	57 (23)	28 (11)	26 (10)	52 (21)

Statements	Strongly Disagree (1)	Disagree (2)	No Opinion (3)	Agree (4)	Strongly Agree (5)
Abortion provisions should be legal if the pregnancy would mean that the mother had to drop out of school (n = 251).	120 (48)	52 (21)	16 (6)	29 (11)	34 (14)
Abortion provision should be legal if the pregnancy was unplanned, and the woman does not want to be pregnant (n = 252).	117 (46)	48 (19)	21 (8)	32 (13)	34 (14)

Personal belief or attitude against abortion provision (alpha = 0.71, mean score = 3.23, 95% CI 3.12–3.35)					
I prefer not to perform an abortion under any circumstances (n = 252).	62 (25)	44 (17)	25 (10)	46 (18)	75 (30)
I would not refer a patient for abortion under any circumstances (n = 252).	89 (35)	54 (21)	22 (9)	38 (15)	49 (20)
If a female patient requested an abortion, I would try to discourage her from seeking the procedure (n = 252).	35 (14)	23 (9)	20 (8)	71 (28)	103 (41)
I would try to convince other health care providers not to perform abortions (n = 252).	48 (19)	40 (16)	31 (12)	53 (21)	80 (32)
I think I would be discriminated against/stigmatized if I provided abortions to women (n = 252).	43 (17)	43 (17)	41 (16)	48 (19)	77 (31)
Health care providers who conscientiously object to abortion should be allowed to refuse to perform abortions (n = 252).	45 (18)	32 (13)	39 (15)	59 (23)	77 (31)
Personal attitudes/beliefs toward abortion provision (alpha = 0.44, mean = 3.19, 95%CI 3.04–3.35)					
I would refer patients for abortion services, in situations where I cannot or will not provide those services myself (n = 252).	56 (22)	27 (11)	26 (10)	53 (21)	90 (36)
Health care providers who conscientiously object to abortion should be required to refer patients seeking an abortion to non-objecting providers (n = 252).	64 (25)	38 (15)	39 (16)	52 (21)	59 (23)

The mean score of the respondents in the subscales for general and conditional support of abortion provision was 2.8 (CI 2.65–2.99) and 2.86 (2.75–2.96) respectively. The mean score for scale generally not in support of abortion service provision was 2.71 (CI 2.54–2.87). Meanwhile, the mean score for personal attitude and beliefs against and towards abortion service provision was well above the average 3.239 (CI 3.12–3.35) and 3.35 (CI 3.04–3.35) respectively (Table 5).

In the sub-scale 1, attitude generally in support for abortion service provision, nearly half 115 (46%) of the respondents agree that provision of safe voluntary abortion should be made legal and accessible meanwhile 122(48%) disagreed with the idea. About 38% of the respondents agree with the idea of including abortion services as part of the minimum health care package, this is contrary to 52% who disagree with that provision. Although 43% of the respondents agree that a woman has a right to decide whether or not to abort, 53% disagree with the idea. (Table 5).

Subscale 2, attitude generally not in support of abortion had two items. Half of the respondents (50%) reported that its morally unacceptable for a woman to abort irrespective of any reason, contrary to this, about 71% of the respondents agree that abortion services should not be provided for any reason but for very good reasons (Table 5).

In sub-scale 3, conditional support for abortion provision, the respondents had a varying opinion for legal provision of abortion depending on the conditions; 81% of the respondents reported agreement if the woman's physical health is endangered, 65% if the mental health is endangered, and 71% if the fetus shows serious congenital anomalies. On the other hand, respondents reported that abortion services should not be provided in the case the woman was raped(49%), a woman is not married(78%), the woman is not able to raise the child (71%), the pregnancy was a result of incest (58%), the woman had to drop out of school (69%) and unplanned pregnancy(65%) (Table 5).

In sub-scale 4, personal attitudes and beliefs against abortion service provision, nearly half of the respondents 48% agreed that they will not perform an abortion under any circumstance, meanwhile, 42% disagreed; 56% claimed they would not refer a patient for abortion under any circumstances, 35% agreed for such referral. More than half of the respondents (69%) reported they would discourage women from seeking abortion procedure, and about (53%) said they would discourage other healthcare providers from providing such services. About half (50%) of the respondents agreed that abortion service provision is a source of stigma/ discrimination, and (54%) said that health care providers who conscientiously object abortion service provision should be allowed to say no to it (Table 5).

In sub-scale 5, personal attitudes and beliefs towards abortion provision, more than half of the respondents (57%) agreed to refer patients for the services only if they cannot can-not or will not provide the services themselves, and about 43% said the objecting providers should be required to refer patients seeking abortion provision to non-objecting providers (Table 5).

Multivariate Findings

Table 6
Demographic characteristics associated with adequate knowledge about complications due to unsafe abortions

Variables (adequate knowledge n = 162, 64%, 95% 58–70%)	Frequency	COR	95% CI	p-value	AOR	95% CI	p-value
Gender (n = 252)							
Male	80	1					
Female	172	0.69	0.39–1.22	0.198	0.75	0.34–1.65	0.475
Age group (n = 252)							
Less than 20 years	25	1			1		
20–29 years	109	2.13	0.88–5.18	0.094	2.07	0.74–5.76	0.165
30–39 years	78	4.35	1.69–11.22	0.002	2.50	0.75–8.31	0.136
40 and above years	40	4.50	1.54–13.17	0.006	2.69	0.73–10.00	0.138
Marital status (n = 252)							
Single/Separated/Widowed	101	1			1		
Cohabiting	35	2.06	0.91–4.64	0.082	1.89	0.73–4.94	0.192
Married	116	2.70	1.53–4.78	0.001	2.24	1.06–4.76	0.035*
Religion (n = 252)							
Catholic	140	1			1		
Anglican	59	2.43	1.20–4.90	0.013	2.22	1.03–4.79	0.042*
Born again Christian	42	1.24	0.60–2.53	0.561	1.14	0.51–2.58	0.749
others (Muslim/Seventh Days Adventists/Nonbelievers)	11	0.82	0.24–2.83	0.759	0.94	0.24–3.77	0.935
Employment status (n = 251)							
Employed in Government only	100	1			1		
Employed in NGO Health Centre	26	0.75	0.29–1.94	0.552	0.97	0.32–2.88	0.949

*Significant

Variables (adequate knowledge n = 162, 64%, 95% 58–70%)	Frequency	COR	95% CI	p-value	AOR	95% CI	p-value
Employed in Private For-Profit Hospital	44	0.89	0.40–1.98	0.774	0.81	0.30–2.15	0.665
Employed in private non for-Profit Hospital	75	0.26	0.14–0.50	0.000	0.31	0.14–0.66	0.002*
Employed in Both Government and Private Hospitals	6	0.67	0.12–3.86	0.651	0.77	0.10–5.82	0.800
*Significant							

Variables (adequate knowledge n = 162, 64%, 95% 58–70%)	Frequency	COR	95% CI	p-value	AOR	95% CI	p-value
Type of health care provider (n = 251)							
Nurse	85	1			1		
Midwives	86	0.65	0.35–1.21	0.178	0.54	0.26–1.12	0.100
Doctor	26	2.18	0.74–6.36	0.156	1.24	0.37–4.11	0.725
Clinical Officer	30	2.59	0.90–7.47	0.078	1.79	0.52–6.24	0.358
Others	24	0.52	0.21–1.30	0.160	0.38	0.12–1.14	0.084
Numbers of years working (n = 251)							
Less than one (1) year	45	1			1		
1 to 5 years	109	1.59	0.79–3.20	0.197	0.65	0.27–1.60	0.349
6 to 10 years	51	3.48	1.43–8.45	0.006	1.00	0.29–3.41	0.994
11 years and above	46	1.98	0.85–4.62	0.116	0.55	0.16–1.94	0.352
*Significant							

Multivariate logistic regression for an association between demographic characteristics and adequate knowledge about complications due to unsafe abortions revealed that respondents who are married and an Anglican were more likely to be knowledgeable about abortion complication p-values; [0.035(OR 2.24, CI-1.06-4.76)] and [0.042(OR 2.22, CI 1.03–4.79)] respectively. Meanwhile being employed in Non-For-

Profit Faith-based hospitals is statistically associated with poor knowledge of abortion complications p-value [0.002(OR, 0.31 CI 0.14–0.66)] (Table 6).

Table 7:

Ordinary least square regression analysis

Demographic characteristics	General support for abortion provision (alpha=0.75, mean score=2.8, 95% CI 2.65 - 2.99)	Not in generally support for abortion provision (alpha=0.58, mean=2.71, 95% CI 2.54 - 2.87)	Conditional support for abortion provision (alpha=0.76, mean score=2.86, 95% CI 2.75 - 2.96)	Personal belief or attitude against abortion provision (alpha= 0.71, mean score= 3.23, 95% CI 3.12 - 3.35)	Personal attitudes/beliefs toward abortion provision (alpha=0.44, mean=3.19, 95%CI 3.04 - 3.35)
Gender (n=252)					
Male	Ref	Ref	Ref	Ref	Ref
Female	-0.39 (-0.85 – 0.06)	0.24 (-0.22 – 0.79)	-0.19 (-0.47 – 0.08)	0.24 (-0.22 – 0.69)	0.14 (-0.55 – 0.28)
Age group (n=252)					
Less than 20 years	Ref	Ref	Ref	Ref	Ref
20 - 29 years	0.50 (-0.11 – 1.10)	0.18 (-0.42 – 0.79)	0.08 (-0.28 – 0.45)	0.18 (-0.42 – 0.79)	0.45 (-0.11 – 1.00)
30 - 39 years	0.53 (-0.17 – 1.23)	-0.14 (-0.85 – 0.56)	0.41 (-0.02 – 0.83)	-0.14 (-0.85 – 0.56)	0.30 (-0.35 – 0.94)
40 years and above	0.85 (0.08 – 1.61) *	0.02 (-0.75 – 0.78)	0.55 (0.08 – 1.01) *	0.02 (-0.75 – 0.78)	0.39 (-0.32 – 1.09)
Marital status (n=252)					
Single/Separated/Widowed	Ref	Ref	Ref	Ref	Ref
Cohabiting	0.22 (-0.35 – 0.79)	0.50 (-0.06 – 1.07)	0.18 (-0.17 – 0.52)	0.50 (-0.06 – 1.07)	0.13 (-0.39 – 0.65)
Married	-0.21 (-0.65 – 0.23)	0.24 (-0.20 – 0.68)	-0.13 (-0.39 – 0.14)	0.24 (-0.20 – 0.68)	0.35 (-0.06 – 0.75)
Religion (n=252)					
Catholic	Ref	Ref	Ref	Ref	Ref
Anglican	0.03 (-0.39 – 0.46)	0.15 (-0.27 – 0.58)	0.06 (-0.19 – 0.32)	0.15 (-0.27 – 0.58)	0.17 (-0.22 – 0.56)
Born again Christian	-0.51 (-0.99 – -0.04) **	0.34 (-0.13 – 0.82)	-0.14 (-0.43 – 0.15)	0.34 (-0.13 – 0.82)	-0.04 (-0.48 – 0.40)
others	-0.08 (-0.93 – 0.77)	-0.07 (-0.92 – 0.79)	0.38 (-0.14 – 0.89)	-0.06 (-0.92 – 0.79)	0.17 (-0.61 – 0.95)
Religious beliefs (n=251)					
Very strong	Ref	Ref	Ref	Ref	Ref
Somewhat strong	0.40 (-0.19 – 0.98	-0.03 (-0.61 – 0.56)	0.26 (-0.09 – 0.61)	-0.03 (-0.61 – 0.56)	0.73 (0.19 – 1.26) *
Neither strong nor weak	-0.30 (-0.91 – 0.31)	0.17 (-0.44 – 0.78)	0.04 (-0.33 – 0.41)	0.17 (-0.44 – 0.78)	-0.12 (-0.68 – 0.44)

Demographic characteristics	General support for abortion provision (alpha=0.75, mean score=2.8, 95% CI 2.65 - 2.99)	Not in generally support for abortion provision (alpha=0.58, mean=2.71, 95% CI 2.54 - 2.87)	Conditional support for abortion provision (alpha=0.76, mean score=2.86, 95% CI 2.75 - 2.96)	Personal belief or attitude against abortion provision (alpha= 0.71, mean score= 3.23, 95% CI 3.12 - 3.35)	Personal attitudes/beliefs toward abortion provision (alpha=0.44, mean=3.19, 95%CI 3.04 - 3.35)
Employment status (n=251)					
Employed in Government only	Ref	Ref	Ref	Ref	Ref
Employed in NGO Health Centre	0.67 (0.05 – 1.29)	0.06 (-0.56 – 0.69)	0.54 (0.16 – 0.91) *	0.06 (-0.56 – 0.69)	-0.01 (-0.58 – 0.56)
Employed in Private For-Profit Hospital	0.48 (-0.08 – 1.03)	-0.18 (-0.73 – 0.37)	0.40 (0.07 – 0.74) *	-0.18 (-0.73 – 0.37)	0.54 (0.04 – 1.05) *
Employed in private non for-Profit Hospital	0.31 (-0.15 – 0.76)	0.30 (-0.15 – 0.75)	0.37 (0.09 – 0.64) *	0.30 (-0.15 – 0.75)	0.30 (-0.12 – 0.72)
Employed in Both	-0.50 (-1.64 – 0.65)	-0.44 (-1.58 – 0.70)	-0.22 (-0.91 – 0.47)	-0.44 (-1.58 – 0.70)	-0.35 (-1.40 – 0.70)
Type of health care provider (n=251)					
Nurse	Ref	Ref	Ref	Ref	Ref
Midwives	0.06 (-0.37 – 0.48)	-0.04 (-0.47 – 0.38)	-0.02 (-0.28 – 0.23)	-0.04 (-0.47 – 0.38)	0.25 (-0.14 – 0.65)
Doctor	-0.11 (-0.77 – 0.54)	0.20 (-0.46 – 0.85)	-0.06 (-0.45 – 0.34)	0.20 (-0.46 – 0.85)	-0.24 (-0.84 – 0.36)
Clinical Officer	-0.09 (-0.76 – 0.58)	-0.17 (-0.84 – 0.50)	0.28 (-0.12 – 0.69)	-0.17 (-0.84 – 0.50)	0.28 (-0.33 – 0.90)
Others	-0.10 (-0.78 – 0.58)	-0.35 (-1.03 – 0.33)	-0.02 (-0.43 – 0.39)	-0.35 (-1.03 – 0.33)	0.07 (-0.55 – 0.70)
Number of years working (n=251)					
Less than one (1) year	Ref	Ref	Ref	Ref	Ref
1 to 5 years	-0.12 (-0.66 – 0.42)	-0.45 (-0.99 – 0.09)	0.08 (-0.25 – 0.40)	-0.45 (-0.99 – 0.09)	-0.00 (-0.50 – 0.49)
6 to 10 years	-0.14 (-0.86 – 0.57)	-0.46 (-1.18 – 0.25)	-0.14 (-0.57 – 0.29)	-0.46 (-1.18 – 0.25)	0.06 (-0.60 – 0.72)
11 years and above	-0.25 (-0.99 – 0.50)	-0.25 (-0.99 – 0.49)	-0.25 (-0.70 – 0.19)	-0.25 (-0.99 – 0.49)	0.02 (-0.66 – 0.70)
Intercept	2.60 (1.76 – 3.44)	2.56 (1.73 – 3.40)	2.51 (2.00 – 3.02)	2.56 (1.73 – 3.40)	2.36 (1.59 – 3.12)
Adjusted R2	0.12	-0.002	0.10	0.09	0.03

**Positive associated coefficient*

*** Negative associated coefficient*

In ordinary least-square regression analysis, being of aged 40 years and above was positively associated with general support for abortion provision and conditional support for abortion provision (coefficients 0.85 and 0.55). Participants who had strong religious beliefs were positively associated with personal attitudes/beliefs towards abortion provision (coefficient 0.73). Being employed in the NGO Health facility was positively associated with general support for abortion provision and conditional support for abortion provision (coefficients 0.67 and 0.54). While being employed in a private for-profit health facility was positively associated with conditional support for abortion providers and personal attitudes/beliefs towards abortion provision (coefficients 0.40 and 0.54). Similarly, being a participant who was employed in a private not for profit faith-based health facility was positively associated with conditional support for abortion provision (coefficient 0.37). However, being a born-again Christian was negatively associated with general support for abortion provision (coefficient − 0.51). Table 7 summarises the result for the five scales of abortion attitude.

Discussion

To the best of our knowledge, this is the first study investigating knowledge, practice, and attitude of healthcare providers as in regard to abortion service provision in Northern Uganda. The respondents were drawn from a wide background of the healthcare professional within, Gulu City, northern Uganda.

Regarding knowledge about abortion complications, respondents employed in faith-based health facilities showed comparatively lower knowledge of complications caused by induced abortion [p-value 0.002(OR, 0.31 CI 0.14–0.66). The gap in Knowledge among respondents could be related to unavailability of training opportunities and post-abortion service provision as most faith-based facilities do not provide abortion services except as part of the emergency evacuation for inevitable or incomplete abortion. Mother church positions on abortion are normally that of pro-life hence less or no involvement of their staffs in post-abortion and comprehensive abortion care-related pieces of training. Post-abortion care training exposes healthcare providers to value clarification and attitude transformation (VCAT), a very important tool in clarifying about abortion service provision in some circumstances(17). Exposure and training may also explain a positive association about providers who are 40 years and older and an employed in Non-for-profit NGO health facilities in general support for abortion provision, coefficients 0.85 and 0.67 respectively. Post-abortion care-related pieces of training can enhance conditional support for abortion provision as seen by positive association among providers who are aged 40 years or more, employed in NGO and private for-profit health facilities and conditional support for abortion provision coefficients 0.55, 0.54, and 0.4 respectively. This finding is similar to a study conducted in Pakistani by Baig (2017) which found about 60% of the midlevel health care providers showed a positive attitude to

value clarification regarding post-abortion care because of religious influence, abortion being a sinful act in the Islam religion,(18). Meanwhile, being a born-again Christian was negatively associated with general support for abortion provision (coefficient − 0.51). This finding replicates a national survey about knowledge and perception of abortion law in Trinidad and Tobago revealed that Christians who are Non-Catholics and non-Pentecostals are more of prochoice compared to Catholics and Pentecostal who are antichoice(19).

Most of the respondents (85%) were aware of the use of modern family contraceptives as a good method of preventing post-abortion complications. This is particularly important in Ugandan settings where a significant number of pregnancies are unintended and stems from low contraceptive uptake; a prevalence of 35% and high unmet needs of contraceptive(28%)(12). Training healthcare providers in post-abortion family planning services is a perfect opportunity for intervention used to increase modern post-abortion contraceptives uptake.

Although a good number of respondents (69%) believed that many of the induced abortions are done by unmarried couples, up to (59%) did say that avoiding sex before marriage is not a solution to preventing complications due to unsafe abortion. Because of Uganda's restrictive abortion laws, many women or couples with unintended pregnancies seek a clandestine, unsafe abortion. This practice may be higher in some societies where premarital sex is regarded as a sin and can lead to social ostracization. Interventions aimed at reducing unwanted pregnancies among sexually active unmarried women will help lessen the complications of induced abortion. This is consistent with earlier findings in Uganda where the contraceptive increase has been seen as a way to reduced maternal mortality and morbidity caused by unsafe abortion(20).

Nearly half (49%) of the respondents hoped for a change in the abortion laws in Uganda yet the majority (61%) detest legalizing abortion laws. Article 22(2) of the Ugandan Constitution, "protection of the right to life," states, "no person has the right to terminate the life of an unborn child except as may be authorized by law" (21). This provision does not exclude access to abortion, it simply requires that there is no right on the part of any person whether the provider or the pregnant woman to terminate "the life of an unborn child" in the dearth of a law permitting them to do so. This may be because of the confusion about the laws that have already some provision for termination of pregnancy in case of severe congenital anomalies and danger to maternal life. The legalization of abortion laws might attract widespread resistance from pro-life movement and such a law might never be passed. It also enlightens the controversies around abortion care as stated by the Ugandan opinion leaders (14).

The confusion continues to disintegrate the minds of the study respondents giving out mixed reactions, about 49% of the respondents disagreed with the legal provision of abortion in a condition that the woman was raped, meanwhile 40% agreed that if the pregnancy was as a result of rape then she may terminate the pregnancy. This, however, maybe as a result of personal perceptions of rape and incest being an abomination in the African society, pregnancy occurring as a result of this is considered "a bad

luck child" who may bring misfortune to the family, while others attach this to religious belief that every child is a gift to the family irrespective of the circumstances around it as found elsewhere(22).

About half (50%) of the study respondents reported stigma related to abortion care provision, this could be due to unclear laws on induced abortion in Uganda and the moral values among healthcare providers making them reluctant to commit to abortion-related care. Stigma and passive resistance are key barriers to the realization of reproductive health including abortion-related care in Northern Uganda as has been reported elsewhere (23). The level of stigma seems to be similar across all sections of the community as motorbike taxi drivers (Boda Boda) expressed a great deal of tension and conflict over abortion as it relates to notions of respectability, family shame, felt it was necessary to dissociate themselves from the practice in public spaces yet in private spaces they reported being involved in abortions (24).

Participants who had strong religious beliefs and those who are employees in the private for-profit health facilities were positively associated with personal attitudes/beliefs towards abortion provision coefficient 0.73 and 0.54, respectively. Two items were examined under this subscale about the referral of a patient for abortion services only if they cannot or will not provide the services themselves, and about objecting healthcare providers that should refer patients seeking abortion services provision to non-objecting providers. This is a reassuring finding given the fact that these providers are more likely to refer clients seeking abortion-related services ensuring continuity of care.

The Ugandan penal code has provision for abortion in the event that the pregnancy is causing harm to the mother or the baby has severe congenital anomalies incompatible with life(25). There was no mention of conscientious objection whether in the constitution or penal code, in case a healthcare provider has been faced with a mother who meets criteria for pregnancy termination as provided in the laws, under what circumstances are they supposed to object if they feel it is against their beliefs or values. A South African study involving in-depth interviews among healthcare providers clearly brought the lack of understanding concerning the circumstances in which health care providers were entitled to invoke their right to refuse to provide or assist in abortion services. Providers seemed to have poor understandings of how conscientious objection was to be implemented, but was also constrained in that there were few guidelines or systems in place to guide them in the process(26).

This study has several limitations. First, responses from a self-administered survey may not be indicative of the actual behaviour, particularly regarding current and future intentions and behaviour. Furthermore, external issues, such as facility-based constraints preventing abortion provision, may be restraints to access to abortion services now and in the future, despite the providers' attitude and willingness to perform or not abortions related services. A comprehensive longitudinal assessment of practices and beliefs requiring a large-scale cohort study among providers in various health facilities in Uganda will give more information.

Second, given the restrictive nature of abortion laws in Ugandan settings and despite all efforts to ensure confidentiality, providers' response may be biased by socio-cultural and legal norms and dependent on the degree to which each individual respondent felt comfortable stating attitudes and practices contrary

to such standards. We attempted to minimize such bias by administering the questionnaire privately and anonymously.

A third limitation is that our findings may not be generalizable to other healthcare providers in Uganda or other countries. Healthcare providers in Gulu City may differ demographically or otherwise in Uganda or elsewhere. Knowledge, attitudes, and beliefs about abortion and abortion provision can be quite different from country to country and should be considered in the appropriate political, religious, cultural, and educational context.

We believe our study is the first to look at the knowledge attitudes of healthcare providers as regards abortion provision in Uganda. We achieved a high level of response by recruiting providers from department to department through their supervisors. An additional strength is an instrument itself, which was designed carefully, the attitudinal score being adopted from the South African study, and modified to fit for our case(16), piloted extensively, and tested for internal reliability and consistency.

Conclusion

Post-abortion and comprehensive abortion care training with VCAT is key interventions to help improve on the attitude of healthcare providers especially those working in reproductive healthcare points as they manage clients seeking post-abortion care including termination of pregnancy when medically indicated. Such healthcare workers may need to have basic understandings of the situations under which some women chose to terminate a pregnancy or seek post-abortion care if they are to provide an objective harm reduction strategy. Effective ways to improve access to harm reduction strategy in abortion care must be carefully planned, applied, and repeatedly monitored and evaluated.

A clear national effort to improve abortion training and service delivery is needed and must involve private and public practitioners, ministry of health, academic training and research institutions, and non-governmental health organizations.

Academic medical institutions must ensure that students understand the laws and responsibilities that govern their professional actions with respect to abortion care (regardless of their personal views) and must provide appropriate abortion training.

Training and service in post-abortion family planning should be increased to meet the family needs and reduce the unintended pregnancy rates in Uganda. Larger and nationwide additional studies examining the knowledge, attitudes, beliefs, and intentions of providers in abortion provision would be an important contribution to the field.

List Of Abbreviations

AOGU: Association of Obstetricians and Gynaecologists of Uganda; **CPR:** Contraceptive Prevalence Rate; **UDHS:** Uganda Demographic Health Survey; **GUREC:** Gulu University Research and Ethics committee;

LHIREC: Lacor Hospital Institutional Research and Ethics Committee; **NGO:** Non-Government Organisation; **PI:** Principle Investigator; **TFR:** Total Fertility Rate; **VCAT:** Value Clarification and Attitude Transformation

Declarations

Ethics approval and consent to participate

Approval to carry out this research was sought from: Gulu University Research Ethics Committee approved the study under number GUREC-079-19. and each individual research participants provided written informed consent before participation in the study. Administrative clearances were granted by Gulu Regional Referral Hospital ethical committee correspondence number ADM/2017-18/001 and St Mary's Hospital Lacor ethical boards with administrative clearance number LHIREC Adm 022/09/19. Marie Stopes Uganda provided an email clearance, other Health centres, and hospitals provided administrative clearance verbally by each institutional head before we recruited the participants into the survey.

Consent to Publish

Not Applicable

Availability of Data and Materials

The data sets used and analysed during this study are not deposited in the public repository but available from the corresponding author on reasonable request.

Competing Interests

The authors declare that they have no competing interests

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Author's Contributions

All authors contributed significantly to this work. PFP; Conceived, designed the study, participated in data collection, interpretation, and discussion; drafted the manuscript. AAG.; participated in the proposal designs, data interpretation, and discussion. OJH participated in drafting the method, data analysis and interpretation. All Authors read and approved the manuscript.

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Not Applicable

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