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Faculty of Medicine and Health Science

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Assessment of Awareness on Vesico-Vaginal Fistula Among Women of Reproductive Age in Public Hospitals, Sana'a City, Yemen

By:

1. **Rayden Mohammed Alsaeedi**
2. **Ayman Abdulrazaq Alsamawi**
3. **Eman Fadhil Al baqri**
4. **Zeiad Mahdi ali Alyaari**
5. **Ali abdullah Alyosfe**
6. **Molok Salem Riry**

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Supervisor:

Asst. Prof. Moneera alfaiq

Asst. Prof. Emad al-shameri

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DEDICATION

To our parents and families who have been our source of inspiration and give us strength when we thought of giving up, who continually provide their moral, spiritual, emotional, and financial support.

ABSTRACT

Background: Obstetric Vesico-Vaginal Fistula is a reproductive health problem mainly caused by prolonged obstructed labour and delay in seeking emergency obstetric care after delivery.

Objective: The main goal of this study is to raise the awareness among women of reproductive age towards VVF in public hospitals, Sana'a, Yemen.

Methodology: A across sectional study was conducted among 383 patients at public hospitals, Sana'a, Yemen

Structured Arabic questionnaire was implemented through using face to face interview. The questionnaire consisted of sociodemographic data, questions for assessment awareness, knowledge, associated risk factors and attitude. The collected data was entered and analyzed by using the statistical program (SPPS). Data was presented in tables and figures

Results: The study was conducted among a sample of 383 patients, it showed that there is a high level of awareness regarding nature, prevention and complications of VVF. But there is a Medium level of awareness regarding social consequences and the symptoms of VVF. In general our study showed that there is a high level of awareness among the respondents about the awareness axis, where the general average of the level of awareness of the respondents was with an arithmetic mean of (3.52) and a standard deviation of (0.878) with a significance rate of (70.40).Also the study showed that there is a high level of knowledge among the respondents, as the general average of the level of knowledge of the respondents was with an arithmetic mean of (3.65) and a standard deviation of (0.20) with a significance rate of (72.97). But the study showed that there is a low knowledge among the respondents of the risk factors axis, as the general mean of the axis was with an arithmetic mean of (1.42) and a standard deviation of (.71), with a significance ratio (46.9), which indicates a low level of knowledge among respondents about risk factors of vesico-vaginal fistula in women of childbearing age. Also, the study showed that the majority of respondents had average attitude towards Vesico-vaginal Fistula based on Likert scale scores. Our study shows that there are statistically significant differences between awareness of VVF, attitude, knowledge & residence because p.value (0.00) is less than the level of significance (0.05). Also, there are statistically significant differences between awareness of VVF, Attitude, knowledge & Educational status, because the p.value (.003, .039, .004) is less than the level of significance (0.05).

Conclusion: The study concludes that the respondents had high awareness levels, low level of knowledge about risk factors and average attitude towards Vesico-Vaginal Fistula. The findings will be available in governmental and non-governmental organizations for structuring programs and strategizing on interventions targeting creation of community awareness as well as its prevention and management. These results would also be of use to the Ministry of Health for purposes of health education, policy formulation and implementation with regards to available short and long-term Vesico-Vaginal Fistula interventions.

LIST OF CONTENTS

المحتويات

List of Tables

List of Figures

ABBREVIATIONS

OBF	Obstetric Fistula
VVF	Vesicovaginal Fistula
UNFPA	United Nations Population Fund
WHO	World Health Organisation
EmONC	Emergency Obstetric Neonatal care
TBA	Traditional Birth Attendants
CHW	Community Health Workers
CBD	Community Based Distributors
SMAG	Safe Motherhood Actions Groups
FGC or FGM	female genital mutilation
SLR	Systematic Literature Review
POL	prolonged obstructed labor

Chapter 1

Introduction

1. Introduction

1.1. Background

Motherhood is an important milestone in the lives of most women. Yet, this phase of life which should be a bundle of joy and happiness tends to be often marred with some challenges. Some women either suffer complications during pregnancy and childbirth, thereby leading to the death the child or mother (1). One of such birth-related injuries that exacerbate maternal morbidity and mortality is obstetric fistula (OBF) (2). OBF is a medical condition in which there is an abnormal opening or connection between woman's genitals and the urinary tract (urogenital fistula) or rectum (most commonly, rectovaginal fistula) (2-5), that occur as the result of obstetric trauma, typically from prolonged obstructed labor (4, 5), and is a characteristic of prolonged and obstructed labor, which is worsened by the unavailability of prompt medical care (6).Vesicovaginal fistula (VVF) is known to be a subtype of OBF. VVF is an abnormal fistulous tract extending between the bladder and the vagina that allows the continuous involuntary discharge of urine into the vaginal vault (7). In addition to the medical squeals from these fistulas, they often have a profound effect on the patient's emotional well-being (8).It is a public health concern for women and their communities within developing nations, particularly in Africa and Southeast Asia (11), and it is found to be one of the most visible indicators of maternal morbidity (12).

To a large extent, obstetric VVF has been linked to obstructed labor which is also one of the major causes of maternal mortality especially in low- and middle-income countries. The term fistula refers to an abnormal duct or opening that occurs as a result of injury, disease, or disorder that connects a hallow organ in the body to another (9). VVF is an abnormal opening between a woman` s vagina and bladder through which her urine continually leaks. It is a very unpleasant experience for the patients, and it is considered as the most dehumanizing condition that afflicts women. And VVF is the most common type of urinary tract fistula (5).

1.2. Epidemiology of Vesicovaginal fistula

OBF occurs in both low-and middle-income and high-income countries, the greatest burdens of OBF are recorded in low-and middle-income countries (6). Evidence shows that each year, between 50,000 and 100,000 cases of OBF are reported worldwide (13). Women who experience obstetric fistula suffer constant incontinence, shame, and social segregation and health problems. It is estimated that more than 2 million young women live with untreated obstetric fistula in Asia and sub-Saharan Africa (13).

Obstetric fistula has been more prevalent in sub- Saharan Africa and Asia, with a pooled incidence of around 1.13 per 1,000 women of reproductive age (25). Although largely eradicated in the developed world due to improved obstetric care, fistula continues to have devastating effects on the lives of many women in developing countries.

In Yemen, most of obstetric fistula patients were in age group 15-35yrs (76.8%) early age of marriage (82%) illiterate (69.8%) and still married despite having fistula (83.7%) with no antenatal care attendance in the causative pregnancy (53.5%) and have history of previous once and more caesarian section (20.0%,16.3%) most of participants delivered vaginally (53.5%) with prolonged delivery > 2 days (81.4%) most of results are with p-value <0.05 statistically significant. With (80.5%) obstructed prolonged labor is leading cause to obstetric fistula still the iatrogenic cause with high percent (5.9%). Most of obstetric fistula (90.7%) with genitourinary type, (25%) with rectovaginal type and (16.27%) have complex fistula with p-value0.00. Majority of obstetric fistula patient conducted trans-vaginal approach (65.1%) in one stage (75.3%) and most of them (79.1%) stay in hospital>3weeks with highly success surgical repair (97.7%) all result with p-value <0.05 which statistically significant (24). Yemen remains among the countries with the highest maternal mortality in the region with 148 maternal deaths per 100,000 live births (39).

This study will be conducted to assess the awareness of vesicovaginal fistula among women of reproductive age in public hospitals in Sana'a city, Yemen.

1.3 Study Justifications

Generally, women who experience OBF are stigmatized and forced to live a life of misery, loneliness, and poverty (11). Thus, uregntly it's very important to eliminate OBF. Recognizing the need to eliminate OBF, the World Health Organization (WHO) has outlined strategies to prevent OBF. These strategies include promoting prompt access to obstetric care, delaying maternal age at first birth, and the elimination of harmful traditional procedures such as female genital mutilation (FGM) (11).

In Yemen, like other developing countries, obstetric VVF is one of the causes of maternal morbidities and mortality. The prevalence of obstetric VVF in the country has been attributed to limited access to essential and timely obstetric care as well as misconceptions and false beliefs about the condition. Existing literature on obstetric VVF in Yemen, however, does not reveal a lot of information on the level of awareness about this condition. Reliable data and research on this maternal morbidity are lacking due to the stigma related to this condition.

The underestimation of fistula cases is another issue of concern. In Yemen, the actual incidence of obstetrical fistula is not well-documented. Awareness of OBF and its related factors is central to efforts to eliminate OBF, and to improve maternal health status.

This study therefore focused on assessing community awareness of obstetric VVF with a focus on risk factors, presentation, prevention and management in order to generate new knowledge about awareness of obstetric VVF of high prevalence rate of obstetric VVF due to poverty, and can be a good base or background for further studies in a specific area depending on finding or relationship between variables. Finally, the findings of the study could be used by the authorities to create and

implement health education and health promotion programs by applying a strategy to increase and improve the patient's knowledge.

1.4 Research objectives

1.4.1 General objective

The main goal of this study is to raise the awareness among women of reproductive age towards VVF in public hospitals in Sana'a city, Yemen.

1.4.2 Specific objectives

- To determine the sociodemographic characteristics towards VVF among women of reproductive age in public hospitals, Sana'a city, Yemen.
- To determine the level of awareness towards VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.
- To determine the knowledge and attitude level towards VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.
- To identify perceived risk factors associated with VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.
- To identify the relationships between sociodemographic characteristics and knowledge, attitudes, awareness towards VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.

Chapter 2

Literature review

2. Literature review

2.1 Introduction

Obstetric Fistula is a medical condition in which there is an abnormal opening or connection between a woman's genitals and the urinary tract (urogenital fistula) or rectum (most commonly, rectovaginal fistula) (2-5), that occur as the result of obstetric trauma, typically from prolonged obstructed labor (4, 5), and is a characteristic of prolonged and obstructed labor, which is worsened by the unavailability of prompt medical care (6). Vesicovaginal fistula (VVF) is known to be a subtype of OBF. VVF is an abnormal fistulous tract extending between the bladder and the vagina that allows the continuous involuntary discharge of urine into the vaginal vault (7). In addition to the medical squeals from these fistulas, they often have a profound effect on the patient's emotional well-being (8). It is usually caused by child birth called as an obstetric fistula, when a prolonged labor presses the unborn child tightly against the pelvis, cutting off blood flow to the Vesicovaginal wall. The affected tissue may necrotize, leaving a hole (9). VVF can also result from violent rape; this injury has become common in some war zones, where rape is used as a weapon against civilian populations resulting to VVF (10). It is a public health concern for women and their communities within developing nations, particularly in Africa and Southeast Asia (11), and it is found to be one of the most visible indicators of maternal morbidity (12). To a large extent, obstetric VVF has been linked to obstructed labor which is also one of the major causes of maternal mortality especially in low and middle income countries. The term fistula refers to an abnormal duct or opening that occurs as a result of injury, disease, or disorder that connects a hallow organ in the body to another (9). VVF is an abnormal opening between a woman's vagina and bladder through which her urine continually leak. It is a very unpleasant experience for the patients, and it is considered as the most dehumanizing

condition that afflicts women. It is the most common type of urinary tract fistula. (5). Picture 2.1 represents the female organ showing the area where VVF is concentrated.

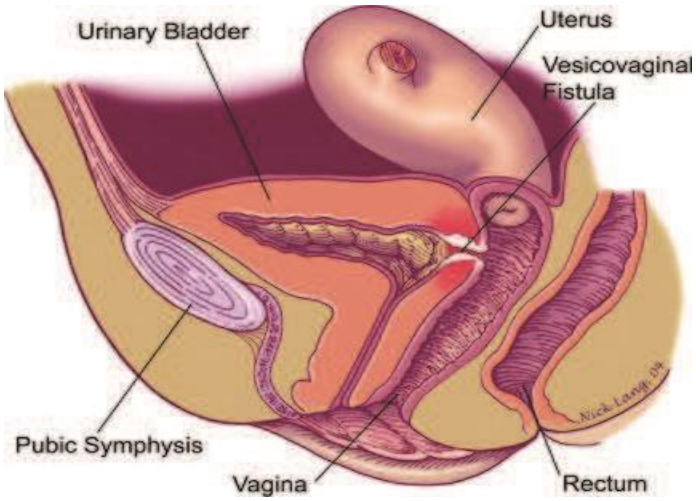

Figure 2.1: Vesicovaginal fistula. (Referred to 28.03.2010)

The main cause of VVF is prolonged obstructed labor (POL) which is a reflection of the poor state of emergency obstetric care (EmOC) in developing nations with associated high still birth (26, 27). Other major risk factors for obstetric fistula include child marriage associated with an early age at pregnancy, short stature, illiteracy, poverty, not attending antenatal care, rural place of residence or living far away from a health facility, lack of emergency obstetric services, and poor health services (28-30). Other risk factors that contribute to obstetric fistula include primiparity, prolonged labor, stillbirth delivery, and poor socioeconomic status (31-34). Lack of access to appropriate emergency obstetric care is one of the main risk factors for obstetric fistula (35, 36). Lack of knowledge, cultural beliefs and values, isolation, unreliable public transportation and no direct methods of communication between villages and rural health centers or district hospitals contribute to the delay of seeking health care in cases of emergency (37). It might take approximately 30 years to treat the back log of existing cases of VVF, therefore, the need to explore the knowledge and attitude towards its prevention (38). It is commonly known that VVF can be caused by diseases, medical treatment or by trauma. Medical fistula is mainly caused by gallbladder complications or through radiation therapy leading to

Vesicovaginal fistula. The other causes of disease fistula are due to the inflammatory bowel diseases such as ulcerate Colitis and Cohn's disease. In developing countries including Yemen, the main cause is due to obstructed labor during childbirth described as Obstetric Fistula. This occurs when a prolonged labor presses the unborn child tightly against the pelvis, cutting off blood flow to the vesicovaginal wall. Hence the affected tissue may necrotize, leaving a hole**.**It also results from an injury to the urinary tract caused by accidents during surgery procedures to the pelvic area such as hysterectomy (13). For example, in developing countries, there are some areas where culture encourages marriage and conception at a young age, often before full pelvic growth has been achieved. Due to poverty, some women suffer from chronic malnutrition during pregnancy which further limits pelvic dimensions, increasing the risk of developing VVF. In addition, few women are attended by qualified health care professionals or barely have access to medical facilities during childbirth because they cannot afford to pay medical fee. This leads to obstructed labor protracted for days or weeks. Secondly most girls under the age of 18 years old try to do abortion at home using some homemade herbs which cause complications and necrosis to the womb. Furthermore, another cause is tumors in the VV area or by reduced bloody supply due to tissue death (necrosis) caused by radiation therapy (14.) .Due to financial issues, not all women in developing countries can afford antenatal checkups and lack of knowledge is also another contributing factor to these kinds of incidents (15).

Fistula can exist in two forms simple and complex fistula. Simple fistula is easily identified, it is easily treated and the virginal tract is not significantly impaired during surgery. Figure 2.1 illustrates simple fistula exposing the perianal region which is below the pelvic diaphragm and the patient is operated on using simple tools (16).

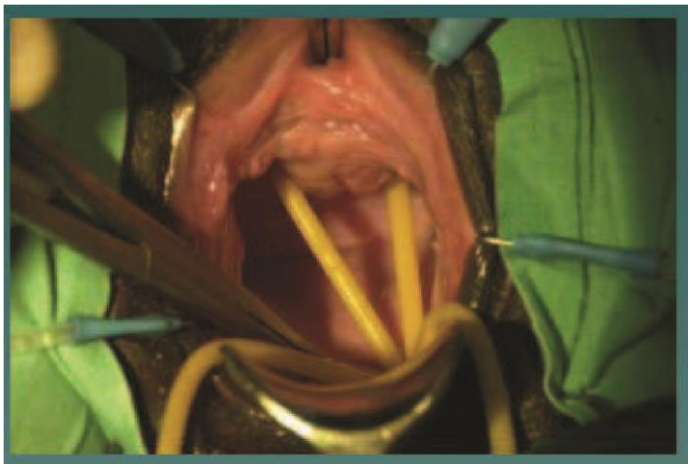

Figure 2.2: Simple fistula demonstrated by opening of the labia. (C-H Rochat, 2003.)

Complex Vesicovaginal fistula involves the vaginal or abdominal approach depending on the location and therapy. The vaginal approach is commonly used as it allows high cure rate, short recovery and it is less complicated. Figure 2.3 illustrates complex vesicovaginal fistula repair using traditional treatment. The vaginal approach reduces bleeding and infections after the whole procedure.

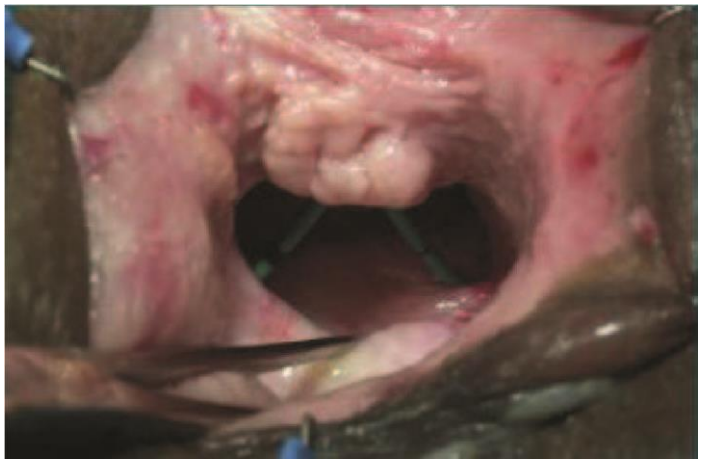

Figure 2.3: complex vesico-vaginal fistula repair. (C-H Rochat, 2003.)

The Symptoms of VVF include constant urine leakage from the vagina. One may experience irritation in the area of the vulva, and frequent urinary tract infections. VVF are allows continuous involuntary discharge of urine into the vaginal vault, which means that the woman is constantly wet and with an unpleasant odor. This condition can lead to other complications, such as genital ulceration, urinary

tract or local skin infections, kidney disease, pain, limping gate in cases of neurogenic injury, scarring of the vaginal tissue which makes sexual intercourse impossible or painful and probably secondary infertility. The physical sequels of obstetric fistula are urinary and/or fecal incontinence, which are continuous and unremitting. These can lead to other medical complications such as infection, genital ulceration, pain, and secondary infertility (17). In the worst cases, women with a fistula are constantly soaked in urine, shunned by people around them, banished from the family house, divorced by their husbands, and forced to the margins of society (18, 19). Women with obstetric fistula suffer significant psychological and physical repercussions, and social effects, including isolation, rejection by society, divorce, loss of social roles, loss of income, stigmatization, shame, and diminished self- esteem (20).

VVF is usually diagnosed by a medical doctor, who performs visual examination of the vagina. By injecting sterile milk or methylene blue dye through a catheter into the bladder, it can be observed whether the dye progresses through the bladder and into the vagina. Cystoscopy tests, x-rays of the bladder are done. Surgery to repair is usually known to be quite successful. When diagnosed to have a VVF, if there is urinary tract infections and vulva irritation they will be first treated. Often VVF is a closed surgically. Laparoscopy is used, incision made in the abdomen or then surgical procedure performed through the vagina. In case of tissue death, a new blood supply is introduced.

In 2003, UNFPA and its partners launched the first ever campaign to end fistula. Its overall goal was to make the condition as rare in south as in the north. This includes the intervention to prevent fistula from occurring, to treat women who are affected and review the hopes and dreams of those who suffer from the condition thereby reducing the stigma associated with it, and helping women who have undergone treatment return to full and productive lives (21).

Although the prevention of maternal death from these causes requires skilled medical and surgical care, none of these interventions require high-technology resources. The essential elements of emergency obstetric care are intravenous fluids, antibiotics, blood transfusion, oxytocic drugs, and

basic surgical services. To address this need, the United Nation Population Fund, partnered with Engender Health to conduct a groundbreaking study on the incidence of fistula in Sub- Saharan Africa and the capacity of the hospital to treat patients. A team of researchers traveled to nine countries over six months to visit public and private sector hospitals that provide fistula surgery and interview doctors, nurses, midwives and patients. Over 35 facilities in some African countries were visited during the rapid assessment process. Results for this nine- country study were to lay the groundwork for future action to prevent and treat fistula in the region (22) .

Basically all obstetric fistulas could be prevented by adequate intrapartum care that would detect the abnormal progression of labor and would allow timely intervention before labor became obstructed. Simple analysis of the progress of labor used by trained birth personnel reduces maternal deaths, prevents prolonged labor, and even results in a decrease in operative intervention (by allowing normal labor to proceed without unnecessary interference). This level of basic obstetric care is absent throughout most of the developing world particularly in Africa. The provision of essential obstetric services has never been a top priority for the governments of countries where the fistula problem is most severe. The maternal health programs that do exist are often restricted to provision of rudimentary prenatal care or emphasize birth control, but family planning programs and antenatal health care programs by themselves will never have more than a marginal effect on maternal mortality. Most maternal deaths are due to unexpected complications that cannot be predicted in advance but that demand prompt intervention when they occur: hemorrhage, hypertensive crises, sepsis, complications of unsafe abortion, and obstructed labor. The international public health community has not emphasized the critical need for surgical services in the developing world, and this problem has been made worse by lack of meaningful ongoing communication between the public-health community and clinical obstetrician-gynecologists of which both an nonexistent in developing countries.

2.2 Epidemiology of Obstetric Fistula

Obstetric VVF occurs in all developing countries with a high prevalence across the northern half of sub-Saharan Africa from Mauritania to Eritrea and in the developing countries of the Middle East and Asia (36). Even though the exact prevalence is hard to determine, it is thought that patterns follow maternal mortality ratios, with higher prevalence seen in regions with high maternal mortality. This is in contrast to developed countries where the causes of obstetric VVF are mainly iatrogenic: radiation therapy and surgery (14). It is argued that even though the provision of emergency obstetric care for obstructed labor through caesarean section is fundamental in preventing the obstructed labor complex including fistula, poor surgical skill has been shown to actually lead to iatrogenic VVF (47). It is estimated that 13.2 percent of genitourinary VVF results from provider error. In one review, four out of five iatrogenic VVF developed following surgery for obstetric complications: cesarean section, ruptured uterus repair, or hysterectomy for ruptured uterus. Hysterectomy was the most common gynecological procedure leading to fistula (13). Difficulties in estimating incidence and prevalence rates arise from the fact that most cases occur in remote geographical settings, the condition is rare and the obstetric VVF victims are often ostracized (11). While the most cited incidence is 1 to 2 per 1,000 deliveries and a corresponding estimated worldwide incidence of 50,000 to 100,000 new cases annually, the methodology used for these estimations has been challenged. Questioning the scientific basis (2007) estimated a prevalence 10 of 188 per 100,000 women aged 15 to 49 years in Sub Saharan Africa and emphasized the need for population-based studies. Many authors argue that hospital-based studies do not give a true picture on the magnitude of the problem, since majority occurs outside the hospital setting. Subsequently, a more recent systematic review and meta-analysis including population-based studies found lower incidences and prevalence of obstetric fistula than previously thought (31).

In a systematic review including reports from Sub Saharan Africa and the Middle East, 79.4% to 100% of reported fistula cases were obstetrical while the remaining cases were from other causes. Recto-vaginal fistulae accounted for 1% to 8%, vesico-vaginal fistulae for 79% to 100% of cases, and combined vesico-vaginal and recto-vaginal fistulae were reported in 1% to 23% of cases (36). Sexual assault has been linked to obstetric VVF, especially in conflict settings (1).

In a retrospective study of 604 consecutive patients seeking treatment for fistula in the Democratic Republic of Congo, 24 (4%) had fistula related to sexual assault: 5 (0.8%) directly from forced penetration with foreign objects and/or gang rapes; 6 had a fistula before they were raped; 9 had iatrogenic fistulas following inappropriate instrumentation to manage rape-induced spontaneous abortion or stillbirth, or after abdominal hysterectomy, and 4 developed fistulas after prolonged and obstructed labor (18).

There is no perfect measurement to accurately capture the number of women with fistula. Although household and mixed method surveys, key informant interviews, health management information systems, and modeling all offer insight, none of these alone adequately captures the scope of fistula prevalence (49). Consequently, measuring incidence and prevalence of this maternal morbidity is difficult. Additionally, fistula often affects the poorest, most vulnerable and powerless women and, because they are frequently so marginalized, they can be hard for a "system" to find.

2.3 Socio-demographic factors

Occurrence of VVF is caused by many factors including socio-economic factors (47). These factors sometimes are predisposing factors which aggregates the manifestation of obstetric fistula. Early pregnancies lead to birth complications especially in young girls with underdeveloped reproductive systems. Because teenage pregnancies constitute a large proportion of pregnancies in developing

countries, and because teenage pregnancy is associated with cephalopelvic disproportion, efforts in reducing obstetric fistulae should focus on prevention of teenage pregnancy (24).

In Yemen, there is a study about Predisposing Factors of Obstetric Fistula & its Surgical Outcomes, among Al-Sabeen maternal hospital attendances ,with results were most of obstetric fistula patients were in age group 15-35yrs (76.8%), early age of marriage(82%), illiterate (69.8%), and still married despite having fistula (83.7%), with no antenatal care attendance in the causative pregnancy (53.5%), and have history of previous once and more caesarian section (20.0%,16.3%), most of participants delivered vaginally(53.5%), with prolonged delivery > 2 days (81.4%), most of results with p-value 3weeks with highly success surgical repair (97.7%) (24).

In Ethiopia, there is a study about a qualitative exploration of the lived experiences of women with obstetric fistula, majority of Participants perceived that the contributing factors to obstetric fistula were: instrument-assisted delivery; inappropriate physical examination and care; early marriage; and long duration of labor. As a result of obstetric fistula, the patients suffered from uncontrolled dripping of urine and/or faces (and associated offensive odors), ostracization by their family and community members, and feeling hopeless and isolation from the community. Patients used different coping mechanisms, including frequent washing of clothes and changing of underwear; they also expressed that they preferred to be alone (4).

Access to emergency obstetric services has been the greatest contributor to most cases of obstetric fistula. There are low cases of obstetric fistula in developed countries attributed to improved access to such services. In low and middle income countries, low income levels hinder women from seeking VVF services thus increased cases (6). They are unable to seek for the services due to ignorance of the available services as well as on how to ask for those services. In a study done in rural Nigeria, it was revealed that 12 victims of VVF lack access to finance to be able to facilitate the uptake of the services (1). Individuals with higher occupational status in society have improved access to quality

reproductive health services since they can afford. Poverty greatly hinders women's access to obstetric fistula repair; its effect is compounded by low socioeconomic (47). The level of education determines access to reproductive health services. Women with higher educational levels have improved access to reproductive health information. Women with high educational level demand much information on quality of care and try to build trust with physicians (20). According to study findings from Nigeria, it was revealed that lack of access to information exposes women to risk factors of OF such as early marriages and thus predisposing themselves to fistula (1). It is worrying that the low rate of education among the obstetric fistula patients is corroborated by UNFPA report that only 2% of 15-19 year old married Nigerian girls are in schools, compared to 69% of unmarried girls. The more education a girl receives the less she is likely to be married as a child (21). Education also helps in dispelling myths and superstitious beliefs which in long run may aggravate the health condition and thus affecting the medical help sought as revealed in a study done in Zambia on women's intention to prevent recurrence of VVF (49).

2.4 Community Awareness about Obstetric Fistula

There has been varying levels of community awareness on Vesico-vaginal fistula across the world. VVF campaigns have improved community awareness through public health programs which enhance community participation. According to a study done in some health facilities in Zamfara region of North-west Nigeria, it revealed that 97.6% of respondents had ever heard of VVF (40).

In another study that was done among women of reproductive age in Ethiopia, it was found that: a total of 14,070 women of reproductive age group were included in the survey. Of which 23.2% ever heard of obstetric fistula. Among women who ever given birth (9,713), some 103 (1.06%, 95% CI; 0.89%-1.31%) experienced obstetric fistula in their lifetime, which means 10.6 per 1000 women who ever gave birth. It is estimated that in Ethiopia nearly 142,387 (95% CI: 115,080-169,694) of obstetric fistula patients exist. Those women who are circumcised had higher odds of reporting the condition

(Chi square = 4.41, p-value = 0.036). In the logistic regression model women from rural areas were less likely to report obstetric fistula than their urban counterparts (OR = 0.21, 95% CI: 0.06-0.69). Women who gave birth 10 or more had higher odds of developing obstetric fistula than women with 1-4 child (OR = 4.34; 95% CI; 1.29-14.55). (41).

There is a study done in some health facilities in Zamfara region of North-west Nigeria about awareness of vesicovaginal fistula among health workers, it revealed that 68.3% of the respondents were females while 31.7% were males. There is no specialist consultant or fistula surgeon among the health personnel interviewed as only 11.7% of them were medical doctors while the remaining are nurses, midwives or community health extension workers.concerning their knowledge of fistula, 97.6% of them have heard of VVF, and 87% of them had the opinions that early marriage causes complications during delivery or giving birth. Also 88% of them were aware of VVF as one of the problems associated with early girl-child marriage while only 61% of them knew that obstructed or delayed labor causes VVF. (40)

In a study done in Nigeria to investigate community awareness among respondents who had developed fistula, majority of them were aware about its causes through health talks even though they were reluctant to change their risky behaviors (20).

In another study done in south east of Nigeria to determine the influence of media broad cast campaigns on VVF prevention and control, it was further revealed that majority of those interviewed had higher awareness levels (42).

In a qualitative study done in Uganda to assess risk factors, presentation and management of VVF, majority of respondents were aware about obstetric fistula, though many had misconceptions regarding its causes, clinical presentation and prevention. Some wrongly attributed fistula to misuse of family planning, having sex during the menstruation period, curses by relatives, sexually

transmitted infections, rape and gender-based violence. However, others attributed the fistula to delays to access medical care, induced abortions, conception at an early age, utilization of traditional birth attendants at delivery, and some complications that could occur during surgical operations for difficult deliveries (43).

According to studies done in Tanzania, it revealed that more than 60% of interviewees reported to be aware of a connotation of urine in the names. Perceived causes of include sorcery, prolonged labor, delivering by operation where doctors/nurses make mistakes perforate the urinary bladder, physique of the expecting mother, poor skills of doctors/nurses to conduct caesarean section, young or old age of an expecting mother and having sex before recovering from the operation. (44).

Improved media campaigns that have been concentrated on the prevention and control of VVF by health care stakeholders have played a significant role in boosting community awareness towards obstetric fistula

2.5 Risk factors for Obstetric VVF

2.5.1 Obstructed labor and sexual violence

Obstetric fistula is mainly caused by a very long, or obstructed, labor which can last several days or even, sometimes, over a week before a woman receives obstetric care or dies. If labor remains obstructed, the unrelenting pressure on the baby's head against the pelvis can greatly reduce the flow of blood to the soft tissues surrounding the bladder, vagina and rectum (23).

In study done in Ebonyi State, Nigeria about Living with vesico-vaginal fistula: experiences of women awaiting repairs, so the findings show that nearly all the women attributed their health problem to supernatural causes. The women stated that they go through a lot of physical and emotional problems. Some of the ways they have devised of physically coping with the problem include bathing regularly and use of strips of old wrappers as pads. Many of them cope emotionally

and financially by attending religious gatherings and having some form of income yielding business. (45).

In another study done in selected hospitals in Kenya, about factors associated with obstetric fistulae occurrence among patients attending selected hospitals, this study shows that seventy cases and 140 controls were included in the study. Independent risk factors associated with obstetrics fistula included duration of labor of >24 hours (OR = 4.7, 95% CI = 2.4 -9.2), seeking delivery services after 6 hours of labor onset (OR = 6.9, 95% CI = 2.2-21.3), taking more than 2 hours to reach a health facility (OR = 5.7, 95% CI = 2.9 -11.5), having none or primary education (OR = 9.6, 95% CI = 3.3 –27.9) and being referred to another facility for emergency obstetrics services (OR = 8.6, 95% CI = 2.7 –27) (26).

In another study that was conducted in Uganda, obstructed labor was a major factor that was associated with occurrence of obstetric fistula among patients seeking repair in referral hospitals too, 420 respondents (140 cases and 280 controls) participated in the study. Duration of labor was used to form the product terms when assessing for interaction and confounding since it was one of the most significant factors at bivariate level with a narrow confidence interval and was hence considered the main predictor. After adjusting for interaction and confounding, significant risk factors associated with development of obstetric fistula in western Uganda were: Caesarean section (adjusted odds ratio [AOR] = 13.30, 95% CI = 6.74–26.39), respondent height of 150 cm or less (AOR = 2.63, 95% CI = 1.35–5.26), baby weight of 3.5 kg or more (AOR = 1.52, 95% CI = 1.15–1.99), prolonged labor (AOR = 1.06, 95% CI = 1.04–1.08. A quarter of the fistulas had resulted from iatrogenic complication during caesarean section. Compared to no education, post primary level of education was protective against obstetric fistula (AOR = 0.31, 95% CI = 0.13–0.72) and there was no difference between respondents without education and those with primary level of education. (46).

Gynecological cancers and/or related radiotherapy treatment can also cause this condition, although this is rare in developing countries. In developed countries, both obstructed labor and obstetric VVF are medical problems which are largely in the past. This is because the problems with labor may be anticipated during antenatal care and a difficult labor that may become obstructed and can be identified by the use of the partograph, and a caesarean section can be performed (23).

2.5.2 **Early Marriage and Poverty**

In resource-poor countries, the reality is different. In these countries, the vast majority of women who die, or who develop fistula during childbirth, they did not receive the health care that they needed. This may be due to a lack of basic health-care provision or an inability to access the local health-care services (24).

In study done in Nigeria and Uganda the traditional practice of early marriage contributes to a risk of obstructed labour and VVF. In parts of sub-Saharan Africa and South Asia, where Obstetric VVF is most common, women often marry as adolescents, sometimes as young as ten years of age, and many become pregnant immediately thereafter, before their pelvises are fully developed for childbearing. In Ethiopia and Nigeria, for example, over 25% of fistula patients had become pregnant before the age of 15, and over 50% had become pregnant before the age of 18 (47). While the immediate causes of obstetric fistula are obstructed labour and a lack of emergency obstetric care, pervasive poverty is an important underlying cause. Women who suffer from obstetric VVF tend to be impoverished, malnourished, lack basic education and live in remote or rural areas (13).

Some epidemiologic studies of fistula have found that over 99% of women undergoing repair were illiterate. In sub-Saharan Africa, the incidence of obstetric VVF has been estimated to be about 124 cases per 100,000 deliveries in rural areas, compared with virtually no cases in major cities (36). Like

many other women in remote areas of poor countries, most women who develop untreated fistula give birth at home, without assistance from skilled birth attendants.

2.5.3 **Harmful Cultural Practices**

Harmful traditional practices, such as female genital cutting or mutilation (FGC or FGM), also contribute to the risk. Such cutting is usually carried out under unsanitary conditions, often by removing large amounts of vaginal or vulval tissue, thus causing the vaginal outlet and birth canal to become constricted by thick scar tissue. These practices increase the likelihood of gynecological and obstetric complications, including prolonged labour and fistula. Although there are few reliable statistics available, these practices may increase the likelihood of such complications by up to seven times. Harmful cutting before or during labour by unskilled birth attendants also contributes to fistula formation. In some countries, a traditional midwife or barber uses a sharp instrument, such as a knife, a razor blade or a piece of broken glass, to make a series of random cuts in the vagina in an attempt to either prepare the vagina for delivery or, during labour, to remove the obstruction and make way for the baby. These practices may explain as many as 15% of fistula cases in some parts of Africa (46).

While most fistula cases in developing countries stem from obstetric causes, others result from direct tearing caused by rape or vaginal trauma. For example, at the Addis Ababa Fistula Hospital, which treats about 1,200 fistula cases per year, a study found that over a six-year period, 91 fistula cases were caused by rape or sexual abuse within a marriage (23).

It is difficult to estimate the prevalence of fistula caused by sexual abuse because many victims do not seek treatment, often fearing stigmatization or lacking access to health care. In wartime conditions, sexual violence is common, often used as tactic to intimidate and control. Aid workers

in war-torn areas have estimated that one woman in every three is a rape victim and that the majority of new fistula cases are caused by rape (47).

In another population based demographic and health survey done in Ethiopia to estimate obstetric fistula cases, majority of fistula cases were associated with female genital mutilation amongst women of reproductive age (41).

2.5.4 Three Delay M ode

Thaddeus and Maine described 3 delays that contribute towards bad obstetric outcomes including obstructed labor. These delays are synergistic. The first delay refers to the one caused by the socio-economic and cultural factors in a woman's environment. For example, in a prospective study examining the profiles of women seeking obstetric VVF treatment, women in Bangladesh and Guinea were more likely to say that their husbands or other family members did not allow them to go to a facility (11). The community may also perceive women who deliver at a health facility as weak. The second delay refers to the one caused by delayed arrival at the health facility may be influenced by poor road conditions, transportation or communication. Insecurity may deter a woman from going to the facility at night and waiting until morning, or the facilities may simply just be too far, which is not uncommon. found that the overall median travel time to the treatment facility was five hours, women in Guinea had the longest delay (median 24 hours); women in Nigeria, the shortest (median 2 hours) (11). Clearly, if a woman had already labored at home in the hopes of delivering, the extra amount of time spent on the way to hospital only further complicates the issue. The third delay occurs when a woman arrives at the facility, she may not access adequate care, due to a lack of staff or unfriendly staff, supplies, or electricity (12). Insufficiently skilled staff may mean that the woman may not get the care that is needed or when provided, results in complications (13). These delays may trigger a vicious cycle. For example, if a woman reaches the facility, workers with poor attitude may quarrel why she came late, or embarrass her if she is too young. Where maternity care is not free, extra costs

for caesarean section or costs of obstetric fistula repair may push the family further into poverty. Eventually, the woman may be discouraged to seek care from the facility next time she is in labor.

2.6 Knowledge Factors of VVF

the Knowledge of this case refers to having information on the causes, prevention, treatment and cure for VVF. Lack of knowledge or ignorance has been reported to be the most contributory factor in developing VVF. Low knowledge level of VVF may make women unaware of prevention and health seeking behaviors to avoid developing VVF. This may also make people to associate this condition to superstitious beliefs which in the long run may aggravate the health condition and thus affecting the medical help sought (6).

In a study done in Zambia on women's intention to prevent recurrence of VVF, it revealed that knowledge level was not associated with awareness levels among respondents (49).

According to a study done among pregnant women attending a rural hospital in south eastern Nigeria on awareness about VVF, Awareness of vesicovaginal fistula was 57.8%. Risk factors identified for vesicovaginal fistula were prolonged obstructed labour, instrumental vaginal delivery, caesarean section and short stature. Only 80 (39.2%) believed vesicovaginal fistula could be treated. (1).

In another study done in some health facilities in Zamfara region of north-west of Nigeria about awareness of vesicovaginal fistula among health workers, it revealed that 68.3% of the respondents were females while 31.7% were males. There is no specialist consultant or fistula surgeon among the health personnel interviewed as only 11.7% of them were medical doctors while the remaining are nurses, midwives or community health extension workers. concerning their knowledge of fistula, 97.6% of them have heard of VVF, and 87% of them had on opinion that early marriage causes complications during delivery or giving birth. Also 88% of them were aware of VVF as one of the

problems associated with early girl-child marriage while only 61% of them knew that the obstructed or delayed labour causes VVF. (40).

In another study done in Kebbi state in Nigeria among married women of reproductive age revealed that 49.3% of respondents were 15-26 years old, 45.8% reported to have attended Quranic School, and only 10.3% had finished primary school. 63.7% were first married at 12-15 years old, while 56.3% of the respondents had their first baby at 14-17 years. 36 (9.5%) respondents were found to be living with VVF. The study revealed that the relationship between knowledge and occurrence of VVF was found to be highly significant ($p<0.001$). In contrast, the attitude level was not found to have a significant relationship with the occurrence of VVF ($p = 0.396$). A highly significant relationship between utilization of maternal health services and occurrence of VVF was also found. The women had less knowledge about preventive measures than about risk factors, sign and symptoms. The maternal health status of the women was poor which a common factor for the occurrence of VVF. (48).

In south east Nigeria, there is study which revealed that the awareness level of the people is 58.6% and the knowledge level of the people is 50% and influence on their attitude and practice is 40%. Though it may be correct to say that awareness level on VVF is high, it has not made available enough volume of VVF information on the larger populace to influence their knowledge base and by extension their attitude and practice for the better. (42).

Once they occur, obstetric VVF usually require surgical repair; they usually cannot heal by themselves. Over 90% of women can be cured with one operation and can resume an active and fulfilling life, including having further children (23). However many women and/or their families, especially those who lacked skilled care during delivery, may not even know that a treatment exists for fistula. And these services, when they exist, are often too far away or too expensive bearing in mind that majority of the affected comes from poor or low socio-economic status (11).

In some developing countries, a few specialized fistula hospitals or services exist, particularly in parts of Ethiopia, Nigeria, Pakistan, Sudan, Tanzania and Kenya. But most doctors lack training in fistula repair, and most hospitals and clinics are unable to treat fistula successfully. Prevention of obstructed labor remains the ultimate strategy in reducing the number of women developing obstetric fistulae, apart from reducing maternal deaths. Family planning programs can reduce the number of pregnancies in a given population and hence morbidities related to becoming pregnant in general (5).

Because teenage pregnancies constitute a large proportion of pregnancies in developing countries (7-30%), and because teenage pregnancy is associated with cephalopelvic disproportion, efforts in reducing obstetric fistulae should focus on prevention of teenage pregnancy (36). According to a study done in Zambia attributed delivery with a non-skilled attendant as a major contributor toward birth complication such as formation of obstetric fistula (49). Many 'at-risk' women will deliver normally and many 'low-risk' women will suffer complications. In a study done in south east Nigeria, it revealed that only a few of the pregnant women interviewed knew that pregnant women were at risk of developing vesico-vaginal fistula (1). Though a vast majority of complications cannot be predicted, antenatal screening should aim to minimize later complications (32).

Caesarean section improves outcomes for both mother and fetus in women with obstructed labour if provided expeditiously and done well (5). Urinary catheterization can also be used to prevent obstetric fistula. For a woman who has had obstructed labour, this can be used as tertiary prevention for obstetric fistula and implemented by primary health care workers including community health extension workers if properly trained (Fistula Care, 2013).

2.7 **Attitude Towards VVF**

People in Rural areas often view obstetric complications either as a result of the pregnant woman's sin, the anger of the gods, a curse, evil spirits, or heredity (3).

For example, studies conducted in Ghana about Socio-cultural aspects of the stigmatization process among women with obstetric fistula, the results of this study suggest that women in the North were more stigmatized than those in the South (North vs. South: median overall stigma= 14.0 vs. 4.0, p=0.02; median internal stigma= 7.0 vs. 3.0, p=1.0). Stigma was also higher among women who have longer duration of fistula, have previously attempted surgical repair, live rurally, are unemployed, are uneducated, or do not have living children or a partner, although these trends were not statistically significant. Stigma was lower among those with less severity of incontinence (frequency of daily pad/cloth change less than five vs. six or more: median overall stigma= 7.0 vs. 14.0, p=0.045; median internal stigma= 5.0 vs. 9.5, p= 0.03), as well as among those who reported passing, or successfully concealing their fistula status from some network members (passing vs. not: median overall stigma=3.0 vs. 12.5, p=0.009; median internal stigma= 3.0 vs. 7.5, p= 0.03). Internal stigma was lower for women who were able to attend and stay for the full duration of meaningful social activities (median internal stigma= 3.0) compared to those who could rarely (median internal stigma= 13.5) or never attend (median internal stigma= 7.5) (p=0.05). Qualitative findings suggest fistula-related stigma challenges a woman's ability to fulfill social expectations for being a good woman, a good wife, and a good mother in the Ghanaian context. Most immediately, it threatens a woman's capacity for keeping herself very well, as she must conceal her stigmatized identity through maintaining a clean personal appearance and neat home environment. Maintaining a clean self and home was related to being able to meet expectations of housework, such as cooking or fetching water, and of incomegenerating labor outside the home. A woman who was keeping herself very well was more likely to be able to give to and do for others, making her a good woman, and more likely to have a partner, making childbearing and motherhood more likely. Additionally, in the North, it also threatens

a woman's ability to farm and to respect the needs of her male family members, expectations of a good woman and wife in this more patriarchal and agrarian context. Most women (65.8%) indicated that they had within their network at least three members who showed emotional or tangible social support. Although women appreciated any support, those who reported any social support had higher stigma (support of 3 or more members vs. not: median overall stigma= 14.0 vs. 7.0; p=0.047; internalized stigma= 9.0 vs. 5.0; p=0.009). Those with tangible support seemed most likely to be keeping herself very well and thus be able to maintain their social expectations (3).

Obstetric fistula is a stigmatized condition due to its damaging effect on the physical and psychological well-being of its sufferer. A stigmatized individual is unable to live a happy and successful life. Delay in treatment of these patients due to lack of awareness further fan the flames of these psychological problems which more often doctors fail to notice during the treatment. This condition often results into social humiliation, loss of dignity, shame, interrupted social roles as well as the consequences of losing their child (3).

Some women may live in seclusion and, for many, the responsibility to decide to seek health care in pregnancy, or even after prolonged labor, falls to the husband or other family members, including the mother-in-law. When these women fail in their perceived duty to bear live children and, still worse, develop the stigmatizing condition of obstetric VVF, they are often rejected by their husband's family and have no means of subsistence. They are usually immediately divorced and left to fend for themselves (3)

Qualitative studies undertaken to better understand the societal perception and stigma about obstetric fistula indicates that most women who suffered from obstetric fistula experienced isolation. The patients either withdrew from their communities due to shame or were isolated by others as a result of the stigma (48).

For instance studies conducted in Niger and Malawi indicates that obstetric fistula victims are usually stigmatized and discriminated by the society. Often women with fistula might receive support in terms of food and shelter, but are segregated in the compound and are reported to sleep on their own, eat on their own and are not allowed to cook for others (42).

Obstetric fistula is confused with a venereal disease by some, or regarded as a curse or punishment from God, views which are likely to contribute to moral stigma. In Burkina Faso, women with fistula were deprived of timely obstetric emergency care because those who anticipate childbirth complications were assumed to be guilty of adultery. Some reports indicated that society blames women for the condition, and some women even blame themselves, and this might add to further social stigma encountered (49).

Despite the fact that some religious beliefs contribute to obstetric fistula, religion has also been used as a coping mechanism for individuals diagnosed with obstetric fistula. Religious coping refers to religion-based strategies that individuals use to respond to stressful or otherwise challenging situations, experiences, or emotions (32). These coping strategies are classified into five key areas: finding meaning in adverse circumstances; seeking control over one's experiences; finding comfort; fostering intimacy and closeness with others; and making transformations in one's life. Obstetric VVF is one such medical condition that has a profound effect on a woman's social, psychological, and physical functioning, and may therefore evoke negative religious coping responses (5)

2.8 **Summary of literature review**

Vesico-vaginal Fistula (VVF) is an anomalous communicating swathe in the bladder and vagina leading to constant automatic urine discharge into the crypt of vagina. VVF is caused by the interface of many economic as well as physical factors of women. This relationship helps to determine women class, their physical condition, diet, productiveness, behavior, as well as susceptibility to VVF.

Understanding obstetric fistula is quite low in numerous emergent nations where it is widespread. The choice to go to clinic has been associated with knowledge of the probable difficulties and a distrust of conventional medical services. The single most economic factor contributing to the prevalence of VVF is poverty.

Chapter 3

Methodology

3 Methodology:

3.1 Study design

A cross-sectional descriptive study to assessment the level of awareness among women of reproductive age toward obstetric VVF in public hospitals.

3.2 Study location

The study was conducted in Sana'a public hospitals (AL-Thawra modern general hospital, AL-Gumhouri Teaching hospital, Kuwait university hospital, and Maternity and childhood AL-Sabeen Hospital), Sana'a city, Yemen.

3.3 Study population

The study population were all women of reproductive age in public hospitals based on inclusion and exclusion criteria

3.4 Study duration

This study was conducted from 25th January to 25th February 2023.

3.5 Inclusion criteria

- Women of reproductive age (18-45 years) coming to public hospitals Sana'a city, Yemen for any medical consultant.
- Women of reproductive age (18-45 Years) who consented to participate in the study were asked to complete a questionnaire.

3.6 Exclusion criteria

- Women less than 18 years and above 54 years.
- Women of reproductive age who will refuse to participate.
- Critically ill women
- Women with hearing impairment

3.7 Sampling technique and sample size

Sample size

The required sample size was calculated by considering the major associated factor and using the statistical program of the Opine Version 3 using population proportions formula according to the following setting:

- A 5% level of significance (two-sided) or the hypothesis of no significant difference.
- Confidence interval (1- α) 95%.
- Power: 80%.
- P1-The proportion of women of reproductive age awareness of VVF at public hospitals in Sana'a city, Yemeni, assuming 50% due to unsure and unreliable data. Proportion of 50% indicates a greater level of variability.

The sample was approximately 383 participants, in addition 15% for the reason of dropout and non-participants, yield total 452 sample sizes.

Sample technique

Non-probability purposive sampling technique was be used to select 452 participants from the public hospitals; woman's were selected purposively. Woman of reproductive age respondent will be met the inclusion criteria and will be interviewed privately after giving information clearly about the study and obtained consent to participant in the study, to avoid any kind of interference, each person was interviewed separately.

3.8 Study variables

The variables of this study were divided into independent, dependent variables and confounding variables.

3.9 **Dependent variable**

The dependent variable is the awareness level towards VVF among women of reproductive age in public hospitals, Sana'a, Yemen.

3.10 Independent variables

For this study, the independent variables included:

i. Socio-demographic factors (age, sex, marital status, education status and income).
ii. Knowledge, attitude, practice factors, and awareness level (Availability of VVF services, Prevention of fistula, Presentation of fistula, Causes of VVF and Treatment).
iii. Risk factors (Teenage pregnancy, obstructed labour, lack of access to trained health care provider and female genital mutilation)

3.11 Data collection technique and tools

Data Collection technique

A structured questionnaire was used to collect data through face-to-face interviews from participants. six medical students were collected the data. The information collected included socio-economic characteristics, knowledge, attitude, practices variables & awareness level towards VVF.

Measurement Tools

All women of reproductive age (18 years and above) in the selected study were approached by study team. Data on socio-demographic characteristics, knowledge, attitude, practice factors, and awareness level of VVF, and the investigations were collected by a questionnaire.

3.12 Validity and Reliability of Measurement Tools

The content validity of the questionnaire was assessed by the supervisory committee, which includes a community medicine expert in 21 September University, as well as another expert of public health in other university. The questionnaire was initially designed in English, translated in Arabic by senior project team members and then back-translated into English by an independent person to check for inconsistencies.

Similar conditions for data collection were ensured for each participant. The nature and purpose of the research were regularly communicated. Participants were selected that will be similar with regard to extraneous factors. A pilot study was conducted in the same population to clarify any misunderstanding in the questionnaire. We were calibrating the measurement before activities to ensure correct scales and train the interviewers to use it.

3.13 Data analysis:

Statistical analyses were performed by using the IBM Statistical Program for Social Sciences (SPSS). The study population's characteristics was summarized by using means with SDs for the continuous variables and percentages for the categorical variables. Confidence intervals were also reported for normally distributed continuous variables and Inference. Univariate analysis was conducted to determine the independent effect of each incidence on outcomes but using Crude odds ratios (OR) with 95% confidence intervals (CI) and $p. < 0.05$. Chi squared test and t-test was used to examine the relationship between Knowledge and study variables. Univariate and multivariate logistic regression analyses will be Conduct.

3.14 Ethical considerations:

Ethical clearance to conduct the study will be obtained from the institutional ethics review committee of the Faculty of Medicine, University of 21 September. Then consent will be earned from the public hospital in this study where data will be collected. Then informed consent will be assured from each study individuals after discussing the purpose of the study, the right to refuse, and assuring confidentiality for the information they give, before any data collection undergoes.

As researchers, honesty will be kept because collecting objective data in a socially responsible way is basic to scientific research.

Chapter 4

RESULTE

4 Results:

4.1 Stability coefficient (Cronbach alpha method):

table 4.1 shows that the value of Cronbach's alpha coefficient for all the questionnaires is (0.76), and this value reflects a high degree of stability, which reflects the stability of the respondents' answers, and this in turn indicates the high ability of managing the study tool to measure what it was designed for.

Table 4.1 the stability coefficient (Cronbach alpha method):

N	Questionnaire themes	number of paragraphs	Cronbach's Alpha
1	Section П: Knowledge variables	9	**0.70**
2	Section Ш: Health workers awareness regarding VVF	28	**0.79**
3	Section IV: Respondents' awareness regarding risk factors of VVF	16	**0.78**
4	Section V: Attitude variables	19	**0.78**
	Total	72	**0.76**

4.2 Weights of the five-point Likert scale scores:

A five-point Likert scale was used to measure the respondents' response to the questionnaire items. During coding and analyzing the data, a weight was given to each degree of the five-point Likert scale, as shown in table 4.2

In order to determine the level of awareness of the respondents, the importance ratio for each item was calculated and divided into three levels of knowledge (low-medium-high).

Table 4.2 the weights of the five-point Likert scale scores:

Measure	weight	importance ratio	Approval
strongly disagree	1	Less than 52%	Low
Disagree	2		
Neutral	3	53%−68%	Medium
Agree	4	69% − 100%	High
strong agree	5		

4.3 Socio-demographic characteristics:

Regarding the age of the patients the results showed that the minimum age was 18 years, maximum age was 45 years. the age of the patients was divided to three groups (less than 25 y, 25- 40 y, more than41 years).

table 4.3 shows the distribution of the patients by their age, the result showed that more half of the sample (68.8%) within age 25- 40 years followed by the age group less than 25 years with (25.4%). Those who are more than41 years were only (5.8%).

also, it can be seen from table 4.3 the distribution of the sample by their residence, the results showed that the sample's population who represent urban areas is (69.9%) and (30.1%) are from the countryside.

Regarding the distribution of the sample by martial status, the results showed that the percentage is (80.1%) married, (5.2%) divorce and widowed (4.2%) While single represents (10.5%).

the distribution of the sample by educational level, the results showed that participants who have primary school qualifications have a percentage of (24.6%), while Illiterate represents (24.1%), secondary school is (25.9%), while holders of diploma and above have a percentage of (23.0%).

Regarding the distribution of the sample by their occupation, the results showed that most of respondents (75.7) is housewife. (9.2) have government jobs, while (14.9%) have private jobs.

Also, from table 4.3 the husband Occupation was as follows: farmer (28.3%), employed (38.7%) and merchant percentage was (32.7%) as well, husband educational level (12.6%) is Illiterate, (26.2%) are primary school, (25.9%) are secondary school and thaws who have diploma and above are (35.3%).

Finally, table4.3 shows the distribution of the sample by their monthly income. Among the responded participants almost of them (89%) were low income and have monthly income less than 100 thousands and (6%) were between 100-200 thousands. Those who have monthly income more than 300 thousands were only (1.7%).

Table 4.3 the socio-demographic characteristics of women of childbearing age.

Sociodemographic characteristic		Frequency	Percent
Age	<25 years	264	68.8
	25-40 years	96	25.4
	>41 years	23	5.8
Residence	Urban	267	69.9
	Rural	115	30.1
	Total	382	100.0
Marital status	Married	306	80.1
	Divorce	20	5.2
	Widowed	16	4.2
	Single	40	10.5
Educational level	Illiterate	92	24.1
	primary school	94	24.6
	secondary school	108	28.3
	Diploma and above	88	23.0
Occupation	Housewife	289	75.7
	government working	35	9.2
	private working	57	14.9
Husband Occupation	Farmer	108	28.3
	Employed	148	38.7
	Merchant	125	32.7
Husband Educational level	Illiterate	48	12.6
	primary school	100	26.2
	secondary school	99	25.9
	Diploma and above	135	35.3
Monthly family income	< 100 thousand	341	89.1
	between100-300thousand	35	9.2
	>300 thousand	7	1.7

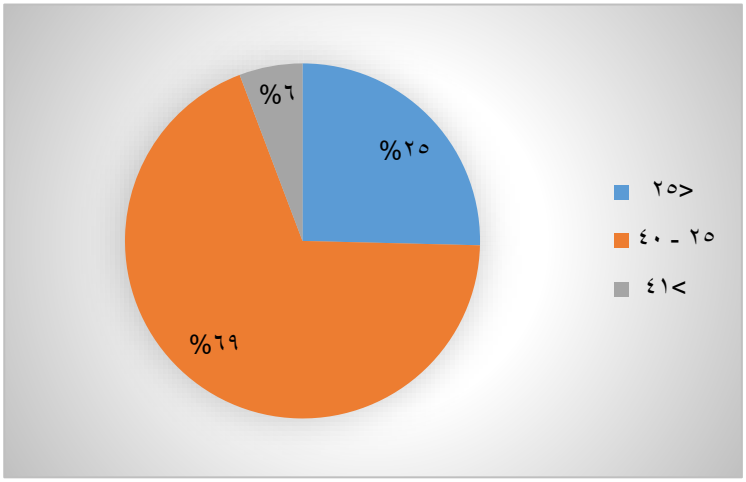

Figure 4.1 distribution of the sample by age group

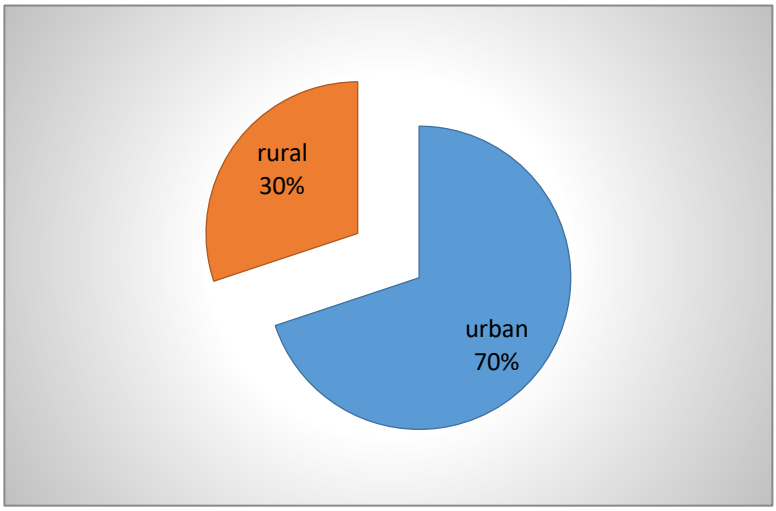

Figure 4.2 residence of the participant

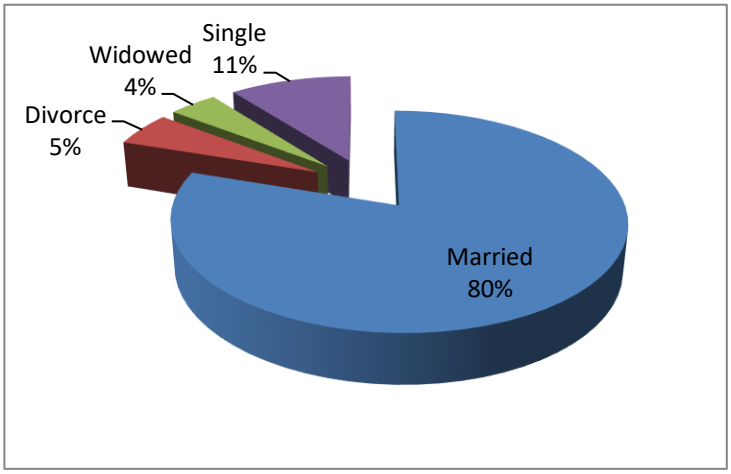

Figure 4.3 distribution of the sample by Martial stats.

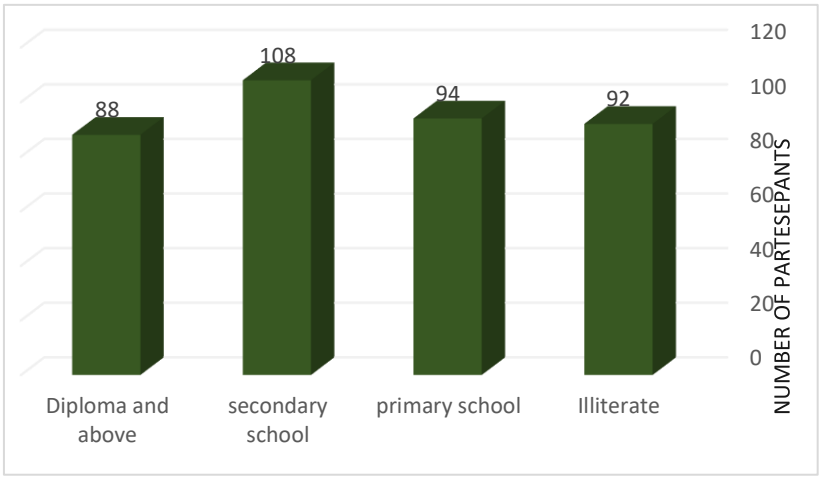

Figure 4.4distribution of the sample by education level

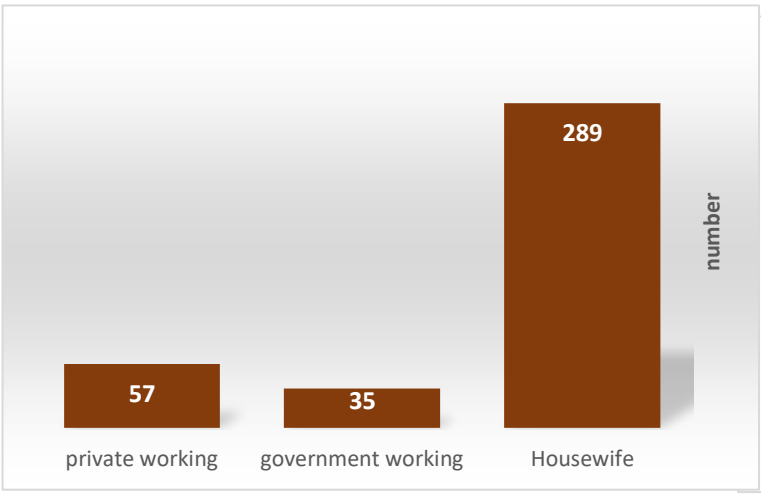

Figure 4.5 distribution of the sample by their occupation

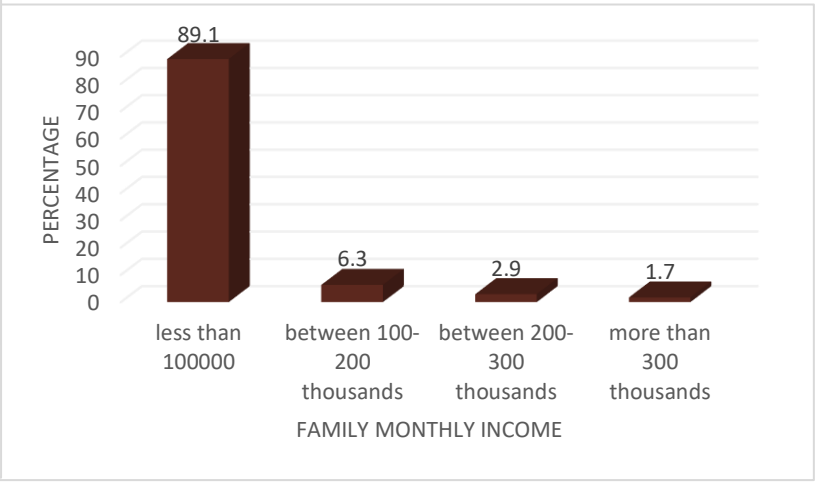

Figure 4.6 monthly income of the participant

4.4 To determine the level of awareness towards VVF among women of reproductive age in public hospitals, Sana'a, Yemen.

Regarding the awareness of respondents about VVF, this section had (28) questions in a Likert scale of scores between 1-5 in which "1" means strongly disagree and "5" means strongly agree. In which 6 questions about respondents' awareness regarding nature of VVF, 4 questions about respondents' awareness regarding prevention of VVF, 6 questions about respondents' awareness regarding social consequences of VVF, 5 questions about respondents' awareness regarding complications of VVF and 7 questions about respondents' awareness regarding symptoms of VVF.

The results in table 4.4 showed that there is a high level of awareness regarding nature, prevention and complications of VVF. But there is a medium level of awareness regarding social consequences and the symptoms of VVF.

In general, the results showed that there is a high level of awareness among the respondents about vesico-vaginal fistula, where the general average of the level of awareness of the respondents was with an arithmetic mean of (3.52) and a standard deviation of (0.878) with a significance rate of (70.40).

Table 4.4 level of awareness about vesico-vaginal fistula among women of childbearing age.

the hub المحور	Mean	S.D	RII	Score
Respondents' awareness regarding nature of VVF	3.71	.15	74.16	High
Respondents' awareness regarding prevention of VVF	3.89	0.92	77.77	High
Respondents' awareness regarding social consequences of VVF	3.08	1.24	61.55	Medium
Respondents' awareness regarding complications of VVF	3.52	1.00	70.46	High
Respondents' awareness regarding symptoms of VVF	3.40	1.08	68.09	Medium
The general average of knowledge	3.52	0.38	70.406	High

4.5 Knowledge of the participants about the VVF among women of reproductive age:

Regarding knowledge of respondents about VVF, this section had seven (7) questions in a Likert scale of scores between 1-5 in which "1" means strongly disagree and "5" means strongly agree.

These results revealed that the majority 217(56.8%) of respondents in which 142(37.2%) of them agreed and 75(19.6%) of them strongly agreed that she heard on the condition called VVF.

The majority 301(78.8%) of respondents in which 199(52.1%) of them agreed and 102(26.7%) of them strongly agreed that VVF would be managed and treated, most of the respondents 274(71.8%) in which 212(55.5%) of them greed and 62(16.2%) of them strongly greed that pregnant women can fall victims of VVF.

On whether delivery by non-skilled birth attendants would lead to development of VVF, the majority 316(82.7%) of respondents in which 203(53.1%) of them agreed and 113(29.6%) of them strongly agreed.

Most of the respondents with number of 213 and percentage of (55.8%) in which 178(46.6%) of them disagreed and 35 (9.2%) of them strongly disagreed that VVF was a sexually transmitted.

The majority of respondents with number of 319 and percentage of (83.6%) in which 221(57.9%) of them greed and 98(25.7%) of them strongly greed that attendance to antenatal clinics would prevent occurrence of VVF.

The majority of the respondents with number of 307 and percentage of (80.4%) of which 233(61.0%) of them agreed and 74(19.4%) of them strongly agreed that VVF can be prevented up on early detection and provision of obstetric care to victims.

In general, the results in table 4.5 indicate that the level of knowledge about vesico-vaginal fistula among women of childbearing age was high, as the general average of the level of knowledge of the respondents was with an arithmetic mean of (3.65) and a standard deviation of (0.20) with a significance rate of (72.97), which indicates high level of knowledge among respondents about vesico-vaginal fistula in women of childbearing age.

Table 4.5 level of knowledge about vesico-vaginal fistula among women of childbearing age.

	Strong disagree		disagree		Neutral		Agree		strongly agree		Total		RII	Score
	N	%	N	%	N	%	N	%	N	%	Mean	S. D		
Have you ever heard of the condition called VVF?	**49**	**12.8 %**	**101**	**26.4**	**15**	**3.9%**	**142**	**37.2 %**	**75**	**19.6 %**	**3.24**	**1.37**	64.87	Medium
Pregnant women can fall victim of VVF?	**6**	**1.6%**	**50**	**13.1**	**52**	**13.6 %**	**212**	**55.5 %**	**62**	**16.2 %**	**3.72**	**0.94**	74.35	Medium
VVF can be prevented?	**3**	**.8%**	**29**	**7.6**	**43**	**11.3 %**	**233**	**61.0 %**	**74**	**19.4 %**	**3.91**	**0.82**	78.12	High
Delivery by non-skilled attendant could lead to VVF?	**3**	**.8%**	**23**	**6.0**	**40**	**10.5 %**	**203**	**53.1 %**	**113**	**29.6 %**	**4.05**	**0.84**	80.94	High
VVF is a sexually transmitted condition?	**35**	**9.2%**	**178**	**46.6**	**87**	**22.8 %**	**55**	**14.4 %**	**27**	**7.1%**	**2.64**	**1.06**	52.72	Medium
Attendance to anti natal care can prevent VVF?	**5**	**1.3%**	**32**	**8.4**	**26**	**6.8%**	**221**	**57.9 %**	**98**	**25.7 %**	**3.98**	**0.88**	79.63	High
VVF can be managed/treated	**4**	**1.0%**	**10**	**2.6**	**67**	**17.5 %**	**199**	**52.1 %**	**102**	**26.7 %**	**4.01**	**0.80**	80.16	High
The general average of knowledge											3.65	0.20	72.97	High

4.6 To determine the attitude level towards VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.

Regarding attitude of respondents towards VVF occurrence, there were nine (9) negative attitude questions on a Likert scale of scores between 1-5 in which "1" means "strongly disagree" and "5" means "strongly agree". The results revealed that slightly more than a half 258(67.6%) of respondents of which 147(38.5%) strongly agreed and 111(29.1%) agreed that they were afraid of developing VVF. Concerning self-vulnerability, 175(45.9%) of respondents of which 141(37.0%) disagreed and 34(8.9%) strongly disagreed that they were at a higher risk of developing VVF.

Majority, 228(60.0%) of respondents in which 179(47.1%) disagreed and 49(12.9%) strongly disagreed that there is nothing that they can do to prevent them from developing VVF. less than a half 181(47.4%) of respondents in which 130(34.0%) disagreed and 51(13.4%) strongly disagreed that if somebody had VVF, it was too late to be treated. Majority 288(75.5%) of respondents of which 188(49.3%) agreed and 100(26.2%) strongly agreed that they would not want others to know in case they were suffering from VVF.

Most, 252(65.9%) of respondents in which 148(38.7%) agreed and 104(27.2%) strongly agreed that they sought to read up and watch out for materials about improving their reproductive health issues. The results revealed that most 283(74.0%) of respondents in which 93(24.3%) strongly agreed and 190(49.7%) agreed that they would feel embarrassed if they had VVF. The findings further showed that 174(45.5%) in which 107(28.0%) of them agreed and 67(17.5%) of them strongly agreed that people would laugh at them if they were diagnosed with VVF.

In general, in table 4.6 the results showed that there is an average attitude among the respondents on the axis of attitude, as the general average of the level of attitude of the respondents was with an arithmetic mean of (3.37), And a standard deviation of (0.10), with a significance rate of (67.50), which indicates that majority of respondents had average attitude towards VVF.

Table 4.6: level of attitude towards vesico-vaginal fistula in women of childbearing age.

Attitude variables	strongly disagree		Disagree		neutral		agree		strongly agree			Mean	S.D	RII	Score
	N	%	N	%	N	%	N	%	N	%	N				
Are you afraid that you may develop VVF?	9	2.4 %	37	9.7 %	78	20. 4%	111	29.1 %	147	38. 5%	382	3.92	1.0 9	78.3 2	High
Do you believe that you are at a higher risk of developing VVF condition than other women?	34	8.9 %	141	37. 0%	128	33. 6%	48	12.6 %	30	7.9 %	381	2.73	1.0 5	54.7 0	Mediu m
I believe that there is nothing I can do to prevent me from developing VVF condition	49	12. 9%	179	47. 1%	60	15. 8%	68	17.9 %	24	6.3 %	380	2.58	1.1 1	51.5 3	Low
If someone had VVF condition I think it is already too late to be treated for it.	51	13. 4%	130	34. 0%	61	16. 0%	99	25.9 %	41	10. 7%	382	2.87	1.2 4	57.3 3	Mediu m
I think some people do not want others to know they are suffering from VVF	5	1.3 %	47	12. 3%	41	10. 8%	188	49.3 %	100	26. 2%	381	3.87	.98	77.3 8	High
I discuss my health concerns with health professionals.	12	3.1 %	47	12. 3%	90	23. 6%	155	40.6 %	78	20. 4%	382	3.63	1.0 4	72.5 7	High
I seek to read up and watch out for materials about improving my reproductive health condition.	11	2.9 %	32	8.4 %	87	22. 8%	148	38.7 %	104	27. 2%	382	3.79	1.0 3	75.8 1	High
I will feel embarrassed about VVF condition if I had it	6	1.6 %	58	15. 2%	35	9.2 %	190	49.7 %	93	24. 3%	382	3.80	1.0 2	76.0 2	High
People will laugh at me if I get VVF condition.	38	9.9 %	92	24. 1%	78	20. 4%	107	28.0 %	67	17. 5%	382	3.19	1.2 6	63.8 2	Mediu m
The general average of attitude												3.37	0.1 0	67.5 0	Mediu m

4.7 To identify perceived risk factors associated with VVF among women of reproductive age in public hospitals in Sana'a city, Yemen.

The study sought to determine the perceived risk factors associated with development of VVF among respondents. The results revealed that majority 278(72.8%) of respondents perceived early pregnancies as a cause of VVF.

In regards to delayed access to obstetric care, most 334(87.4%) of the respondents reported that as a perceived risk factor for occurrence of VVF.

Regarding Sexual violence, 199(52.1%) of the respondents reported that as a perceived risk factor for occurrence of VVF.

In regards to delivery by non-skilled attendant, almost 333(87.3%) of the respondents reported this as a perceived risk factor for occurrence of VVF.

Half, 191(50%) of the respondents reported that home delivery was perceived to be a risk factor for occurrence of VVF.

Only 154(40.0%) of the respondents reported that hysterectomy was perceived to be a risk factor for occurrence of VVF.

More than half 250 (65.4%) of the respondents reported that Instrumental vaginal delivery was perceived to be a risk factor for occurrence of VVF.

In regards to Episiotomy breakdown, less than half 180 (47.1%) of the respondents reported it to be an associated risk factor.

Slightly less than a half 139(36.4%) of the respondents reported that harmful cultural practices were not perceived to be a risk factor for occurrence of VVF.

Regarding obstructed labor leading to development of VVF, almost 331(86.6%) of the respondents reported it to be an associated risk factor.

Slightly more than half 215 (56.3%) of the respondents reported that Unspaced childbirth was perceived to be a risk factor for occurrence of VVF.

Regarding malnutrition 167 (43.7%) of the respondents reported that as a perceived risk factor for occurrence of VVF. The results were presented in Table 4.7.

In general, in table 4.7, the results showed that there is a low knowledge among the respondents about the risk factors axis, as the general mean of the axis was with an arithmetic mean of (1.42) and a standard deviation of (0.71), with a significance ratio. It reached (46.9), which indicates a low level of knowledge among respondents about risk factors of vesico-vaginal fistula in women of childbearing age.

Table 4.7: risk factors associated with vesico-vaginal fistula among women of childbearing age.

risk factors	I DONT		NO		YES		S. D	Mean	RII	Score
	N	%	N	%	N	%				
Early pregnancy leads to VVF?	37	9.7%	67	17.5 %	278	72.8 %	0.65	1.63	53.8	Low
Delayed access to obstetric care leads to VVF?	12	3.1%	36	9.4%	334	87.4 %	0.44	1.84	60.8	Medium
Sexual violence leads to VVF?	85	22.3 %	98	25.7 %	199	52.1 %	0.81	1.30	42.8	Low
Delivery by non-skilled attendant could lead to VVF?	22	5.8%	27	7.1%	333	87.2 %	0.52	1.81	59.9	Low
Prolonged obstructed labor can cause VVF?	23	6.0%	28	7.3%	331	86.6 %	0.53	1.81	59.6	Low
Home delivery can cause VVF?	73	19.1 %	118	30.9 %	191	50.0 %	0.77	1.31	43.2	Low
Hysterectomy can cause VVF?	104	27.2 %	124	32.5 %	154	40.3 %	0.81	1.13	37.3	Low
Instrumental vaginal delivery leads to VVF?	59	15.4 %	73	19.1 %	250	65.4 %	0.75	1.50	49.5	Low
Episiotomy breakdown leads to VVF?	84	22.0 %	118	30.9 %	180	47.1 %	0.79	1.25	41.3	Low
Incomplete healing or unrepaired complete perineal tear leads to VVF?	78	20.4 %	79	20.7 %	225	58.9 %	0.80	1.38	45.7	Low
Female genital cutting or mutilation leads to VVF?	139	36.4 %	91	23.8 %	152	39.8 %	0.87	1.03	34.1	Low
Early marriage can lead to VVF?	60	15.7 %	101	26.4 %	221	57.9 %	0.75	1.42	46.9	Low
Unspaced childbirth leads to VVF?	55	14.4 %	112	29.3 %	215	56.3 %	0.73	1.42	46.8	Low
Prolonged labor leads to VVF?	18	4.7%	30	7.9%	334	87.4 %	0.49	1.83	60.3	Medium
Malnutrition of the mothers leads to VVF?	89	23.3 %	126	Low	167	43.7 %	0.79	1.20	39.7	Low
The average general knowledge							0.71	1.42	46.9	Low

4.8 To identify the relationships between sociodemographic characteristics and knowledge, attitudes, awareness towards VVF among women of reproductive age in public hospitals, Sana'a, Yemen.

4.8.1 The relationships between Awareness, Attitude, knowledge about VVF & residence.

Table 4.8 showing that there is a relationship between Awareness, Attitude, knowledge about VVF & residence of women in childbearing age. The results show that there are statistically significant differences between Awareness, Attitude, knowledge about VVF & residence because p.value (0.00) is less than the level of significance (0.05)

Table 4.8: the relationships between Awareness, Attitude, knowledge about VVF & residence

Residence		N	Mean	Std. Deviation	p.value
Knowledge	urban	**267**	**3.7320**	**.51658**	**.000**
	rural	**115**	**3.4715**	**.47543**	**.000**
Awareness	urban	**267**	**3.5251**	**.40184**	**.012**
	rural	**115**	**3.4097**	**.42257**	**.014**
Attitude	urban	**267**	**3.4217**	**.61003**	**.019**
	rural	**115**	**3.2694**	**.50930**	**.012**

4.8.2 The relationship between Awareness, Attitude, knowledge about VVF &the Marital status.

It was clear from the results of the table 4.9 that there were no statistically significant differences between Awareness, Attitude, knowledge about VVF &the Marital status because p.value (0.56, 0.98, 0.05) was greater than the level of significance (0.05).

Table 4.9: the relationship between Awareness, Attitude, knowledge about VVF & Marital status.

		Sum of Squares	df	Mean Square	F	Value
Knowledge	Between Groups	**.548**	**3**	**.183**	**.679**	**.565**
	Within Groups	**101.658**	**378**	**.269**		
	Total	**102.206**	**381**			
Awareness	Between Groups	**.022**	**3**	**.007**	**.043**	**.988**
	Within Groups	**64.358**	**378**	**.170**		
	Total	**64.381**	**381**			
Attitude	Between Groups	**2.544**	**3**	**.848**	**2.507**	**.059**

	Within Groups	**127.877**	**378**	**.338**		
	Total	**130.421**	**381**			

4.8.3 The relationship between Awareness, Attitude, knowledge about VVF &Educational level.

Table 4.10 showing that there is a relationship between Awareness, Attitude, knowledge about VVF & Educational level of women in childbearing age, because there are statistically significant differences between Awareness, Attitude, knowledge about VVF & Educational level as the p.value (0.003, 0.039, 0.004) is less than the level of significance (0.05).

Table 4.10: Relationship between Awareness, Attitude, knowledge about VVF & Educational level.

		Df	**F**	**Sig.**
Knowledge	Between Groups	3	4.628	0.003
	Within Groups	378		
	Total	381		
Awareness	Between Groups	3	2.811	0.039
	Within Groups	378		
	Total	381		
Attitude	Between Groups	3	4.555	0.004
	Within Groups	378		
	Total	381		

4.8.4 The relationship between Awareness, Attitude, knowledge about VVF & the respondent's occupation.

Table 4.11 showing that there is a relationship between Awareness, Attitude, knowledge about VVF & maternal occupation, because there are statistically significant differences between Awareness, Attitude, knowledge about VVF & maternal occupation, as the p.value (0.017, 0.035, 0.000) is less than the level of significance (0.05).

Table 4.11: Relationship between Awareness, Attitude, knowledge about VVF &maternal occupation.

		Sum of Squares	df	Mean Square	F	Sig.
Knowledge	Between Groups	4.762	2	2.381	9.236	0.000
	Within Groups	97.444	378	.258		
	Total	102.206	380			
Awareness	Between Groups	1.127	2	.564	3.371	0.035
	Within Groups	63.211	378	.167		
	Total	64.339	380			
Attitude	Between Groups	2.793	2	1.397	4.138	0.017
	Within Groups	127.557	378	.337		
	Total	130.350	380			

4.8.5 The relationship between Awareness, Attitude, knowledge about VVF & the Husband Occupation.

It was clear from the results in table 4.13 that there were no statistically significant differences between Attitude & Husband Occupation, because the p.value (0.567) was greater than the significance level (0.05).

While it was found that there are statistically significant differences between knowledge, Awareness & Husband Educational level, because the p.value (0.000, 0.012) is less than the significance level (0.05).

Table 4.12: Relationship between Awareness, Attitude, knowledge about VVF& Husband occupation.

		Sum of Squares	Df	Mean Square	F	Sig.
Knowledge	Between Groups	5.381	2	2.691	10.509	0.000
	Within Groups	96.781	378	.256		
	Total	102.162	380			
Awareness	Between Groups	1.487	2	.743	4.480	0.012
	Within Groups	62.718	378	.166		
	Total	64.205	380			
Attitude	Between Groups	.390	2	.195	.568	0.567
	Within Groups	129.889	378	.344		
	Total	130.279	380			

4.8.6 The relationship between Awareness, Attitude, knowledge about VVF & the Husband Educational level.

It was clear from the results in table 4.13 that there were no statistically significant differences between Awareness & Husband Educational level, because the p.value (0.659) was greater than the significance level (0.05).

While it was found that there are statistically significant differences between Attitude, knowledge & Husband Educational level, because the p.value (0.046, 0.037) is less than the significance level (0.05).

Table 4.13: Relationship between Awareness, Attitude, knowledge about VVF& Husband Educational level.

		Sum of Squares	Df	Mean Square	F	Sig.
Knowledge	Between Groups	2.269	3	.756	2.860	.037
	Within Groups	99.937	378	.264		
	Total	102.206	381			
Awareness	Between Groups	.272	3	.091	.535	.659
	Within Groups	64.108	378	.170		
	Total	64.381	381			
Attitude	Between Groups	2.723	3	.908	2.687	.046
	Within Groups	127.697	378	.338		
	Total	130.421	381			

Chapter 5

DISCUSSION

This chapter discuss in detail the major findings and the implications of them.

According to the results and finds of previous studies compared to the current research.

The Characteristics of sample under the some of the study, awareness levels about VVF, Knowledge about VVF, Risk factors for VVF occurrence, attitude toward VVF.

5.1 Characteristics of sample under study:

In the present study, majority of the respondents were of middle ages of 25-40 years. As one advances in age, the more exposure and experience one gets concerning reproductive health matters. This age category is eager to learn about their life experiences. This explains why there were higher awareness levels among this particular class. The results were inconsistent with a study done in Nigeria and Uganda which revealed that majority of respondents were young girls aged between 15-19 years (47). This was because this study was done among patients undergoing fistulae repair in which majority of the victims were of younger ages. It is therefore significant to discourage tender age pregnancies to reduce cases of complications which may lead to development of VVF. Concerning their highest education levels attained, majority of the respondents had secondary education. Awareness levels on VVF increased with an increase in educational status. This is because education exposes individuals to access more information concerning reproductive health issues including VVF. These results are inconsistent with report by UNFPA which indicated low rates of education among the obstetric fistula patients. It further indicated that only 2% of 15–19-year-old married Nigerian girls are in schools, compared to 69% of unmarried girls (21). Pursuing further education means delay in women's age of getting married.

Education also helps in dispelling myths and superstitious beliefs which in the long run may aggravate the health condition and thus affecting the medical help sought as revealed in a study done in Zambia, on women's intention to prevent recurrence of VVF (49). Women with higher educational levels have improved access to reproductive health information. Women with high educational levels demand much information on the quality of care and try to build trust with physicians. According to the study findings from Nigeria, it was revealed that the lack of access to information exposes women to health risk factors such as early marriages and thus predisposing them to reproductive health complications (1).

5.2 Community awareness on obstetric fistula

The study revealed that there were high awareness levels among majority of women of reproductive age in public hospitals in Sana'a city. This result is consistent with other researches done in Nigeria in which majority of women had high awareness levels on VVF. Their awareness was enhanced through health talks by care providers even though they were reluctant to change their risky behaviors (18). The results were inconsistent with another study done among pregnant women in Nigeria, which found that majority of respondents had high awareness levels on VVF (1).

The results were consistent with another study done in South East Nigeria to determine the influence of media broad cast campaigns on VVF prevention and control which showed that majority of those interviews had high awareness levels (42). The results were also coherent to a qualitative study done in Uganda to assess risk factors, presentation and management of VVF in which majority of respondents were well conversant with the associated risk factors (43). In Tanzania, some results were also reported in which majority of respondents were aware of VVF occurrence together with the associated risk factors even though VVF was not existing (44). High community awareness found in these studies can be attributed to successful campaigns concentrated on the prevention and control of VVF by the Ministry of Health thus played a significant role in improving community awareness towards obstetric fistula.

5.3 Present Knowledge on vesicovaginal fistula

In this study, the majority of respondents had never heard of VVF. Apparently, very little information concerning VVF seems to be reaching the society. However, it may also be argued that, those affected may withhold information regarding their cases of VVF due to associated stigma and discrimination towards the condition. These results were contrary to a study done in some selected facilities in Zamfara region of North-West Nigeria, which revealed that most of the respondents had a previous knowledge of VVF (40). The results were inconsistent with another study done among women of reproductive age in Ethiopia, which found that majority of respondents had never heard of obstetric fistula (41).

The Majority of respondents revealed that delivery by non-skilled birth attendants may lead to development of VVF. This means that they had knowledge of possible complications associated by non-skilled delivery which may further lead to formation of fistula. These results were similar to a

study done in Zambia which showed that majority of women had correct knowledge on the complications associated with delivery by non-skilled attendants (49). Most of the respondents revealed that VVF would be managed and therefore treated through provision of obstetric care to victims. This means that the respondents were knowledgeable or rather they believed that healthcare systems were in a position to treat the condition. This is true since obstetric fistula could be fixed through repairs since they cannot heal by themselves. These results concur with a World Health Organization report which shows that over 90% of women can be cured with one operation and can resume an active and fulfilling life, including having more children (23). Though a vast majority of complications cannot be predicted, antenatal screening minimizes later complications as reported by Browning (32). However, many women and their families, especially those who lacked skilled care during delivery, may not even know that a treatment exists for fistula due to associated costs (11).

Most of the respondents revealed that VVF was not a sexually transmitted infection. The results show that the respondents had correct knowledge since VVF is a complication that occurs during birth not as a result of sexually transmitted infections. The findings were inconsistent with a study done in south east Nigeria which showed that majority of respondents had poor knowledge on the causes of VVF since they attributed it to be a sexually transmitted infection (42). This may be because the study was done in a rural area as compared to the current study which was done in an urban area where access to information is easier.

The study further revealed that the respondents had high knowledge levels. The results concur to a study done among pregnant women attending a rural hospital in south eastern Nigeria and health facilities in Zamfara state facilities in northwest Nigeria which revealed that majority of respondents were knowledgeable on VVF (1 and 40). The results were not in the line with a study done in Kebbi state in Nigeria among married women of reproductive age which revealed low knowledge levels in regard to VVF occurrence (48).

5.4 Risk factors for VVF occurrence

The results revealed majority of respondents believed that early pregnancy was a perceived risk factor for the formation of VVF. Pregnant women who deliver at a younger maternal age tend to face difficulties at birth. This would be attributed to the fact that younger women tend to face more complications during child birth due to underdeveloped reproductive organs especially the pelvic girdle. The results concur with a population based on demographic and health survey in Ethiopia to estimate obstetric fistula which attributed majority of fistula cases to early pregnancies (41). Similar

results were also reported by a study done in Somaliland to determine the risk factors that contribute to occurrence of fistula among women attending Borama National Fistula Hospital from 2011-2014, in which early maternal age was attributed to fistula formation (35). Consistent findings were also reported by a study done in Nabitovu village in Uganda to assess the level of community awareness, risk factors, presentation and prevention of obstetric fistula in which women with less than 18 years were at higher risk of developing compared with those who were older enough (43). In regard to delayed access to obstetric emergency care during pregnancy, most of the respondents reported this as a perceived risk factor for occurrence of VVF. This means that the respondents were highly aware on the risks associated with delayed access to seek the services of skilled birth attendants during delivery. Limited access to emergency obstetric care is a challenge that affects developing countries across the world unlike developed countries where this issue is a rare occurrence (35). This is because problems with labor may be anticipated during antenatal care and a difficult labour that may be obstructed can be identified by the use of the partograph, and a caesarean section can be performed. These results were similar to a study done in Burkina Faso on knowledge of obstetric fistula among young women in urban and rural areas whereby obstetric fistula was widely spread to limited access and use of emergency obstetric care (12). Delayed access may be attributed to postponement in making decisions to seek healthcare delivery services with an average of 6 hours. Delayed onset of labour signs or taking more than 2 hours to reach health facilities may prompt intervention of non-skilled birth attendants which are attributed risks for formation of obstetric fistula (41).

Majority of respondents attributed prolonged labour as an associated risk factor for occurrence of VVF. This would be because prolonged labour may lead to emergence of birth complications such as damage to tissues and therefore resulting in cutting of blood supply. Obstructed labor with unrelenting pressure on the baby's head against the pelvis greatly reduces blood flow to the soft tissues surrounding the bladder, vagina and rectum (23). In case the victim survives, obstructed labor may end in death of the fetus and gradual decomposition may see it slide out of the vagina. Injured pelvic girdle tissues rots, leaving a hole (fistula) between the anal and vaginal organs. These findings were similar to a study done in Ebonyi state of Nigeria on knowledge of causes of VVF and discrimination suffered by fistula patients who revealed some obstructed labor was a major immediate cause (45). The results also concurred with a study done in selected hospitals in Kenya in which obstructed labor was attributed to causing VVF among fistulae patients (26). results were also reported in another population based qualitative study conducted in Uganda among patients seeking obstetric fistula repairs in referral hospitals which associated obstructed labor as a significant major risk factor for its

occurrence (41). These findings were inconsistent with a study done in south east Nigeria which showed that majority of respondents did not associate occurrence of VVF among pregnant women with prolonged labour (42).

The study revealed that majority of respondents did not perceive harmful cultural practices such as FGM as risk factors for occurrence of VVF. This may be because the practice of FGM was not rampantly practiced in our current area of study which was conducted in area. However, other studies have revealed that harmful traditional practices such as female genital cutting or mutilation (FGC or FGM) may also contribute to the risk. In fact, harmful cultural practices accounts for 15% of fistula cases in some parts of Africa. This leads to constriction of the birth canal due to removal of large amounts of vaginal or vulval tissue hence resulting in obstructed labor, an immediate cause of fistula (41). These results were contrary to a study done in Somaliland on risk factors that contribute to fistula formation among fistula women attending Borama National Fistula Hospital from 2011 to 2014 which revealed that FGM was a risk factor associated with VVF (35). These results were also inconsistent with a population based demographic and health survey in Ethiopia to estimate obstetric fistula which attributed majority of fistula cases to female genital mutilation (41).

5.5 Present Attitudes Toward vesicovaginal fistula

The results revealed that majority of the respondents were afraid of developing vesicovaginal fistula. This may be attributed to the nature of its presentation and the stigma and discrimination associated with its occurrence among community members. These results were similar to a study by. Ethiopia which revealed that women who are suffering from VVF are often rejected by the husband's family members (20). Such women may be perceived to fail in their duties to bear live children. They may be immediately divorced and left to fend for themselves.

Concerning self-vulnerability, most of the respondents revealed that they were not at a higher risk of developing vesico-vaginal fistula. This may be because VVF is a rare condition and that they might have lacked the correct information on the risk factors associated to its occurrence. Actually, those who have already suffered from the condition are most likely to develop negative attitude since they have experienced the effects associated with the condition. The results were consistent with an Ethiopian study which revealed that majority of respondents reported poor perception on their self-vulnerability towards VVF (4). Majority of respondents disagreed that there is nothing that they can do to prevent them from developing VVF. This would be because they viewed that they were in a position to control their health behaviors which might be associated with poor health outcomes. The

results were inconsistent with a study done in Zambia, on women's intention to prevent VVF recurrence in two repair centers which revealed that majority of respondents reported that there was nothing they could have done to prevent there prevailing health conditions (49).

Most of the respondents revealed that they would not want others to know in case they were suffering from VVF. This was because of the embarrassment associated with the condition especially stigmatization and discrimination in the society. Even though in the current study, majority of the respondents did not report whether they would feel embarrassed if they developed the condition. The results were consistent with a study done by Cooley, who revealed that individuals suffering from the condition reported to feel isolated from friends and also feel stigmatized in the society. In other studies, done in West Africa indicated that patients suffering from obstetric fistula were usually stigmatized and discriminated (12).

The study further revealed that majority of the respondents had negative attitude towards fistula. This may be attributed to the negative effects associated with the condition such as stigma, discrimination and breakdown of marriage. People always do not feel positive towards poor happenings that occur in their lives. These results were consistent with a study done in Malawian woman which revealed that most women had negative attitude towards their health conditions. The results were also inconsistent with a study done in Zambia majority of women had positive attitude towards fistula (49). The results were contrary to a study done in Kebbi state in Nigeria which revealed that majority of respondents had moderate attitude towards VVF (48). The results also concur with a study done in Ebonyi state in Nigeria which revealed that majority of respondents had negative attitude towards VVF formation (45).

5.6 **Conclusions**

The findings of this study have shown high awareness levels among women of reproductive age in public hospitals, in Sana'a city, Yemen. The study concludes that the respondents had high knowledge levels regarding VVF. The respondents attributed VVF occurrence to superstitious beliefs while they thought that all pregnant women were at risk of developing VVF. Despite the respondents having high awareness and knowledge levels regarding VVF, the study concludes that they were not able to identify the risk factors associated with VVF.

Chapter: 6

Conclusion and Recommendation

6.1 Conclusion

This study concluded that,

- ❖ The level of awareness about vesico-vaginal fistula in women of reproductive age was high.
- ❖ The knowledge about vesico-vaginal fistula in women of reproductive age was high.
- ❖ Level of knowledge about risk factors of vesico-vaginal fistula in women of reproductive age was low.
- ❖ There are a relation between awareness, attitude, knowledge and educational level.
- ❖ Average attitude towards development of VVF in women of reproductive age.
- ❖ There are a relation between awareness, attitude, knowledge & the residence of women in reproductive age.

6.2 Recommendation

- The Ministry of health should raise the level of public awareness regarding seriousness of the problem by running awareness campaigns and educational health program to explain the disease, its risk factors and how can prevent and management this condition.
- There is need for rising the role of medical stuff in increasing the awareness among women of childbearing age about VVF.
- Obstetric fistula centers administration should establish a special Department to educate any new case with VVF.

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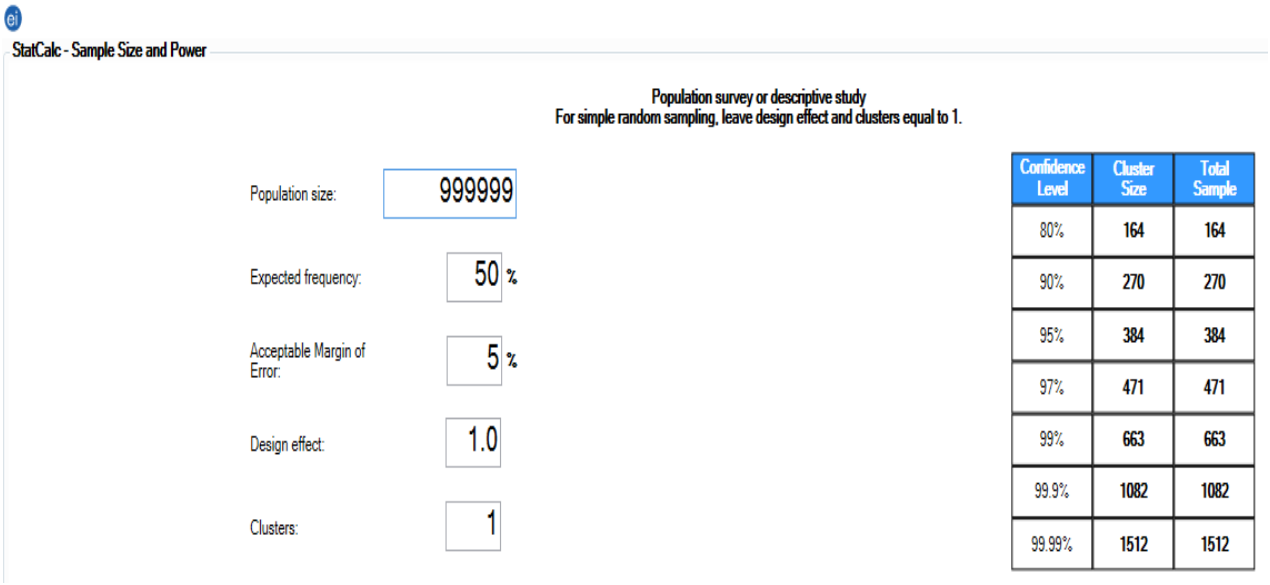
StatCalc - Sample Size and Power
Population survey or descriptive study
For simple random sampling, leave design effect and clusters equal to 1.
Population size:
999999
Expected frequency:
50
%
Acceptable Margin of Error:
5
%
Design effect:
1.0
Clusters:
1
Confidence Level
Cluster Size
Total Sample
80%
164
164
90%
270
270
95%
384
384
97%
471
471
99%
663
663
99.9%
1082
1082
99.99%
1512
1512

استبيان

حول تقييم الوعي بالناسور المثاني المهبلي لدى النساء في سن الإنجاب في المستشفيات العامة ،

مدينة صنعاء – اليمن

مقدمة:

نحن مجموعه طلبه من كليه الطب والعلوم الصحية –جامعه ٢١سبتمبر الوعي بالناسور المثاني المهبلي لدى النساء في سن الإنجاب في المستشفيات العامة حيث نود مشاركتكم فيه لتقديم المعلومات

وقد تم تضمين ابنك / ابنتك في هذه الدراسة.

نطلب منك ونشكرك على موافقتك على ملء هذا الاستبيان حسب كل سؤال وفقرة بالمعلومات المتوفرة تحت كل سؤال ، حيث سيتم التعامل مع هذه المعلومات بسرية تامة ولأغراض البحث العلمي فقط والباحثين والمسؤولين المشرفون الرئيسيون على البحث سيطلعون عليه.

شاكرين لكم حسن تعاونكم...

الباحثون...

أولا: المعلومات الشخصية:

١. العمر بالسنوات: ---------- سنة.

٢. سكن: الحضاري ☐ قروي ☐

٣. الحالة الاجتماعية:

متزوج ☐ الطلاق ☐ الأرامل ☐ أعزب ☐

٤. عدد الاولاد :---------- طفل.

٥. الحالة التعليمية:

أمي ☐ المدرسة الابتدائية ☐ المدرسة الثانوية ☐ دبلوم وما فوق ☐

٦. الوضع المهني:

لا تعمل / ربة منزل ☐ العمل الحكومي ☐ العمل الخاص ☐

٧. مستوى دخل الأسرة في الشهر (YR): .....

٨. حجم الأسرة: ---------- شخص

ثانيا: المعارف المتعلقة بالناسور المثاني المهبلي

رقم	أسئلة	موافق بشدة	يوافق	حيادي	تعارض	لا أوافق بشدة
ك ١	هل سمعت يومًا عن حالة تسمى VVF؟					
K2	يمكن أن تقع المرأة الحامل ضحية ل نواسير الولاده؟					
K3	يمكن منع VVF؟					
K4	هل يمكن أن يؤدي الولاده بواسطه طبيب او قابله غير ماهر إلى VVF؟					
K5	VVF هي حالة تنتقل عن طريق الاتصال الجنسي؟					
K6	يمكن للمعاينه المتكرره اثناء فترة الحمل منع حدوث VVF؟					

K7	يمكن إدارة / علاج VVF					
	ناسور المهبلي المثاني هو أكثر أنواع ناسور الولادة شيوعًا؟					
	التحديد المبكر للولادة المتعسرة يقلل من حدوث VVF؟					

ثالثا: معدل الوعي لدى المستجيبين بالناسور المثاني المهبلي

رقم	أسئلة	موافق بشدة	يوافق	حيادي	تعارض	لا أوافق بشدة
معدل الوعي لدى المستجيبين بطبيعة الناسور المثاني المهبلي						
أ ١	الناسور المثاني المهبلي غير قابل للنقل					
أ ٢	الناسور المثاني المهبلي ليس وراثيًا					
A3	الناسور المثاني المهبلي يمكن الوقاية منه					
A4	الناسور المثاني المهبلي قابل للشفاء					
A5	الناسور المثاني المهبلي يتكرر					
	يمكن للنساء المصابات بالناسور المثاني المهبلي الحمل					
توعية المستجيبين فيما يتعلق بالوقاية من الناسور المثاني المهبلي						
٦	تأخير الزواج					
٧	فحص دوري قبل الولادة					
٨	الولادة عن طريق قابلات ماهرات					
٩	التحديد المبكر للولادة المتعسرة					
وعي المستجيبين فيما يتعلق بالعواقب الاجتماعية للنواسير المهبليه المثانيه						
١٠	العزل الاجتماعي					

١١	كآبة					
١٢	العنف الجسدي					
١٣	الزواج الثاني					
١٤	طرد من المنزل					
١٥	سوء التصرف الأسري والاجتماعي					
وعي المستجيبين فيما يتعلق بمضاعفات النواسير المهبليه المثانيه						
١٦	تكوين الناسور المتكرر					
١٧	التهاب عنق الرحم					
١٨	تهيج المسالك البولية السفلية					
١٩	انخفاض قدرة المثانة					
وعي المستجيبين فيما يتعلق بأعراض						
٢٠	سلس البول					
٢١	لا داعي للتبول					
٢٢	الحكة الفرجية					
٢٣	إفرازات مهبلية كريهة الرائحة					
٢٤	ترطيب الملابس الداخلية					
٢٥	ألم أثناء ممارسة الجنس					
٢٦	سلس البراز					

الجزء الرابع: وعي المستجيبين فيما يتعلق بعوامل الخطر من VVF

م	برأيك: هل توافق او لا توافق على العبارات التالية او لا تعرف العبارات التالية:	أوافق	لا أوافق	لا اعلم
١	الحمل المبكر يؤدي إلى للنواسير المهبليه المثانيه ؟			
٢	تأخر الحصـــول على رعاية التوليد يؤدي إلى للنواســـير المهبليه المثانيه ؟			
٣	العنف الجنسي يؤدي إلى الناسور المهبلي المثاني؟			
٤	هل يمكن أن يؤدي الولاده بواســـطه طبيب او قابله غير ماهر إلى VVF؟			
٥	المناقشة الجماعية المركزة تؤدي إلى VVF؟			
٦	يمكن أن يسبب المخاض المتعسر لفترات طويلة VVF؟			
٧	يمكن أن يسبب الولادة المبكرة VVF؟			
٨	يمكن أن يسبب استئصال الرحم VVF			
٩	الولادة المهبلية باستخدام الادوات تؤدي إلى حدوث النواسير؟			
١٠	القطع اثناء الولاده episitomy يؤدي إلى حدوث الناسور ؟			
١١	عـدم اكتمـال الشـــفـاء أو التمزق العجـاني الكـامـل unrepaired complete perineal tear غير المصلح يؤدي إلى حدوث الناسور؟			
١٢	قطع الأعضاء التناسلية الأنثوية أو الختان يؤدي إلى VVF؟			
١٣	يمكن أن يؤدي الزواج المبكر إلى VVF؟			
١٤	الولادة غير المتباعدة تؤدي إلى VVF؟			
١٥	الولاده المطوله يؤدي إلى VVF؟			
١٦	سوء تغذية الأمهات يؤدي إلى VVF؟			

القسم الخامس: متغيرات الموقف.

رقم	أسئلة	موافق بشدة	يوافق	حيادي	تعارض	لا أوافق بشدة
١	هل أنت خائف من الاصابه ب VVF؟					
٢	هل تعتقد أنك أكثر عرضة للإصابة بحالة VVF من النساء الأخريات؟					
٣	أعتقد أنه لا يوجد شيء يمكنني القيام به لمنعني من الاصابه بحالة VVF					
٤	إذا كان شخص ما يعاني من حالة VVF ، أعتقد أن الوقت قد فات بالفعل للعلاج من ذلك.					
٥	أعتقد أن بعض الناس لا يريدون أن يعرف الآخرون أنهم يعانون من التهاب المهبل البكتيري					
٦	أناقش مخاوفي الصحية مع المهنيين الصحيين والزوج / الزوجة والأطفال					
٧	أسعى للقراءة والانتباه للمواد المتعلقة بتحسين حالتي الصحية الإنجابية.					
٨	سأشعر بالحرج من حالة VVF إذا كان لدي					
٩	سيضحك الناس عليّ إذا أصبت بحالة VVF.					

ملخص الدراسة

المقدمة:

الناسـور الولادة المثاني المهبلي (VVF) هو مشـكلة صـحية إنجابية ناجمة بشـكل رئيسـي عن الولادة المتعسرة لفترات طويلة والتأخير في طلب رعاية التوليد الطارئة بعد الولادة.

الهدف العام:

الهدف الرئيسي من هذه الدراسة هو نشر الوعي لدى النساء في سن الإنجاب تجاه الناسور المثاني المه بلي في المستشفيات العامة، صنعاء– اليمن.

منهجية البحث:

تم اجراء دراسـة مقطعية على ٣٨٣ مريضـاً في المسـتشـفيات العامة، صـنعاء، اليمن تم تنفيذ الاسـتبيان العربي المنظم باستخدام المقابلة وجهاً لوجه. يتكون الاستبيان من بيانات اجتماعية ديموغرافية، وأسئلة للوعي بالتقييم، والمعرفة، وعوامل الخطر المرتبطة والموقف. تم إدخال البيانات التي تم جمعها وتحليلها باسـتخدام البرنامج الإحصائي (SPPS). البيانات المعروضة في الجداول والأشكال.

النتائج:

أجريت الدراسـة على عينة من ٣٨٣ مريضـاً، وأظهرت الدراسـة أن هناك مسـتوى عالٍ من الوعي بشـأن طبيعة، كيفية الوقاية ومضـاعفات الناسور المثاني المهبلي. لكن هناك مستوى متوسط من الوعي فيما يتعلق بالعواقب الاجتماعية وأعراض الناسور المثاني المهبلي ، وبشكل عام أظهرت دراستنا أن هناك مستوى عالٍ من الوعي بين المستجيبين حول محور الوعي بالمرض ، حيث المعدل العام لمستوى وعي المستجيبين كان بمتوسط حسابي (٣.٥٢) وانحراف معياري قدره (٠.٨٧٨) بمعدل دلالة (٧٠.٤٠) .

كما بينت الدراسة أن هناك مستوى عالٍ من المعرفة بين المستجيبين ، كمتوسط عام لمستوى المعرفة كانت معرفة المستجيبين بمتوسط حسابي (٣.٦٥) وانحراف معياري (٠.٢٠) بمعدل دلالة (٧٢.٩٧) مما يدل على ارتفاع مستوى المعرفة بين المستجيبين حول الناسور المثاني المهبلي عند النساء في سن الإنجاب.

لكن الدراسة أوضحت وجود معرفة منخفضة لدى المستجيبين عن محور عوامل الخطر ، حيث كان المتوسط العام للمحور بمتوسط حسابي (١.٤٢) وانحراف معياري (.٧١) مع دلالة نسبية وصلت إلى (٤٦.٩) مما يشير إلى انخفاض مستوى المعرفة بين المستجيبين حول عوامل خطر الإصابة بالناسور المثاني المهبلي عند النساء في سن الإنجاب .

أيضا أظهرت دراستنا امتلاك المستجيبين لموقف سلبي تجاه الناسور المثاني المهبلي وفقا لمقياس ليكرت.

كما أظهرت دراستنا أن هناك فروق ذات دلالة إحصائية بين(الوعي ,الموقف والمعرفة) ومكان الإقامة للمستجيبين لأن قيمة (0.00) p. value أقل من مستوى الدلالة (٠.٠٥) ، كما توجد فروق ذات دلالة إحصائية بين (الوعي والموقف والمعرفة) والحالة التعليمية للمستجيبين لأن 039. ، 003.) p. value ، ٠٠٤.) أقل من مستوى الأهمية (٠.٠٥).

الخلاصة:

خلصت الدراسة إلى أن المستجيبين لديهم مستويات وعي عالية ، ومستوى منخفض من المعرفة حول عوامل الخطر والموقف السلبي تجاه الناسور المثاني المهبلي. سيتم الاستفادة من النتائج للمنظمات الحكومية وغير الحكومية من أجل هيكلة البرامج ووضع الاستراتيجيات التي تستهدف خلق وعي مجتمعي بشأن المرض والعوامل المسببة له بالإضافة إلى الوقاية منه وعلاجة. ستكون هذه النتائج مفيدة أيضًا لوزارة الصحة لأغراض التثقيف الصحي وصياغة السياسات وتنفيذها فيما يتعلق بالتدخلات العملية قصيرة وطويلة الأجل للناسور المهبلي.

Republic of Yemen
Ministry of High Education
and Scientific Research 21
September University
Faculty of Medicine and

الجمهـــورية اليمنيـــة
وزارة التعليم العالي والبحث العلمي
جـــــــامعـــــة ٢١ سبتمبر
كليـــة الطب والعلوم الصحيـــة
قســـم طـــــب المجتمـــــــع

تقييم الوعي بالناسور المثاني المهبلي لدى النساء في سن الإنجاب في المستشفيات العامة، مدينة صنعاء – اليمن

الباحثون:

- ايمن عبدالرزاق السماوي
- زياد مهدي اليعري
- ايمان فضل الباقري
- علي عبدالله اليوسفي
- ريدان محمد عبدالله ناصر السعيدي
- ملوك الريري

تحت اشراف:

الدكتورة/ منيره الفائق

الدكتور/عماد الشميري

قسم طب المجتمع

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