

Spontaneous Abortion: An Assessment of the Knowledge of Health Professionals on their Role in its Prevention

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Abstract

Abortion has a long history and can be traced back to civilizations; and according to Wikipedia, it is defined as the termination of pregnancy by the expulsion from the uterus of a fetus or embryo prior to viability. An abortion can be spontaneous, or induced. Spontaneous abortion, also known as miscarriage, is the unintentional expulsion of an embryo or fetus before the 20th to 22nd week of gestation. The most common cause of spontaneous abortion during the first trimester is chromosomal abnormalities of the embryo/fetus, accounting for at least 50% of sampled early pregnancy losses. Statistics collected from the Regional Hospital Bamenda (Cameroon) shows that in 2010, out of 360 cases of spontaneous abortion recorded 257 (71%) were threatened abortion out of which 103 (40%) ended in miscarriages, i.e. in the expulsion of the embryo or fetus. Similarly in 2011, out of 753 cases of spontaneous abortion registered, 545 (72%) were threatened abortion and out of which 208 (38%) ended in miscarriages.

“Do health care providers know their role in the prevention of spontaneous abortion?” The answer to this question will find its source in the attainment of the main objective which is to assess the knowledge of Health Care Providers on their role in the prevention of SA.

It is based on the Virginia Henderson conceptual model that we frame a directive pattern to this important project.

Man as an individual, is defined by Virginia Henderson as “a bio-psychosocial being, a unified whole, and presenting with 14 fundamental needs. 2 of the needs will direct and make the cue of this study as follows:

- *Need to communicate with others*
- *Need to learn and understand*

The use of structured questionnaires helped to collect information from the respondents in order to reflect the specific objectives of the study. In assessing the knowledge of HCPs, only 16 responses were gotten, instead of 39 responses expected from them. This may show a lack of knowledge, even for those who said knew about. For the prevention of SA, it is observed that psychological care at the prenatal period may be out of practice. Only 2(8%) respondents talked of alleviating anxiety, forgetting that this should be coupled with education and adequate medication administration. To conclude, it is worth noting that HCPs are poorly knowledgeable on their role in the prevention of SA, thus contribute to less significantly in the decrease of its prevalence.

List of abbreviations and acronyms

IUD:	Intra uterine death
OTC:	over the counter
AHA:	Azire health area
RHB:	Regional hospital Bamenda
D&E:	dilatation and evacuation
D&C:	dilatation and curettage
MNH:	Mother and neonatal health
ITN:	Insecticide treated nets
LAP:	Lower abdominal pain
EBF:	Exclusive breastfeeding

FP:	Family planning
SP:	Sulfadoxine pirimethamine
IHC:	Integrated health center
HA:	health area
HF:	health facility
AIHC:	Azire integrated health center
ARC:	Alpha Royal Clinic
RDPH:	Regional delegate for public health
MPH:	Ministry of public health
TA:	Threatened abortion
SA:	spontaneous abortion
CMA :	Centre médicalisé d' Arrondissement
HCP:	health care professional

Introduction

1.1. Background of the study

Abortion has a long history and can be traced back to civilizations; and according to Wikipedia, the free encyclopedia, it is defined as the termination of pregnancy by the removal or expulsion from the uterus of a fetus or embryo prior to viability. An abortion can occur spontaneously, in which case it is usually called a miscarriage, or it can be purposely induced. The term abortion most commonly refers to the induced abortion of a human pregnancy. Abortion when induced in the developed world in accordance with local law is among the safest procedures in medicine. However, unsafe abortions (those performed by persons without proper training or outside of a medical environment) result in approximately 70 thousand maternal deaths and 5 million disabilities per year globally. An estimated 42 million abortions are performed globally each year, with 20 million of those performed unsafely. The incidence of abortion has declined world wide as access to family planning education and contraceptive services has increased (<http://en.m.wikipedia.org/wiki/abortion>).

Spontaneous abortion, also known as miscarriage, is the unintentional expulsion of an embryo or fetus before the 20th to 22nd week of gestation. Between 15% and 30% of known pregnancies end in clinically apparent miscarriage, depending upon the age and health of the pregnant women. The most common cause of spontaneous abortion during the first trimester is chromosomal abnormalities of the embryo/fetus, accounting for at least 50% of sampled early pregnancy losses. Other causes include vascular disease (such as lupus), diabetes, other hormonal problems, infections, and abnormalities of the uterus.

Advancing maternal age and a patient's history of previous spontaneous abortion is the two leading factors associate with a greater risk of spontaneous abortion. It can also be caused by accidental trauma (<http://en.m.wikipedia.org/wiki/abortion>).

The prevalence and incidence of abortion, either induced or spontaneous, in Africa or in developing countries are very difficult to assess and evaluate. This is due to the non-legalization of induced abortion, the confusion between the 2 terms (induced and spontaneous) and mixing up and wrong or poor statistics provided. That is the reason why studies carried out, may help in estimating and evaluating the impact of those practices or occurrences in our society and in terms of demographic data collection and analysis as related to maternal or fetal infant death rates, adding to the fact that induced abortion either legalized or not is a pertinent precipitating factor of spontaneous abortion.

In Cameroon in particular, strategies are put into place to salvage those problems which put the Cameroonian women in danger and affect the State demographic data. It is the case of the national conference of the responsible of central and decentralized services of the ministry of public health, held from the 7th to the 8th January 2011, the theme being “**Amelioration of the mother and child health, the priority of the ministry of health activity in 2011**”.

It is therefore important for the nurse or health care provider to contribute or assist the patient/client, in managing and preventing spontaneous abortion, through adequate and

efficient health care deliveries.

1.2. Statement of the problem

Determining the prevalence of miscarriage is not an easy task. Treatment of women with miscarriage at home means medical statistics on miscarriage miss many cases. Prospective studies using very sensitive early pregnancy tests have found that 25% of pregnancies miscarry by the 6th week LMP. However, other sources reports suggest high rates. One fact sheet from the University of Ottawa, states that: “the incidence of spontaneous abortion is estimated to be 50% to 75% of all pregnancies, based on the assumption that many pregnancies abort spontaneously with no clinical recognition” and that: “it is also estimated that up to half of all fertilized eggs die and are lost (aborted) spontaneously, usually before the woman knows she is pregnant. Among those women who know they are pregnant, the miscarriage rate is about 15% to 20%.”(<http://en.m.wikipedia.org/wiki/miscarriage>).

Clinical miscarriages, i.e. those occurring after the 6th week LMP, occur in 8% of pregnancies. The risk of miscarriages decreases sharply after the 10th week LMP, i.e. when the fetal stage begins. The loss rate between 8.5 weeks LMP and birth is about 2%; loss is virtually completed by the embryonic period. <http://en.m.wikipedia.org/wiki/miscarriage>.

The prevalence of miscarriage increases considerably with age of the patients. Pregnancies from men younger than 25 years are 40% less likely to end in miscarriage than pregnancies from men 25 – 29 years. Those from men older than 40 years old are 60% more likely to end in miscarriage than the 25-29 years age group. This increased risk of miscarriage in pregnancies from older men is mainly seen in the first trimester. <http://en.m.wikipedia.org/wiki/miscarriage>.

To estimate the impact of abortion (any type of abortion), it is by finding out the maternal death rate. As such a prospective study carried out from May to October 1999, in West Africa, i.e. in Benin, Ivory Coast, and Senegal, has shown that, during the study period, 10,744 women were admitted for delivery, of whom 2708 (25%) had major complications (haemorrhage, sepsis, obstructed labour, uterine rupture, or high Bp). Of these 2708 women, 79 died. This fatality rate (3%) was similar to the fatality rate of 2.4 % (37 of 1525) observed among women admitted for complications of induced abortion. There were 4116 women admitted for obstetrical complications during the first trimester of pregnancy. Of these, 1525 (37%) were admitted for complications of induced abortion, 1834 (45%) for complications of spontaneous abortion, 651 (16 %) for ectopic pregnancies, and 106 (3%) for molar pregnancies. A total of 42 of these 4116 woman died. 37 (88%) of these deaths, resulted from complications of induced abortion, conforming that complications of induced abortion the leading cause of maternal death during the first 3 months of the pregnancy. (The New England journal of medicine) (<http://www.nejm.org/doi/full>).

Information and statistics gotten from the American Pregnancy Association (APA) help too, to answer questions about the incidence of SA. According to it, women under 35 years in general good care have about 15% chance of having miscarriage. Also, 670,000 American women miscarry a pregnancy each year, since most miscarriages occur during the first 12 weeks of gestation. In general, a single miscarriage doesn't mean a woman is doomed to multiple miscarriages. A woman who miscarries only once has a slightly higher risk (25%) of having a miscarriage than a woman who has never miscarried (20%). While vaginal bleeding during pregnancy is always present during miscarriage, it doesn't always mean that miscarriage is imminent. An estimated 20% to 30% of women report some type of bleeding in early pregnancy, but only ½ (half) of those who bleed end up miscarrying their pregnancies. Adding to the age factor, women who are 35 – 45 years old have a 20% – 35% chance of miscarriage, while those over the age of 45 can have up to a 50% chance of miscarriage. Around 1 woman in 100 has recurrent miscarriages at some point; this is 3 times the incidence expected by chance.

In Cameroon, statistics is not readily available on miscarriage; the main reason being that the majority of miscarriages occur before the mother realizes; and also, they remain

unreported and/ or due to poor recording and misplacement of records.

Statistics collected from the Regional Hospital Bamenda shows that maternal death has been reduced from 2008, 2009 to 2010, from 6, 4, to 3 maternal deaths respectively. That reduction was linked to the decrease of pregnancy complications. In 2008, out of 1623 people hospitalized for malaria, 167(10%) pregnant women were hospitalized for malaria. In 2009, out of 1491 people hospitalized for malaria, 92(6.2%) were pregnant women. At the mid 2010 (May-June), out of 1110 people hospitalized for malaria, 98 (8.8%) were for malaria in pregnancy, and by the end of the year 2010, 310 cases of malaria in pregnancy were registered. In 2011, the number of malaria in pregnancy was 316.

Furthermore, in 2010, out of 360 cases of spontaneous abortion recorded 257 (71%) were threatened abortion out of which 103 (40%) ended in miscarriages, i.e. in the expulsion of the embryo or fetus. Similarly in 2011, out of 753 cases of spontaneous abortion registered, 545 (72%) were threatened abortion and out of which 208 (38%) ended in miscarriages.

Also during the investigator's specialty internship at the R.H.B in the theatre from the 23rd to the 30th/04/2012, he realized that for his 6 days present there, 5 cases of spontaneous abortion (post expulsion, blight ovum) were registered for D&C and 1 case for the Shirodkar's stitch.

During a 2 weeks clinical internship period in the Gynaecological ward at the RHB, from the 15th – 26th August 2011, the investigator realized the impact of threatened abortion in the woman's life and society. Four cases witnessed, particularly triggered him to carry out further research in order to enhance on the knowledge of HCPs on the prevention of spontaneous abortion.

In the first case, the investigator witnessed malaria in early pregnancy with no initial LAP, which after 30 minutes following the first malaria Protocol administration, the patient started having uterine contractions (premature contractions), and the flow rate when changed from 42 drops per minute to 20 – 21 drops/minute, the contractions stopped and recovery in 2 days time was very effective. The 2nd case was admitted for malaria in early pregnancy (first trimester) with LAP. Infusion against malaria was set up by the Nurse on duty at a flow rate of 42 drops/minute to run for 4 hours. The client after treatment was still complaining of LAP and she ended losing her baby.

With the above statistics, the investigator went in the field to look for the reasons behind the increase in the prevalence and incidence of spontaneous abortion. This will push the investigator to ask this question: **“Do health care providers know their role in the prevention of spontaneous abortion?”** with the intention that the answer to it may help curb the prevalence and incidence of spontaneous abortion.

1.3. Research question

What is the knowledge of HCPs on their role in the prevention of SA?

1.4. Objectives

1.4.1. General objective

To assess the knowledge of HCPs on their role in the prevention of SA.

1.4.2. Specific objectives

-To assess the knowledge of HCPs on S.A -To assess their knowledge in their role in preventing SA. -To assess their activities in the management of threatened abortion and malaria in pregnancy, towards preventing SA -To find out the difficulties they encounter in the prevention of S.A.

1.5. Hypothesis

Health care providers who are knowledgeable on the causes of spontaneous abortion and who understand and carry out their role in preventing it, will contribute more significantly to the decrease in the prevalence of SA, than those who are not.

1.6. Significance of the study

The outcome of this study will go a long way to impact positively the health care providers, by creating awareness on the causes and preventive measures of spontaneous abortion, and their role in its prevention. It will also improve ANC service deliveries by reinforcing IEC process and case finding. It will bring out new knowledge towards a positive approach and positive outcome to health care delivery practices.

1.7. Scope of the study/delimitations

The research has to do with HCPs practicing in the Gynaecological ward, gynaecological department and those in ANC unit, including the labour room, of the RHB; those working in the general wards and at the ANC units of the private clinics of the Azire Health Area (AHA).

Also, it particularly includes the role of HCPs in the prevention of S.A.

1.8. Limitations

Financial and time constraints, have limited the research to the AHA of the NWR.

This study could have been extended to other hospitals in other towns and why not in the whole nation, to come out with a concrete accurate and greater study sample, should the above constraints be met.

1.9. Conceptual model and conceptual frame work

The HCP is an individual, defined by Virginia Henderson as “ a bio-psychosocial being, a unified whole, presenting with 14 fundamental needs”, she identifies, among the 14, with those needs which make the cue of this study as follows:

- Need to communicate with others
- Need to learn and understand

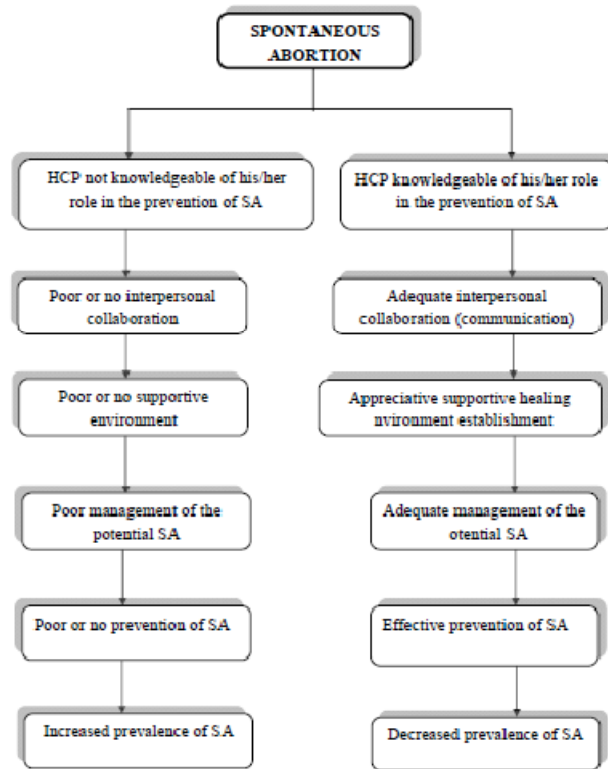
The causes and predisposing factors responsible for the initiation or occurrence of SA are of many origins (see chapter 2) and the preventive measures put into place are used based on the knowledge of those causes and predisposing factors.

A deficit of knowledge or ignorance about a causative factor and or potential risk would worsen the condition of the client and even lead to induction of premature contractions. That's the reason why, as stated by Virginia Henderson in her conceptual model, the HCP would “need to learn and understand”.

Additionally, a HCP with knowledge deficit would not adequately communicate with the patient and/or other health professionals for the proper management towards preventing SA. This might indirectly lead to stimulation/induction of SA process and worsen the condition of the client which may end up aborting, leading to increased prevalence of S.A. Thus the “need to communicate with others”.

A HCP knowledgeable of his/her role in preventing SA will adequately implement the required preventive measures. This will lead to an appropriate management of the condition of the client exposed to a potential SA, and finally, he/she would play his/her role in the reduction of the prevalence of S.A as Virginia Henderson stipulates the role of the Nurse being “to assist the individual sick or well in accomplishing those tasks that he/she would perform unaided if he/she had the will, the knowledge and the power; and in doing so, to lead the person to recovery or to a peaceful dead”.

Furthermore, except stated otherwise, a well knowledgeable HCP will help strengthen the client's moral in such a way that she should feel secured and her baby safe. As such, the client will adapt in the present condition, despite the endurance, effort and patience to put in, in the management of her condition. The supportive healing environment established by the Nurse/HCP who is the change agent, will help to client adapt effectively to the change (physiological, psychological, environmental, etc), that she has gone or is going through.



Conceptual framework

Literature review

2.1. Definition of “abortion”

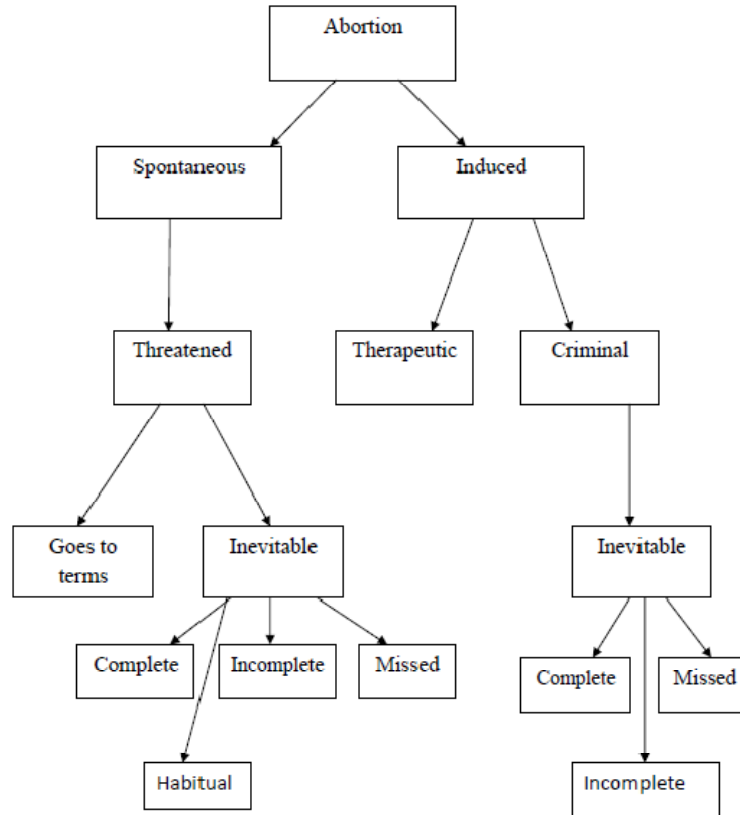
According to Petrozza John C. (August 29, 2001) in his book: ” Early pregnancy loss”, **ABORTION** is defined as the termination of pregnancy by the removal or expulsive from the uterus of a fetus or embryo prior to viability.

An **abortion** can occur spontaneously, in which case it is usually called a miscarriage or it can be purposely and deliberately induced. The term abortion is commonly used to refer to the induced abortion of a human pregnancy, thus the need to differentiate them. Induced abortion in the developed world is among the safest procedures in medicine, and follows the local law that legalizes the practice. (Wikipedia the free encyclopedia). However, unsafe abortions, i.e. those performed by persons without proper training or outside of a medical environment, result in approximately 70,000 maternal deaths and 5 million disabilities per year globally (from Wikipedia, the free encyclopedia), whereas, spontaneous abortions are unintentional.

Elizabeth J. Dickason (1975) says “an **Abortion** is a termination of pregnancy before the fetus is liable to survive”. In her review titled, “maternal and infant care”, she affirms that: “an early abortion takes place before the 16th week of gestation; a late abortion occurs during and after the 16th week. To be classed as a product of an abortion, or as pre-viable, the fetus must weigh less than 500g. The age of viability has now been set at the beginning of the 20th week of gestation, even though very few of the 20-27 weeks old infants are able to survive, by the use of modern techniques of neonatal intensive care, thus counted as potentially viable infants”.

2.1.1. Classification of abortion

According to Douglas G. Wilson Clyne (1959), abortion is classed as follows:



Habitual Incomplete

2.2. Spontaneous abortion

2.2.1. Definition

According to Wikipedia the free encyclopedia, **miscarriage** or **spontaneous abortion (SA)** is the spontaneous end of a pregnancy at a stage where the embryo or fetus is incapable of surviving independently, generally defined in humans at prior to 20 weeks of gestation.

Miscarriage is the most common complication of early pregnancy. Primary early miscarriages are those that occur before the 6th week LMP (since the woman's LMP) and are medically termed "**early pregnancy loss or chemical pregnancy**". Those occurring after the 6th week are medically termed "**clinical spontaneous abortion**". The limit of viability at which 50% of fetus/infants survive long term is around 24 weeks, with moderate or major neurological disability dropping to 50% only by 26 weeks. Although long-term survival has never been reported for infants born from pregnancy shorter than 21 weeks and 5 days, fetuses born as early as the 16th week of pregnancy may sometimes live some minutes after birth (Wikipedia the free encyclopedia).

2.3. Time frame of pregnancy outcomes

		GESTATIONAL AGE FROM LMP (IN WEEKS AND 2 MORE THAN DEVELOPMENTAL AGE)															
Aspect of fetus and pregnancy		2	6	11	2	2	2	2	24	2	2	2	28	29	3	40	42
					0	1	2	3	+	5	6	7			7		
	Prenatal development stage	Embryo			Fetus												
Whether fetus viable	Not viable				(Probably not)						(Probably)			Viable			

	If vaginal bleedings observed	Threatened abortion	Probable miscarriage				Ante partum haemorrhage			
	Onset of spontaneous delivery	Early Pregnancy Loss	Clinical spontaneous Abortion (miscarriage)				Premature labour	Terms	Overdue	
	... and delivered alive						Premature birth	Delivery		
	... but then dies afterwards						Neonatal death			
	If died before deliver						Still birth			

NB: Age of viability was 28 weeks before availability of modern medical intervention, current 50% chance of survival to discharge occurs for 24 – 25 weeks.

Definition varies by country: Australia: 20 weeks, UK: 24 weeks, US: no standard definite

2.4. Causes of spontaneous abortion

Seventy-five percent (75%) of all spontaneous abortions take place between 8 and 12 weeks of gestation. Many women have experienced early abortions without realizing that they were actually pregnant. Spotting at first period, then extra bleeding and cramping at the next may be the only indications of the pregnancy loss. Since an estimated 15% of all gestations end in spontaneous abortion, almost every gravid will have experienced an involuntary loss of a pregnancy at some time in her reproductive period.(Elizabeth J. Dickason).

Furthermore, Elizabeth J. Dickason in her review expresses the causes of miscarriage which have been classified as embryonic and fetal causes (50 – 60%), maternal causes (15%) and a combination or unknown (20 – 30%).

2.4.1. Embryonic or fetal causes

a. Chromosomal and germ plasma defects

According to, most clinically apparent miscarriages (2/3 – 3/4) occur during the first trimester, with chromosomal abnormalities being found in more than ½ (half) of embryos miscarried in the first 13 weeks. A pregnancy with a genetic problem has a 95% probability of ending in miscarriage. Most chromosomal problems happen then by chance, having nothing to do with the parents and are unlikely to recur; however, chromosomal problems due to a parent’s genes can be a possibility. This is more likely to have been the cause in the case of repeated miscarriages, or if one of the parents has a child or other relatives with birth defects. Genetic problems are more likely to occur with older parents; this may account for the higher miscarriage rates observed in older women.

Elizabeth J. Dickason defines a “**blighted ovum**” as abnormal development or implantation that is inconsistent with growth. It is also called an empty sac or an embryonic pregnancy and according to Kaufman et al (2007), it is a condition where the gestational sac develops normally, while the embryonic part of the pregnancy is either absent or stops growing very early.

According to Douglas George Wilson Clyne (1959), another abnormality of the zygote is the hydatidiform mole. Its degeneration has been found in as many as 40% of abortions and in many more fetal monstrosities which were present.

b. Placental abnormalities/umbilical cord problems

According to petrozza et al (2006), 19% of second trimester losses are caused by problems with the umbilical cord. It then, accounts for a significant number of late-term miscarriages.

Douglas G. Wilson. Clyne in his review: “A concise text book for midwives” (1959), affirms that in faulty embedding, if the ovum embeds low down near the isthmus, abortion is then common. If no abortion occurs the placenta praevia may reach full term. That faulty embedding, however rarely occurs and if it does, it is usually in situation where the mother presents with infantile or double uterus.

Elizabeth J. Dickason in “maternal and infant care” (1975), gives a clear and simple pathophysiology of spontaneous abortion as a result of placenta praevia. On occasion the blastocyst implants in the lower uterine segment. Because the decidua is less nourishing and the blood supply is less adequate, the placenta spreads out over a larger surface and may cover the internal so completely, partially or marginally. A fourth type, the low-lying placenta, does not impinge on the internal so until the cervix is well dilated during labour. Placenta praevia occurs in about 1% of all pregnancy and is more common in older gravidas and in those with a multiple pregnancy. Because low implantation does not favour fetal growth, many of these pregnancies are lost by spontaneous abortion in the first trimester.

2.4.2. Maternal causes

They tend to be involved in late abortions and are displayed as follows:

- Progesterone deficiency

It is one of the causes which occur in early miscarriage. Women diagnosed with low progesterone levels in the second half of their menstrual cycle (luteal phase) may be prescribed progesterone supplements, to be taken for the first trimester of pregnancy, although there are contradicting views about the use of progesterone supplements to prevent (Petroza, John C. (August 29, 2006)).

- Uterine malformation
- Tumors (fibroids)
- Cervical problems etc.

2.5. Predisposing or risk factors

2.5.1. General factors

- Infections. E.g. Malaria, pneumonia, diphtheria, STDs, small pox, influenza, measles, typhoid fever etc.
- Toxaemia, including nephritis and hypertension.
- Poor nutrition; e.g. lack of vitamin E, essential for the continuation for normal pregnancies to full term (Douglas G. Wilson C. (1959)).
- Trauma
- Sickle cell anaemia (because of placenta-bed micro infarcts) (Petrozza et al, 2006)
- Tobacco consumption
- Diabetes (uncontrolled diabetes)
- IUCD use
- Advanced maternal age
- The use of certain drugs which may contradict to the evolution of the pregnancy. e.g. antidepressants (paroxetine, venlafaxine)
- Polycystic ovary syndrome (Stein-Leventhal syndrome) (30 – 50% of pregnancies in the 1st trimester)
- Hypothyroidism

Conception and hypothyroidism are usually incompatible. However, should a hypothyroid woman become pregnant, early diagnosis is mandatory, because abortion, premature delivery, pre-eclampsia, and congenital abnormalities (notably cretinism and/or mental retardation) are common. Since the baby's thyroid develops independently of the mother's, however there is a possibility of a normal infant born to be hypothyroid (Elizabeth J. Dickason (1975)).

2.5.2. Specific risk factors

a. Autoimmune diseases

It is associated with a greatly increased risk of miscarriage. In the case of auto-immune induced miscarriage, the woman's body attacks the growing fetus or prevents normal pregnancy progression. And according to Wikipedia the free encyclopedia, further research has also suggested that auto-immune disease can cause genetic abnormalities in embryos which in turn, can lead to miscarriage.

b. Morning sickness

Because nausea and vomiting of pregnancy (morning sickness) may alter a woman's food intake and other activities during pregnancy, it may be a confounding factor when investigating possible causes of miscarriage.

c. Exercise

According to Wikipedia the free encyclopedia, most types of exercise (with the exception of swimming) correlate with a higher risk of miscarriage prior to 18 weeks. Increasing time spent on exercise is associated with a greater risk of miscarriage. Also, an approximately 10% increased risk may be seen with up to 1.5 hours per week of exercise, and a 200% increased risk seen over 7 hours per week of exercise. After the 18th week, no relationship may be found between exercise and miscarriage rates.

d. Caffeine

Also, according to Wikipedia the free encyclopedia, caffeine consumption has been correlated to miscarriage rates, at least at higher levels of intake. Normally, 200 mg of caffeine is found in 10 oz (300 ml) of coffee or 25 oz (740 ml) of tea. Thus, pregnant women who consume 200 mg or more of caffeine per day may experience a 25% miscarriage rate, compared to 13% of pregnant women who don't consume any caffeine.

e. The use OTC drugs

Elizabeth J. Dickason (1975) clearly displays this fact. In fact, every ingested or inhaled drug, by the pregnant women crosses the placental barrier in varying concentrations and has the potential for disturbing or altering the growth pattern of the fetus. Those are called the teratogenic effects of drugs.

According to Martha Olsen Schult and Sister Theresa Thomas (1975), Americans consume exorbitant amounts of sleeping medications, barbiturates, amphetamines, antacids, laxatives antibiotics, and vitamins. When taken according to prescribed amount most drugs are considered "safe" for the adult human body. However, they can have devastating effects on the unborn baby. And so, a few effects of drugs on the fetus are known. For example, aspirin has the potential for causing GI bleeding in the fetus. Large doses of Phenobarbital can cause neonatal bleeding, and some vitamins taken in excess can harm the fetus. For this reason, all pregnant women should be warned against taking any medication unless it is prescribed by the physician.

Some women indulge into these practices without knowing their pregnancy status, and by so doing, they ignorantly cause harms to the embryos, which may involve miscarriage. That is why Douglas G. Wilson C. (1959) displays the signs and symptoms of pregnancy among which the possible signs and symptoms i.e. the ones of very early pregnancy, which must call the attention of any woman so as to help her not to get involve into non-control use of drugs. The other signs and symptoms i.e. the probable and positive ones, will be easily identified later.

Possible signs and symptoms of pregnancy

1. Amenorrhoea
2. Morning sickness
3. Breast changes
4. Frequency of micturition
5. Appetite changes
6. Vaginal discharge (in excess amount)
7. Quickening- mostly noticed by multiparae at the 16th weeks.

f. Emotional disturbances (Douglas G. Wilson, C,1959)

The joy of pregnancy and the expectation of motherhood may be marred by the fear of the unknown, and affected by temperament, intelligence, environment, general health and so on. This may result in spontaneous abortion.

This mis-information about the labour period may stress-up a woman.

A young adult who becomes pregnant unwilling (like in case of incest, rape or other unwanted pregnancies) and which doesn't found good in inducing abortion voluntarily, is also at risk of having spontaneous abortion.

Emotional disturbances may also affect the progesterone levels for the maintenance of the implanted ovum, which if very less, can lead to pregnancy loss.

Emotional disturbances may also be associated with religious factors, economical status etc....

g. Professional mistakes

The misuses of medications including their poor follow-up for the treatment of conditions in pregnancy are likely to lead to its loss. The tangible example which will make the cue of this research is the wrong use of quinine in the treatment of malaria in pregnancy.

2.6. Classification of spontaneous abortion

1. Threatened abortion

It is premature uterine contractions before viability and which may be characterized by lower abdominal pain and per vaginal bleeding. It happens in the first 3 months of pregnancy (Douglas G. Wilson C, 1959).

2. Inevitable abortion (Elizabeth J. Dickason, 1975)

The term “**inevitable**” is used to describe the inability of therapy to reverse the process of cervical dilation or save the fetus.

It can be divided into 3 types:

i) Complete abortion

The cervix dilates to 4-5 cm, and all parts of the placenta and embryo are passed out of the uterus. The recovery period is one of normal involution. Many women do not receive medical care but may go through the complete abortion at home.

ii) Incomplete abortion

After cervical dilation, bleeding and cramping, fragments of the embryo and placenta are passed. The retained portions of the placenta cause excessive bleeding. This is common after the 10th week.

Incomplete abortion may also be due to a poorly performed criminal abortion.

iii) Habitual Abortion

A woman who has lost 3 or more consecutive pregnancies is called a habitual aborter. The cause may be maternal infertility, chronic disease, or blood group incompatibility. The chief cause is cervical insufficiency due to poor birth trauma to the cervix, or to intrinsic anatomic problems. The process follows a specific pattern; the cervix begins dilating after 16 weeks, the membranes budge out of the external cervical os and the uterus begins the contractions which will lead to delivery of a tiny fetus. (Elizabeth J. Dickason, 1975)

3. Missed abortion

This is the retaining of fetus 4 or more weeks after IUD

2.7. Manifestations of spontaneous abortion

- Bleeding, which may increase accordingly
- Cramping

- Abdominal aching

This is like labour pain, coming round from back to the front, and gripping in character.

2.8. Diagnosis of spontaneous abortion

- Through signs and symptoms
- Ultra sound
- Examination of the passed tissue
- Microscopic pathologic symptoms of miscarriage

E.g. Chorionic villi, trophoblast, fetal parts, background changes of the endometrium.

- Genetic tests may be performed to look for abnormal chromosome arrangements.

2.9. Management of spontaneous abortion

2.9.1. General management

- i) Blood loss being the most common symptom during early pregnancy loss, transvaginal ultra sound is performed.
- ii) Medical management It consists of using misoprostol (cytotec) (orally or vaginally) a prostaglandin or oxytocin (*syntocinon*) to encourage completion of the miscarriage, then Hyoscine to stop the contractions after completion if necessary, in case of incomplete abortion.
- iii) Surgical management
 - D & C
 - D & E

2.9.2. Specific management

a. Threatened abortion

Since the cause is rarely known early enough to use preventive therapy, treatment is symptomatic;

- Bed rest
- While waiting for medical aid, the nurse shaves the pubic hair, and the vulva swabbed down with an antiseptic solution, all soiled clothing and pads are preserved for the doctor's inspection
- Temperature and pulse are recorded thereafter twice daily
- Avoid vaginal or rectal examinations that may make the abortion inevitable.
- Bowels are let severely alone for 48 hours.

After that the doctor may order any liquid paraffin needed

- Doctor's treatment:
 - Sedatives will be ordered, such as pethidine 100 mg or phenobarbitone 1g TID
 - If tests for progesterone and human chorionic gonadotrophin (HCG) reveal low levels, replacement with progesterone may be started. After 10 days, another pregnancy test may be requested to discover whether the pregnancy is continuing.
 - If the cervix is patulous or incompetent, a nylon suture round it is placed through the Shirodkar's operation.
 - Thyroid supplements, sometimes, help to maintain a pregnancy.
 - If an abortion is threatening because of psychogenic causes, calm listening and counseling may be helpful.
 - In every case, intercourse will be contra-indicated until the pregnancy seems to be well established.
- Diet and other advices.
 - a• A light diet with wheat-germ oil as suggestion may be prescribed.
 - b• After 5 days without bleeding, the patient is allowed up, and if there is no further loss, may be discharged 3 days later.
 - c• She is told to take things easily and to report if there is any recurrence of pain or

bleeding.

b. Inevitable abortion

i) General care

- Put the patient to bed, and send for medical aid
- Avoid any rectal and any vaginal examinations
- Clean and shave the vulva, and keep all soiled clothing or pads.

ii) In case of emergency

- If the bleeding is very severe, and the patient appears to be in danger, give 0.5 mg of Ergometrine or Oxytocin injectable, while waiting for the doctor.
- Plug the vagina tightly with broad, sterile gauze.

iii) Doctor's treatment/order

▪ Complete abortion

Since up to the 8th or 10th week the whole of the fetal sac generally is expelled intact, bed rest for a few days and a daily injection of Ergometrine/oxytocin IM (if necessary) are sufficient.

- Incomplete abortion
 - Expulsion of the retained placenta with injections of ergometrine/oxytocin.
 - If it fails, D & E is done under anaesthesia
 - If it is as a result of criminal abortion, sepsis is liable to occur, and so, antibiotics will be prescribed in such cases
 - Blood transfusion may be required if exaggerated blood lost
- **Habitual abortion**
 - **Shirodkar's operation** It consists of the use of cerclage procedure, by placing a non-absorbable suture around the cervix to hold it closed. It can be done before conception. If done after, special precautions must be taken to maintain the pregnancy after the cervical manipulation.
 - Post operatively, the patient is placed in a Trendelenburg's position for 48 hours to relieve the pressure of the fetus on the cervix.
 - Sedation and complete bed rest for 48 hours are usually ordered.
 - Special check-up will be done for vaginal bleeding, contractions, and the fetal heart beat. Before delivery is possible, the suture must be removed.

c. Missed abortion

- a• Emptying of the uterus with suction, or with dilation and curettage, using oxytocin infusion to control bleeding.
- b• Late abortion will be treated with oxytocin infusion to soften the cervix. Should this be ineffective, the doctor may use an intra-amniotic injection of saline solution (hypertonic saline) to start labour.

2.10. Prevention of spontaneous abortion

According to Wikipedia, currently, there is no known way to prevent an impending miscarriage. However, fertility experts believe that identifying the cause of the miscarriage may help prevent it from happening again in a future pregnancy.

a) Medical preventive measures

They consist of the use of supplement progesterone before and during pregnancy (<http://en.m.wikipedia.org/wiki/miscarriage>).

Progesterone plays a key part in preparing the uterus for implantation of the newly fertilized egg. It has been suggested that some women who experience spontaneous abortions may not be producing enough progesterone; and so, by administering exogenous progesterone it may be possible to prevent miscarriage. Doctors in Vietnam widely prescribe progesterone for the treatment of threatened miscarriage. In France also, progesterone is among the most frequently prescribed drugs during pregnancy, and almost 1/3 of women with threatened

abortion are prescribed progesterone in Italy. Unlike in developed countries, most health care providers and policy-makers in developing countries do not have easy access to the latest reliable information on effective care.

To then, institute the use of progesterone therapy for recurrent miscarriage, treatment protocols for reproductive health care will to be standardized and periodically updated by appropriate authorities, using an evidence based approach.

(http://apps.who.int/rhl/pregnancy_childbirth/antenatal_care/miscarraige/cd003511_thacht/en/index.html).

b) The first ANC visit.

The first visit is encouraged to be done as early as possible after realizing a pregnancy. It is usually during the 1st trimester. Considering that SA mostly occurs during the 1st trimester, the emphasis will be done on the ANC during the first trimester, and particularly on the prevention of abortion added to other activities. As viewed by Elizabeth J. Dickason (1975), the 1st trimester needs vary according to whether the pregnancy is a first one. A first pregnancy is like any other first experience. Curiosity and concern are felt about the unknown that lies ahead. The woman may appear to be very self-concerned and will reflect the ambivalence of the phase through which she is going. Because she probably will not be able to focus on instructions concerning future events such as labour, delivery, child care, or contraception, such topics are best discussed in later visits. A nurse usually has the first contact with a patient following the registration procedures; besides, the patient is assured of the confidentiality of her record and of the importance of having a complete history for background information that will be useful in assessing this particular pregnancy. According to Douglas G. Wilson. C. (1959), a first ANC visit is made up of history and examination, and general advice to the patient.

1. History

- General history e.g. demographic data, minor ailments etc.
- Obstetric history. e.g. previous labour, delivery, puerperia, etc.

2. Examination

- General examination: e.g. vital signs, physical inspection etc.
- Special examination: e.g. laboratory investigation (HIV status) etc
- Abdominal examination: e.g. palpation.
- Measurements
- Vaginal examination: e.g. consistency, exclusion of cysts and fibroids etc.

3. Advice to the patient (IEC) on:

- Use of ITNs
- Diet
- Exercise and rest
- Clothing
- Smoking and alcohol etc.

c) Subsequent ANC visits

- Besides routine ANC activities as stated above, there can be:

1. health education

- EBF
- FP
- EPI program etc.

2. Drugs

- SP as from 16 weeks or when viability period
- Folic acid
- Ferrous etc.

2.11. Malaria in pregnancy

Since glimpses of antiquity, the woman's womb is exposed as axis of the universe, the nucleus of the world in which all human beings, whatever their age, ability, background, physical or spiritual power take form. In other words, within the bosom of the woman resides the fructifying life-giving power without which sustaining source for the continual existence of the human species is impossible. This is why generations throughout ages have celebrated the fertility of the woman. This is why pregnancy, the transition into motherhood in most African societies is climaxed with special mother-centered gatherings of friends and family to honor, support, nurture, and encourage the mother-to-be in her new role or continuing role. For the most part, pregnancy is a special time in life to honor this momentous rite of passage and infuse the epoch with love, spirit, caring, and support the mother-to-be. For example, in certain traditional society, not only was it uncommon to take all the best part of certain slaughter animals to be specially prepared to feed the mother-to-be but she was forbidden to eat certain meat, mushroom, and vegetables for the sake of the fetus. Equally important, the mother-to-be was the first to take her bath, eat, and went to bed early as the goddess or a "protectress" of the "seed." In essence, the mother has not only been the glue of the household and the flower in a garden but one who gives birth to the human race.

It is no wonder why an early death of a child or the loss of the unborn to a miscarriage, "spontaneous abortion" is one of the most traumatic experiences no couple would ever want to go through. They are haunted for life with the frustrated feelings of motherhood. Sadly, an estimated 30 million plus childbearing African women who become pregnant in malaria-endemic environment annually have to suffer, thereby dying from a malaria-induced miscarriage/stillbirth. The figure is vividly captured in the U.N. findings that 95 percent of the deaths worldwide, related to pregnancy and childbirth, occurs in Africa where a woman dies from complications in pregnancy every minute. The statistics is even frightening when compare to women living in the western world. For example, "African women are 175 times more likely to die in childbirth and pregnancy than Westerners; a UN report says. (www.news.bbc.co.uk/2/hi/health/).

Additionally, tens of thousands of African women who survive the ordeal would live with severe disabilities, maternal anemia, etc.

2.11.1. Preventing and treating malaria in pregnancy

These can be a key intervention to improve maternal, fetal and even child health globally and is linked to 3 of the Millennium development goal (MDG)

- MDG – 3 improve maternal health
- MDG – 4 reduce under 5 mortality
- MDG – 5 combating infections disease (combat HIV, malaria, TB and others diseases)

Pregnant women are generally more susceptible to malaria infection than other adults. In area where malaria is prevalent, the disease contributes to 2 – 15% of diseases of maternal anaemia, 8 – 14% of low birth, and as many as 3 – 5% of infant deaths. More than 45 million women – 30 million of them in Africa, become pregnant in malaria-endemic areas each year.

When a pregnant woman has malaria, even if she has no clinical symptoms, she may develop placental parasitaemia which can contribute to maternal anaemia, and impaired fetal growth, or spontaneous abortion. Also, the prevalence and intensity of Malaria infection during pregnancy is higher among HIV-positive women. (http://www.planetwire.org/files.fcgi/3438_BPmalMa02e.pdf).

a. Prevention

Following the recommendation of the WHO, the MNH program promotes IPT and the use of ITNs in the prevention of malaria.

Family members can also help protect the woman from malaria by filling areas in the ground near their homes when water collects, clearing bushes away from the house, disposing of trash and keeping food containers covered.

(http://www.planetwire.org/files.fcgi/3438-BPmal_Ma02e.pdf)

b. Treatment

For severe malaria during pregnancy, the WHO recommends artesunate or guanidine during the 1st trimester and artesunate as the first line therapy during the second and third trimesters (http://en.m.wikipedia.org/wiki/artesunate#cite_note-8).

Appropriate management should be available to all women with clinical cases of malaria. In endemic areas, screening for signs and symptoms of malaria should be a routine part of ANC. If not possible, the diagnosis can be done through blood test and managed somehow otherwise.

(http://www.planetwire.org/files.fcgi/3438_Bpmal-Ma02e.pdf)

According to Wikipedia the free encyclopedia, if malaria is suspected in a pregnant patient, refer immediately to secondary/tertiary care where infectious disease, obstetric and neonatal care is on hand and intensive care facilities if needed.

- Drugs should be used at adequate doses and according to clinical condition and local resistance patterns.
 - Chloroquine and quinine can be used safely in any part of the pregnancy, but resistance is common.
 - Artemisinins appears to be safe in the second and third trimesters.
 - Mefloquine and SP are safe in second and third trimesters.
- Fluid replacement needs to be very carefully monitored to prevent pulmonary oedema.
- If anaemia requires transfusion (Hb \leq 7-8 g/dl) then packed cells are preferred to avoid fluid overload.
- The complications of malaria should be carefully and aggressively managed
- Involve the obstetric team early in case of premature labour
- Iron/Folate may be added to the prescription

NB: Primaquine, tetracycline, doxycycline and halofantrine are contra-indicated. So, it is suggested to use quinine and clindamycin in place of doxycycline for example.

(<http://www.patient.co.uk>)

- Parental treatment/Quinine infusion.
 - For a quinine dose of 25mg/kg/day, the flow rate should be reduced from 42 drops/minute to about 20-21 drops/minute for 4 hours. (particularly when the first line contains 1200mg of quinine)
 - For a quinine dose of 20mg/kg/day, a flow rate of 42drops/min x 4 hours can be maintained. NB: vitamin B complex ampoules (1-2) should be added to the infusion in order to reduce the effects of quinine.
 - A salbutamol infusion may be added to a quinine infusion of 25mg/kg/day; but it should be noticed that this shouldn't be given in early pregnancy where it is contra-indicated. It is typical to malaria in late pregnancy.

c. Quinine treatment/effects in pregnancy

Quinine capsules should not be used during pregnancy and even after as it is found in the breast milk, except specifically and purposefully prescribed by a competent doctor.

Congenital abnormalities (including damage to the auditory and optic nerve) have been reported following the use of large doses of quinine for its abortive effect. Quinine is only recommended for use during pregnancy when there are no alternatives and benefits outweigh risk.

Quinine crosses the placenta and gives measurable blood concentrations in the fetus. During a study of women with Plasmodium falciparum malaria, difference in the rate of stillbirths at greater than 28 weeks of gestation was not significant in pregnant women treated with quinine compared to the control group without malaria or exposure to anti-malarial agents during pregnancy. The overall rate of congenital malformations was not different for women treated with quinine (1.4%) compared to a control group (1.7%). The rate of SA was

lower in women treated with quinine (3.5%) than the control group (10.9%). Despite its contracting effect on the uterus, it is safe for the pregnant women when administered rightly, and as recommended to treat malaria, as prescribed accordingly by the doctor.

(<http://www.netdoctor.co.uk/medecines/100002213.html>).

2.12. Role of hcps in the prevention of SA.

The role of health care providers depends greatly on the unit of activity.

i) At the ANC unit.

- Identification of women at risk by proper history, physical examination, laboratory investigation...
- Proper referrals
- IEC on preventing SA on topics relating to:
 - Proper use of mosquito nets
 - Avoid physical and psychological stress
 - Proper nutrition
 - Avoidance of OTC drugs
 - Recognizing early signs of pregnancy
 - Recognizing early signs of Threatened Abortion and the immediate action to take.
 - The types and limits of physical exercises.
 - Use of intermittent preventive treatment against malaria added to folic acid and iron.

ii) In the wards

- Use appropriate approach towards patients
- Monitor vital signs
- Proper administration of medications
- Ensure strict bed rest
- Alleviate anxiety through proper psychological care.
- Counsel the woman on the various preventive measures.
- Ensure good collaboration in the health team in order to ease corrections, proposals, critics and renovations in the activities.
- Drawing of nursing care plans for proper management of patients.

Research methodology

3.1. Description of the study area

The area of study adequately chosen for this research work is the Azire Health Area. AHA is one of the 17 functional has that make up the Bamenda Health District (see appendix). It is situated in the Bamenda II subdivision, in the Mezam division of NWR.

Azire Health Area is divided into 10 quarters/zones as follows: Azire A, Azire B, lower Atuazire, Nitop 1, Nitop 2, Nitop 3, Nitop 4, Ntarikon 1, Ntarikon 2, and Ntaturu. (See appendix)

With a population of about 65,031 inhabitants in 2010 HA census, AHA is bounded to the North by Ntamulung HA, to the South by Ntuakom HA, to the West by Alakuma HA and to the East by Ntambag HA.

It is made up of 7 Health facilities as follows:

- 1) Alpha Royal Clinic
- 2) Azire IHC
- 3) Mezam Polyclinic
- 4) Broadgreen Maternity
- 5) Mount Zion Clinic
- 6) Regional Hospital
- 7) God's Glory Clinic (actually not existing).

The study was carried out in 3 of the health facilities, i.e. Alpha royal clinic, Azire IHC, and Regional Hospital. AHA is the 2nd most populated HA with about 65,031 inhabitants; after Nkwen urban (69,104 inhabitants). It is made up people of various origins, tribes,

languages... Also, it is mostly made up of people of high educational level, with many primary, secondary schools i.e. the population is a mature one.

3.2. Research design

A **descriptive cross sectional design** has been used for this work. It is a design in which people's perception, knowledge, belief patterns and practices are assessed and the findings described as such. The investigator collected data from a sample of respondents in the 3 health facilities out of 6, representative of the entire population of HCPs in the AHA, on the knowledge of their role in the prevention of SA. This design helped the investigator to acquire information so as to meet with the study objectives.

3.3. Target population

It is the population which comprises people of various sex, age groups, health occupations... that have the potential to be part of the study sample. The target population chosen for this study was HCPs both male and female, regardless of their duration in service and grade, of the gynaecological ward (general ward), ANC department, labour room and gynaecological/obstetrical consultation of these health institutions.

3.4. Sample size and sampling procedure

During this study a **sample size of 24 HCPs** were recruited in 3 Health Facilities of the Azire Health Area, with 12 respondents from the Regional Hospital Bamenda, 7 from the Azire Integrated Health Center, and 5 from the Alpha Royal Clinic.

The sampling procedure used was the **convenient sampling method** where all available HCPs in the specific units were sampled. This was due to existing small size of the target population. This helped the investigator to get tangible information from the HCPs about the study in the health units concerned.

3.5. Data collection tool

This is an instrument used in the collection of raw data from the target population. The tool used here was a structured questionnaire designed to obtain responses from the respondents. The questions were made of open-ended questions, and short answered questions. They were structured to reflect the specific objectives of the study.

3.6. Pre-testing and instrument validation

The questionnaires were pre-tested in the Nkwen Urban HA and particularly in the Medicalised Health Centre Nkwen (CMA Nkwen). This HF was chosen because of close characteristic features as that HFs chosen in the AHA; and also has a population (69,104) close to the one the AHA.

The pre-testing was necessary because it helped the investigator to be sure that the questions were clearly structured such as to enable easy understanding by the respondents. Flaws in the question structures and lapses in the responses were corrected to fit the research objectives, so as to make the questionnaire be valid and reliable as a research instrument.

3.7. Data collection procedure

The questionnaires were administered by the investigator and they were answered and handed over to him after a short while, due to the busy schedule of the respondents.

Also, secondary data was collected from the doctor(s) in charge of the gynaecological/obstetric consultation, through short informal interview.

3.8. Data analysis tools

Raw data collected from the field was presented and analysed in the next chapter using frequency tables, bar charts, pie charts etc. analysis was done under each table and chart accordingly

3.9. Ethical considerations

Authorization to carry out this study was obtained from the RDPH-NWR (see appendix). This granted the investigator to go ahead to carry out this study in the chosen area.

Also, in collecting raw data from the target population (HCPs), the concern of respondents was solicited first; then explanation given to them on the purpose of the study, and also guaranteeing them on the confidentiality of the information they provide. This was necessary because it made the respondents to build up trust on the investigator and so doing, answered the questions freely and accurately. This made them to understand that their rights are being respected and will still be respected during and after the study.

Finally, to reassure confidentiality the names of the respondents were not taken, so as to make them not to be identified.

3.10. Communication of results

This work serves as an academic work and shall be presented to different areas and individuals in corrected copies. It shall be presented to:

- The school library (TSSRN Bamenda Library).
- The Regional delegation for public Health.
- One of the HFs where the research was carried out (RHB).

Data presentation and analysis.

The purpose of this study was to assess the knowledge of HCPs on their role in the prevention of SA. Raw data was collected from the field through the administration of questionnaires to the HCPs of the required departments/units, so as to achieve the above mentioned purpose. Due to time constraint, out of 27 questionnaires administered, 24 were answered. As such, the presentation and analysis shall be done based on the answered questionnaires.

SECTION I: SOCIO DEMOGRAPHIC DATA

Table I: Distribution of HCPs/respondents according to unit department of service

Unit/department of service	Frequency	Percentage (%)
Consultation	6	25
ANC	6	25
Labour room/delivery room	5	21
Gynaecological ward/general ward	7	29
Total	24	100

From the table above, out of 24 HCPs recruited for this study, 6(25%) were working in the consultation department, 6(25%) in the ANC, 5(21%) in the labour room, and 7(29%) in the gynaecological/general ward.

Table II: Distribution of respondents according to their duration in their units/departments.

Duration in the unit/department	Frequency	Percentage (%)
< 1 years	7	29
1-5 years	13	54
5-10 years	4	17
Total	24	100

As seen on the table II above, out of the 24 recruited respondents, the majority, i.e. 13(54%) are 1-5 years in their units, 7(29%) less than 1 years and 4(17%) between 5-10 years.

Table III: Distribution of respondents according to professional grade.

Grades	Frequency	Percentage (%)
Gynaecologist	1	4
General practitioner	2	8
Nurse midwife	2	8
Midwife	4	17
SRN/reproductive health	1	4
SRN	4	17
Nurse assistant	10	42
Total	24	100

As seen on the table III above, out of the 24 respondents recruited, the majority i.e. 10(42%) are nurse assistants.

SECTION II: ASSESSMENT OF THE KNOWLEDGE OF HCPS ON SA

Table IV: Distribution of respondents according to their definition of SA.

Response	Frequency	Percentage (%)
It is unintentional expulsion of the embryo or fetus before viability	14	58.3
It is unintentional expulsion of the embryo only, before viability	1	4.2
It is unintentional expulsion of the embryo or fetus after viability	6	25
It is unintentional expulsion of the embryo or fetus before viability	1	4.2
No response	2	8.3
Total	24	100

As seen on table IV above, 14 (58.3%) answered correctly by saying that SA is unintentional expulsion of the embryo or fetus before viability.

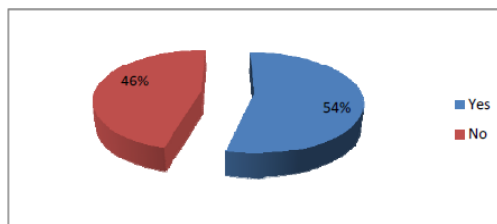


Figure 1: distribution of respondents according to whether they know the various types of SA or not.

Out of the 24 respondents recruited, 13(54%) said yes they know the definition off SA, and 11(46%) said **no**.

Table V: Distribution of respondents' responses who said that they knew the types of SA, according to the various types of SA.

Types of spontaneous abortion	Frequency	Percentage (%)
Threatened	3	19
Inevitable	4	25
Complete	3	19
Incomplete	3	19
Habitual	0	0
Missed	1	6
Early spontaneous abortion	1	6

Late spontaneous abortion	1	6
Total	16	100

From the 13 respondents who said yes they know the types of SA, 16 answers were gotten out of which 4(25%) were “inevitable SA”. Nobody thought of habitual abortion. This is seen on the table V above.

Table VI: Distribution of respondents according to when SA occurs.

Period of occurrence of SA	Frequency	Percentage (%)
First trimester only	16	66.7
Second trimester only	1	4.2
First and second trimester	4	16.7
No response	3	12.5
Total	24	100

From the table VI above, it is seen that only 4 respondents (16.7%) said that SA occur both in the first and (early) second trimester. The majority of respondents (66.7%) said it occurs in the first trimester only.

Table VII: Distribution of respondents according to how SA can be prevented.

Responses	Frequency	(%)
Education of selected potential mothers at risk during ANC visits and appropriate treatment when signs and symptoms appear	7	29
Education of selected potential mothers at risk during ANC visits added to other ANC activities	9	38
Appropriate treatment when signs and symptoms are appearing	5	21
By alleviating anxiety	2	8
No response	1	4
Total	24	100

As seen on the table VII above, the majority of respondents, i.e. 9(38%) said to prevent SA, education of selected potential mothers at risk during ANC visits, 7(29%) of them associated to the previous answer the appropriate treatment when the signs and symptoms appear, only 2(8%) thought of alleviating anxiety.

SECTION III: ASSESSMENT OF THE ACTIVITIES OF HCPS IN THE MANAGEMENT OF SA.

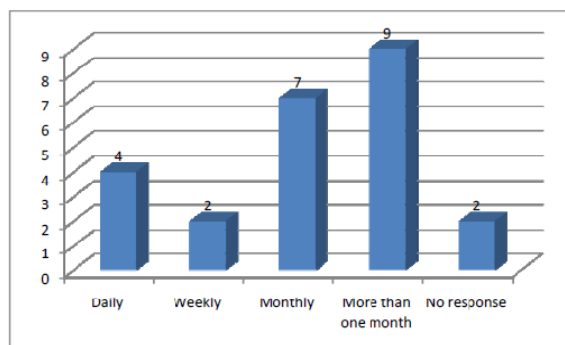


Figure 2: Distribution of respondents according to the frequency occurrence of threatened abortion (TTA).

As seen on the figure 2 above, 9(38%) respondents said that they encounter TA above a month, 7(29%) said per month, and up to 4(17%) said they do meet TA every day.

Table VIII: Distribution of the respondents' responses following their management of TA.

Responses	Frequency	Percentage (%)
Counseling	6	19
Referral to the doctor/gynaecologist	14	45
Physical examination	3	10
Administration of prescribed drugs	8	26
Total	31	100

The responses on the table VIII above were answered by 23 respondents. The majority of the answers i.e. 22(71%) are: referral to the doctor gynaecologist and administration of prescribed drugs; only 9(29%) are: counseling and physical examination.

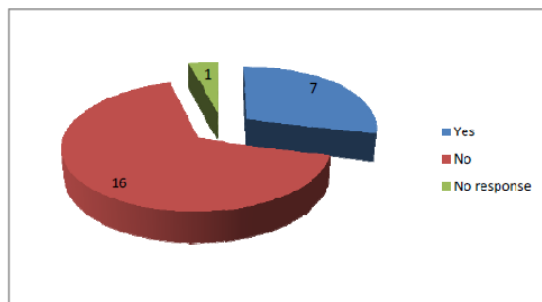


Figure 3: Distribution of respondents according to whether vaginal or rectal examination is carried out during TA conditions.

From the figure 3 above, 7(29%) of the respondents said yes to vaginal or rectal examination, 16(67%) said no.

Table IX: Distribution of respondents according to their reasons of doing vaginal or rectal examinations in TA cases.

Reasons	Frequency	Percentage
To examine the cervix	2	29
To exclude ectopic pregnancy	1	14
To determine if the abortion is inevitable or not (to assess the degree)	1	14
To confirm diagnoses in order to act	2	29
No answer	1	14
Total	19	100

From the table IX above, only 1(14%) respondents said vaginal or rectal examination could be done to exclude ectopic pregnancy, 2(29%) said to confirm diagnosis in order to act.

Table X: Distribution of the respondents' reasons who said "no" to vaginal or rectal examination in case of TA

Responses	Frequency	Percentage (%)
It may cause contraction and lead to expulsion of the fetus	9	47
It may cause further bleeding	6	32
To prevent infection	2	11
It can cause the rupture of membrane	1	5
To reduce manipulation	1	5
Total	19	100

Out of the 19 reasons given, 1(5%) said, it can cause the rupture of membrane, 18(95%) were correct reasons.

Table XI. Distribution of respondents according to whether the threatened abortion cases they did manage ended in abortion or not.

Responses	Frequency	Percentage
Yes	13	59
No	06	27
No response	03	14
Total	22	100

As seen on the table XI above, out of the 22 respondents who had encountered TA, 13 (59%) said the cases they did manage ended in abortion, and 6 (27%) said their cases did not end in abortion.

Table XII: Distribution of respondents' reasons who said the cases of TA they did manage ended in SA.

Reasons	Frequency	Percentage (%)
Late consultation/late intervention	5	36
Infection	2	14.3
Natural causes	2	14.3
Incompetent cervix	3	21.4
Rupture of membrane	1	7.0
Poor or no cooperation of the patient	1	7.0
Total	14	100

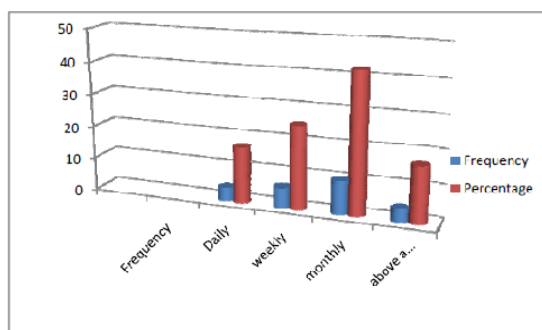


Figure 4: Distribution of respondents according to the frequency of occurrence of malaria in pregnancy

As seen on figure 4 above, up to 4(16.7%) HPCs meet malaria in pregnancy daily and only 10(42%) see it monthly.

Table XIII: Distribution of respondents according to how they did manage malaria in pregnancy

Responses	Frequency	Percentage
Treatment with malaria only and strict bed rest	5	21
Treatment using malaria protocol, salbutamol protocol and strict bed rest	1	4
Treatment using malaria protocol and salbutamol protocol as well	5	21
Treatment using malaria protocol only	6	25
Strict bed rest only	2	8
Referral to doctor	3	13
No response	2	8
Total	24	100

From the table XIII above, 6 respondents (25%) said to manage malaria in pregnancy, there is need to use only malaria protocol. Only 6 (25%) thought that besides medications there is need from the patient to get strict bed rest.

Table XIV: Distribution of respondents according to how malaria in pregnancy can lead to SA.

Responses	Frequency	Percentage (%)
The parasites of malaria cross the placenta and cause premature contractions	15	62.5
By causing uterine contractions	3	12.5
By causing uterine contractions and by the change of temperature	4	16.6
By causing uterine contraction and due to poor treatment and by the change in term premature	1	4.2
No answer	1	4.2
Total	24	100

From the table above, the majority of respondents i.e. 15(62.5%) answered in the best way that the parasites of malaria cross the placenta and cause premature contractions.

Table XV: Distribution of respondents according to the effect of quinine on the pregnant uterus

Responses	Frequency	Percentage (%)
Quinine can cause uterine contractions.	12	50
Has no effect	1	4.2
No response	11	45.8
Total	24	100

As seen on the table XV above half of the respondents i.e. 12 (50%) said that quinine can cause uterine contractions, while the other 12 (50%) seemed not to know its effect on the uterus.

Table XVI: Distribution of precautions to consider in the management of malaria in pregnancy with malaria in fusion protocol, by respondents

Responses	Frequency	Percentage (%)
Pay attention to the flow rate and amount of quinine administered per day	23	67.7
Use of aseptic technique	3	8.8
Frequent observation	6	17.6
Maintain good hygienic conditions	2	5.9
Total	34	100

From the table XVI above, the majority of responses i.e. 23(67.7%) is pay attention to the flow rate and amount of quinine administered per day.

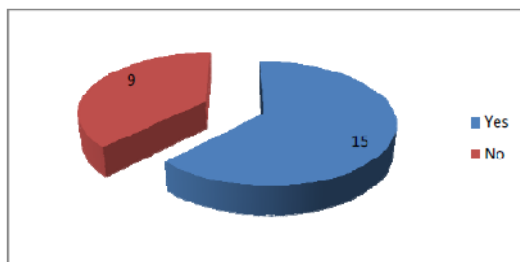


Figure 5: Distribution of respondents according to whether a HCP can ignorantly initiate premature

contractions in early pregnancy.

As seen on figure 5 above, 15(62.5%) respondents said yes to the possibility of HCPs too ignorantly cause premature contractions.

Table XVII: Distribution of the reasons of respondents who said yes to the possibility by HCPs to cause premature contractions.

Responses	Frequency	Percentage (%)
Poor or no control of the amount of quinine and flow rate of infusion	5	31.25
Administration of contra-indicated medications	9	56.25
Poor or no aseptic technique and traumatic palpation	1	6.25
Over dosage	1	6.25
Total	16	100

The table XVII shows the reasons for HCPs to ignorantly cause premature contractions: 15 responses (i.e. 93.75%) are mostly linked to the administration of medications.

SECTION IV: ROLE OF HCPs IN THE PREVENTION OF SA

Table XVIII: Distribution of the respondents' responses on the role of HCPs in the prevention of SA.

Responses	Frequency	(%)
IEC at ANC, ward and/or consultation department	23	43.4
Administration of appropriate prescribed drugs	11	20.8
Maintain aseptic method	2	3.8
Screening and follow-up of high risk mothers	9	16.9
Use of Shirodkar's operation	2	3.8
Avoid frequent vaginal examination	1	1.9
Referral on time	3	5.7
Reassure the patient	2	3.8
Total	53	100

From the table XVIII above, the majority of responses on the role of HCPs in the prevention of SA is 23 (43.4%) IEC at ANC, ward and/or consultation units, next is 11(20.8%) for the administration of appropriate prescribed drugs.

SECTION V: DIFFICULTIES ENCOUNTERED IN THE MANAGEMENT AND PREVENTION OF SA

Table XIX: Distribution of respondents' responses according to the difficulties they do encounter in the prevention of SA

Responses	Frequency	Percentage (%)
Lack of adequate knowledge on the part of health personnel	10	27
Lack of material for the care of patients	6	16
Inadequate or no cooperation of patients	12	32
Patients having financial problems	8	22
Patients coming late for consultation	1	3
Total	37	100

From the table XIX above, the majority of difficulties encountered by HCPs is: inadequate or no cooperation of patients which counts for 12 responses (32%); next is lack of adequate knowledge on the part of HCPs: 10 responses (27%).

Discussions of results, conclusions and recommendations

5.1. Discussion of results

SECTION I: SOCIO DEMOGRAPHIC DATA

The 24 respondents recruited for this study were from varied departments. The majority i.e. 7(29%) were from the gynaecological/general ward, the smallest, i.e. 5(21%) were from the labour room. This diversity of units HCPS was stated by Elizabeth J. Dickerson in her book, “maternal and infant care” is to assure that “competent care should be available to all in order to improve the infant and maternal to all in order to improve the infant and maternal morbidity and mortality rates”.

The distribution of respondents according to the duration in the units/departments show that 7 respondents (29%) has less than 1 year in their service and 13(54%) has 1-5 years; and as such they should have had enough time to get acquainted in their service in order to get experience. However, this does not tie with the statistics collected in the BRH, which shows that in the year 2009, the number of malaria in pregnancy cases was 92, compared to the year 2010 with 310 cases. Also, in 2010, 103(40%) miscarriages from 257 threaten abortion (TA) cases were recorded. This number doubled in 2011, with 545 TA cases out of which 208 (38%) ended in miscarriages. As such, the HCPs and nurses in particular may not be versed with specific nursing procedures of the concerned unit.

The distribution of respondents per professional grade indicates that the majority of HCPs were Nurse Assistants (10 of them i.e. 42%). As such there should be an increase chance for them to carry out activities which are out of their functions or job description. This will result in low quality of work as reflected on the statistics collected in the BRH, and consequently to an increase in the prevalence of SA.

SECTION II: ASSESSMENT OF THE KNOWLEDGE OF HCPs ON SA

The distribution of respondents according to their definition of SA, indicates that only a majority of 14 respondents (58.3%) knows what SA is. 10 (41.7%) were out of track i.e. they did not know what SA is, though well concerned with the issue. This distribution is similar to the one according to the various types of SA where 13 (54%) only said they know the types.

Looking at the distribution according to those respondents’ responses (i.e. the 13 who claimed to know the various type of SA), only 16 responses were gotten, compared to an expected minimum of 3 responses per respondents, i.e. 39 responses expected from them. This shows a lack of knowledge, even for those who said knew about.

The responses on the period of occurrence of SA: up to 16 respondents (66.7%) were for the first trimester only and only 4(16.7%) actually knew that it could happened as well in the 2nd trimester of pregnancy and particularly in the early second trimester, as said by Elizabeth J. Dickerson in book titled, “maternal and infant care”, that: “an early abortion takes place before the 16th week of gestation; a late abortion occurs during and after the 16th week “. So the knowledge on the issue is poor.

For the prevention of SA, it is observed that psychological care at the prenatal period may be out of practice. Only 2(8%) respondents talked of alleviating anxiety, forgetting that this should be coupled with education and adequate medication administration. It is thus obvious that adequate knowledge on the prevention of SA is lacking.

SECTION III: ASSESSMENT OF THE ACTIVITIES OF HCPs IN THE MANAGEMENT OF SA.

The frequency of occurrence of threatened abortion shows that up to 4 respondents (17%) meet TA every day. This means that in a month of 30 days, there is a high probability to meet 120 patients per month if at all they meet 1 patient per day, even though there is a higher chance to get more than 1 patient per day.

Looking at the respondents’ responses on the management of TA, it is clear that HCPs are much more turned to the management with medications, even in their intention of referring to

the doctor. Counseling, psychological care and physical assessment which also include vital signs, frequent observation and follow-up, are less considered; this ties with the fact that most of the respondents are Nurse Assistants, whose role is much more directed towards implementation of the nursing care plans (which are not even taken into consideration).

On the responses on vaginal or rectal examination in TA condition: Out of the 7 (29%) respondents who said yes to it, only 1(14%) gave a logical and acceptable reason of doing vaginal or rectal examination during TA cases, which is “to exclude ectopic pregnancy”. The lack knowledge may reflect poor practice.

For those who were against that practice, only 1(5%) reason was not acceptable i.e. “it can cause the rupture of membrane”. It is then retained that vaginal or rectal examination can only be carried by a professional specialized in the practice, even though it is usually not advisable as a practice.

On the outcome of the management of TA, out of 22 respondents who had encountered TA, 13 (59%) said the cases they managed ended in abortion, it means that there is a failure in its management. To justify themselves, as seen on table XV, it can be observed that all the responsibilities are directed towards the pregnant women and not the HCPs.

For the frequency of occurrence of malaria in pregnancy: the responses gotten from this question as seen on figure 4 are similar to the responses on the frequency of occurrence of TA seen on figure 2. From the 2 figures, (4 respondents from each table with percentages of 16.7% and 17%) it is observed that the percentage in an average of 16.85% is high and there should be a great link between them. It is therefore probable that the occurrence of TA may be mostly due to malaria in (early) pregnancy.

For the management of malaria in pregnancy, only 1 respondent (4%) responded correctly i.e. treatment using malaria protocol, salbutamol protocol and strict bed rest. This is applicable in malaria in late pregnancy. For malaria in early pregnancy, salbutamol being contra indicated, treatment with malaria protocol only and strict bed rest is adequate as 5 respondents answered (21%). The 18(75%) remaining respondents were incomplete in their answers. This indicates poor knowledge in the management of malaria in pregnancy, and hence a probable indicator to the increased prevalence of SA.

On the distribution of respondents according to how malaria in pregnancy can lead to SA as seen on table XVIII 15(62.5%) respondents were corrects in their answers. The parasites cross the placenta and cause premature contractions. In average answers, 4(16.7%) were correct “by causing uterine contractions and by the change of temperature”. A total number of 18 (79.2%) respondents are knowledgeable on how malaria in pregnancy can lead to SA.

On the responses on the effect of quinine on the pregnancy uterus, up to 11 (45.8%) respondents did not answer. 1 (4.2%) “Said it has no effect” 50% of respondents had lack of knowledge in the effect of quinine on the pregnant uterus.

On the precautions to consider in the management of malaria in pregnancy with malaria protocol, up to 23 respondents (67.7%) answered correctly. Pay attention to the flow rate and amount of quinine administered per day. However, this number of respondents is contradictory to those gotten on the effect of quinine on the pregnant uterus as seen on table XIX. Otherwise, for this question the responses could have been 12, rather it is almost the double. However there is knowledge on the precautions to take in the management of malaria in pregnancy.

For the distribution of respondents according to whether a HCP can ignorantly initiate premature contractions in early pregnancy, the majority i.e. 15(62.5%) said yes. This response is quite contrary to those gotten from table XV, where the HCPs declined their responsibilities in the failure realized in the management of some TA cases.

On Yes that HCPs can ignorantly cause premature uterine contractions in the early pregnancy, 15 respondents (93.75%) were directly linked to medications. The reasons given to justify themselves are correct, but the expected nursing role/care is not observed here, since it is supposed to justify table III, where 42% of respondents were Nurse Assistants, 17% were Nurses (SRNs) 8% were Nurse Midwives.

SECTION IV: ROLE OF HCPs IN THE PREVENTION OF SA.

The distribution of the respondents' responses according to the role of HCPs in the prevention of SA the majority i.e. 23(43.4%) of responses is on IEC at ANC, ward and/or consultation unit. Next is the administration of appropriate prescribed drugs, with 11 responses (20.8%). Only 9 responses (16.9%) refer to "screening and follow-up of high risk mother" and only 2 (3.8%) are on the patients reassurance. As such, HCPs and particularly those having a nursing course by profession may not be knowledgeable of their role in the prevention of SA.

SECTION V: DIFFICULTIES ENCOUNTERED BY HCPs IN THE PREVENTION OF SA.

The responses of respondents on the difficulties they encounter in the prevention of SA responses (32%), the majority, is about the inadequate or no cooperation of patients. This group of responses is to be revised because the inadequate or no cooperation may be mostly due to the approach of the HCPs and the nurses in particular, while receiving and caring for the patient. In the next group, 10(27%) were for lack of adequate knowledge on the part of health personnel. This is correctly answered and match with some tables (e.g. table XIX, table XX), confirmation of the lack knowledge on the part of HCPs, as 10 respondents have answered.

5.2. Conclusions

Looking at the distribution of respondents according to the definition of SA, the various types and their reasons of choices, the frequency of occurrence of SA and its prevention, it is worth noticed and retained that HCPs have inadequate or poor knowledge on SA.

The majority of respondents as seen on table III that is 21 HCPs (88%) have a nursing course by profession. And so, their practices towards preventing SA are supposed to be nursing care plan based with holistic approach used. But unfortunately it is realized that from table X which brings out the practices of HCPs in managing TA towards preventing SA, the HCPs (22.71%) use but the drug-based method of prevention. It is also seen on table XXII. This obviously makes their practices worsen the patient's condition through inadequate knowledge as seen on table XIV with 13(59%) respondents confirming the loss of pregnancies they did manage, there is a failure in practice, due to dislocation of roles or functions.

On the role of HCPs in the prevention SA, 2 responses (3.8%) were for patient's reassurance. The psychological aspect of the patients is being neglected in the management/prevention of SA. As such, the follow-up of cases at risk will be reduced (9 responses i.e. 16.9%) as observed on table XXIII.

The difficulties in the prevention of SA have been expressed, but the most prevalent one which is inadequate or no cooperation of patients has to be reviewed because of the approach used by HCPs, as proven in the latter paragraph above, from table XXIII, where psychological care is neglected, which may be the main cause. The most important difficulty is the lack of adequate knowledge by health personnel's.

To conclude, it is worth noting that HCPs are poorly knowledgeable on their role in the prevention of SA, thus contribute less in the reduction of its prevalence.

5.3. Recommendation

5.3.1. To the health personnel

Short term: All nurses concerned should create time to read and learn individually from various available sources about the management/prevention of SA, in order to practice holistically through the use of a nursing care plan and reduce the prevalence of SA in Cameroon.

5.3.2. To the health institutions

Forums on various health issues should be organized accordingly to refocus each health personnel towards his/her domain of activity.

5.3.3. To the government

Medium term

- a• The government should recruited more HCPs, and nurses in particular so as to minimize the load of patients per nurse
- b• The government should facilitate in-service training for Nurses in order to improve in their practices.
- c• Health insurance should be issued to pregnant women so as to substantially improve on their accessibility to health care.
- d• The ministry of public health should supply the TSSRN with updated library and high technologies school learning materials, in order to facilitate the tasks of students.

Long term

The creation of visiting nurse association (VNA), working closely with public health agencies and clinics in order to move its focus beyond the hospital doors and out into the community.

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