



Ministry of Health

**Over treatment of Cervicitis and
the High Prevalence of Reported
Vaginal Discharge among Low
Risk Women in Cambodia**



DFID

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Preface

Vaginal discharge is a main sexual and reproductive health problem usually affects women of reproductive age in Cambodia. The management of sexually transmitted and reproductive tract infections (STIs/RTIs) based on syndromic approach is focused on risk assessment for diagnosis presumptive cervicitis caused by Gonococcus and Chlamydia infections. This approach is used in many health centers in Cambodia where laboratory facilities are not available. However, it has led to overtreatment of cervicitis relative to the prevalence of Gonococcus and Chlamydia infections among low risk women in Cambodia.

In response to this issue, the National Center for HIV/AIDS, Dermatology and STIs (NCHADS) conducted this survey in order to look at the high prevalence of vaginal discharge among low-risk women, which has led to overtreatment of cervicitis in many health centers in Cambodia.

I believe that the findings of this study will assist health care providers to improve STI/RTI case management, especially regarding vaginal discharge, to be more appropriate and accurate.

On behalf of NCHADS, I would like to thank to DFID for financial support, and the people who joined this study, especially NCHADS officers and health care providers and clients of selected health centers who provided useful information for the study.

Phnom Penh, 30th January, 2009



DR. MEAN CHHI VUN

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1- BACKGROUND

In the era of the spread of HIV/AIDS, sexually transmitted infections (STIs) have been found in many epidemiological studies to have a strong association with the likelihood of getting infected with HIV (Cohen et al., 1997). This finding had triggered both political and technical effort to treat STIs for all HIV high risk groups. In Cambodia, the management of STIs has been conducted through the implementation of 100% condom use policy, in which the provision of free STI treatment to all vulnerable individuals is guaranteed. At the early stage of HIV epidemic, there is no comprehensive research investigating the magnitude of STIs in Cambodia. The lack of local political commitment, technical and financial support from international communities was believed to be the factors underlying the short of epidemiological study on STIs. However, it is strongly believed that the prevalence of STIs is high. In 1996, the National center for HIV/AIDS Dermatology and STIs conducted a survey to estimate the prevalence of STIs among female brothel based female sex worker, police and military and women attending antenatal clinic. It has been found that apart from suffering from high prevalence of HIV, direct female sex worker were also suffering from gonorrhoea (23.2%), Chlamydia (22.5%), Syphilis RPR (13.8%), Trichomonas (5.4%)(Leng et al., 2002). More importantly, these findings have been used to implement the WHO syndromic guideline for vaginal discharge.

From public health point of view, it is important to imply an intervention which is cost-effective and sustainable. In the management of STIs infection, patients, especially those in developing country such as Cambodia, may not be able to seek specialized health care services since it is too expensive compared to their daily income. Therefore, it is assumed that the application of syndromic approach to STI cases management is the most appropriate response to STI problem in Cambodia.

The Cambodia national policy and strategies on STI prevention and care, the due interventions focusing on target population (female sex workers) and general population is suggested (NCHADS, 2004). To do so, the ministry of health, in collaboration with WHO, has introduced the implementation of management of STIs based on syndromic approach in 1998 (NCHADS, 2004). This approach has been integrated into health centers where the STI lab is not available and the primary level of care is often occurred. Furthermore, in the year 2000, the STI case

management based on speculum examination and laboratory has been introduced in STI clinic designing to serve female sex workers (NCHADS, 2004). In addition, the speculum examination and laboratory use were also recommended in referral hospitals where some severe STI cases, such as pelvic inflammatory diseases, are referred to for more advanced care.

World Health Organization introduced the syndromic approach to manage individuals with STI symptom such as vaginal discharge (Hawkes et al., 1999). It is believed that syndromic management is an effective and appropriate strategy to manage STIs in the area where laboratory test for individual STIs is impossible (van Dam et al., 1998). It has been found that one of the symptoms included in the WHO recommended guidelines is vaginal discharge. Vaginal discharge is a symptom related to some or all of common reproductive tract infections. For instance, it can be found in *Chlamydia trachomatis* infection, gonorrhea and trichomoniasis. Moreover, non-STI infections such as Bacteria Vaginosis and Candidiasis – which occur as results of the imbalance of normal bacteria in vagina (Patel et al., 2005) - also often presented with vaginal discharge.

After the implantation of WHO recommended syndromic approach for STI case management, there has been no formal evaluation study to access the effect and import of this intervention. However, in 2001, the first national STI prevalence survey was conducted. Although the main objective of the 2001 national survey is not to evaluate the application of syndromic case management, some of its findings may also shed light on the topic on the sensitivity and specificity of the syndromic approach for vaginal discharge.

The first national STI prevalence survey was conducted in Cambodia in which only five target groups were included. Those groups were; Brothel sex workers, Police and women attending reproductive health clinics, military, and indirect female sex workers (orange sellers) (Leng et al., 2002). Surprisingly, it has been observed that STI prevalence for women attending reproductive health clinics was very low. There was no case of Gonorrhea and primary syphilis found in the group. In addition, the prevalence of Chlamydial infection was approximately 3%. Note that, the prevalence among women attending reproductive health clinic is as high as 53% (Leng, 2002).

It has also been observed that the complaint of vaginal discharge is very common among women in South Asia (Kumar, 2001). There is no exception for Cambodia. High percentage of women with low risk of STI seeking treatment at health centers reported having vaginal discharge and/or lower abdominal pain. A report from the national STI survey 2001 revealed that 60% of women coming to health centers complained of having lower abdominal pain and/or vaginal discharge. Subsequently, they have been all managed by health care workers through the use of WHO recommended syndromic approach. As a result, among those who reported of having vaginal discharge and/or lower abdominal pain, only 2% were confirmed to have cervicitis based on laboratory confirmation test.

Therefore, it is interesting to qualitatively investigate the issue underlying the high prevalence of reported vaginal discharge among women with low risk of STIs and to understand process of the implementation of syndromic approach and its consequences of STI management.

2- OBJECTIVES

Two important issues are emerging from the above information. That is; the over diagnosis and over treatment of cervicitis among low risk women, and there are an inordinately high proportion of low risk women who seek health care because of vaginal discharge. These issues are going to be addressed by this study. Therefore, the specific objectives of the study are as follow:

2.1 To access the factors associated with the over diagnosis and over and/or under treatment of cervicitis among low risk women. This will include:

2.1.1 an inquiry to health care providers' definition and understanding of normal and abnormal vaginal discharge, lower abdominal pain and other associated symptoms or conditions; their diagnosis and prescription practices when women present at health centers with complaints of vaginal discharge and lower abdominal pain; as well as their knowledge regarding the over diagnosis and over treatment of cervicitis with antibiotics.

2.1.2 an assessment of the possibility of over treatment and/or under treatment, among health providers, of antibiotics on women complaining of having reproductive health problem; and

2.1.3 an investigation to determine if the over treatment with antibiotics is a result of misreporting of actual drug use. In other word, the over treatment is used to justify the use of antibiotics for other purposes.

2.2 To access the factors associated with the high prevalence of complaints of vaginal discharge among low risk women seeking reproductive health care

This will include an assessment of the understanding among low risk women regarding normal and abnormal vaginal discharge and an inquiry into low risk women's self assessment and health seeking behavior related to RTI, especially vaginal discharge and lower abdominal pain.

The realization of these objectives will have several important points for health program implications, and will contribute to improving the reproductive health services of low risk women. An identification of the factors associated with the over diagnosis and over treatment of cervicitis will provide information that can be used in training programs to improve providers' abilities to better understand what women mean when they say they have vaginal discharge, and to correctly diagnose and treat RTIs among low risk women. This information can also be used to improve rational prescription and dispensing of antibiotics, and possibly contribute to improvements in how the syndromic management protocols are used.

The identification of factors related to the high prevalence of vaginal discharge will provide information that can be used in the development of IEC/BCC programs for low risk women. These programs would be aimed at improving their ability to conduct self assessments to correctly recognize RTI symptoms, and to improve their reproductive health seeking behavior.

To sum up a qualitative study was employed aiming to:

- Access factors explaining the high prevalence of complaining of having vaginal discharge among women in communities

- Explore reasons of over diagnosis of cervicitis and the over treatment of cervicitis among health providers working STD clinic in health centers.

3- METHODS

This section will illustrate methods for site selection, and the whole study procedures, including; the target population of the study, sampling, data collection and analysis for each objectives and sub objectives of the study. It should be noted that this study is primarily qualitative. No attempt is made to draw samples of health care providers and RTI clients that could be considered representative of their total population in the provinces from which they have been selected.

However, a dataset from STI national survey 2001 will also used to compliment the findings derived from qualitative study, consequently, relatively complete information regarding over diagnosis, over treatment of cervicitis and over reported vaginal discharge could be collected. As result, new recommendation could be made based on more accurate information.

3.1 Site Selection

Four provinces, 1 OD in each province and 8 HC in each OD, are selected purposively, based on the following criteria:

- 1) availability of existing information about current staff, records, etc.,
- 2) availability of existing STI surveillance data,
- 3) sufficient numbers of clients to do follow up interviews.

Below are the provinces, OD and the health centers have been selected.

Kampot province (OD Kampot)

1. Health center Kraing Ampel
2. Health center Trapaing Sangke
3. Health center Kaun Sath
4. Health center Prey Khmum
5. Health center Kampong Treng
6. Health center Chakrey Ting
7. Health center Koh Toch
8. Health center Trapaing Lapoa

Kampong Cham province (OD Krek)

1. Health center Pon Lay
2. Health center Daun Ttey
3. Health center Trapaing Pring
4. Health center Beik Pi
5. Health center Korng Kang
6. Health center Kandol Chroum
7. Health center Chong Cheay
8. Health center Tek Chrao

Kampong Chhnaing province (OD Kampong Chhnaing)

1. Health center Kampong Chhnaing
2. Health center Psa Chhnaing
3. Health center Prey Khmer
4. Health center Pong Ro
5. Health center Svay Chrum
6. Health center Cheng Kreav
7. Health center Sala Lek 5
8. Health center Long Vek

Siem Reap province (OD Sothnikom)

1. Health center Sam Raung
2. Health center Kampong Kday
3. Health center Dam Dek
4. Health center Kean sangke
5. Health center Kampong Klaing
6. Health center Khchas
7. Health center Long Vek Roussey
8. Health center Dan Ron

Objective 1: Identification of the factors associated with over diagnosis and over treatment of cervicitis.

A- An inquiry to health care providers:

- *definition and understanding of normal and abnormal vaginal discharge, lower abdominal pain and other associated symptoms or conditions,*
- *diagnosis and prescription practices when women presented at health centers with the complaints of having vaginal discharge and lower abdominal pain,*
- *knowledge regarding over diagnosis and over treatment of cervicitis with antibiotics.*

3.2 Sample Selection and Data Collection and Analysis

Three health care providers who provide STI treatment for female patients (doctors, medical assistants, nurses, midwives...etc) were randomly selected from each health center. Then each health care provider was interviewed. The total number of health care providers interviewed was 96.

In-depth interviews were conducted by a team comprised of four interviewers and one supervisor/coordinator. The team was specifically trained for five day for this study.

The data collected from providers focused on possible factors that could be associated with their practices of over diagnosis and over treatment of cervicitis. This included providers' awareness/understanding of the terms used by their clients for vaginal discharge; the providers' definition and understanding of normal and abnormal vaginal discharge; how they assess and treat women with vaginal discharge; their use or nonuse of the syndromic approach; their understanding of the degree of the severity of vaginal discharge; and their knowledge/perceptions of the effects of vaginal discharge and associated conditions on a women's health.

B- An assessment of possibility of over treatment and under treatment with antibiotics performed by health providers on women with the complaint of reproductive health problems.

In order to answer to this objective, existing dataset from the National STI Survey of 2001 was analyzed to assess the proportion of over treatment of antibiotics. Cross tabulations of these data were created to compare between women with lab diagnosed STIs and the treatment they received to assess correctness of the diagnosis and treatment across different types of vaginal discharge (normal/abnormal). It should be noted that the prevalence of STI among low risk women was very low. This limits the analysis of the prevalence of under treatment with antibiotics.

Additional analysis was also performed estimate the proportion of under treatment of different types of abnormal vaginal discharge and to document the proportion of the total prevalence of vaginal discharge that might be caused by bacterial vaginosis and vaginal candidiasis. The result of this inquiry will have implications for policies that propose to routinely treat women for vaginitis, but not cervicitis, at their first visit with a complaint of vaginal discharge.

C- An investigation to determine if the possible over treatment with antibiotics is a result of drug misuse and it was made up to justify the use of antibiotics for other purposes.

The target population for the attainment of this objective was the patients who were diagnosed as cervicitis, according to their clinic record forms, and were given antibiotics. For each province, five health centers among the eight previously selected health centers were randomly pick. The following were the health centers selected for the following up of patients diagnosed as cervicitis:

Kampot province (OD Kampot)

1. Health center Kraing Ampel
2. Health center Trapaing Sangke
- D- Health center Prey Khmum
- E- Health center Kampong Treng
- F- Health center Koh Toch

Kampong Cham province (OD Krek)

1. Health center Daun Ttey
2. Health center Trapaing Pring
3. Health center Beik Pi
4. Health center Korng Kang
5. Health center Tek Chrao

Kampong Chhnaing province (OD Kampong Chhnaing)

1. Health center Kampong Chhnaing
2. Health center Psar Chhnaing
3. Health center Prey Khmer
4. Health center Pong Ro
5. Health center Long Vek

Siem Reap province (OD Sothnikom)

1. Health center Dam Dek
2. Health center Kean sangke
3. Health center Kampong Klaing
4. Health center Khchas
5. Health center Dan Ron

The last two patients recorded as having cervicitis in these each health centers were followed up at their homes and briefly interviewed regarding their receipt of antibiotics. If they were not at homes, the third or the fourth person was used to replace. The same interview team responsible for the interview of providers also conducted these interviews.

Analysis was conducted by comparing client's clinic records (whether or not antibiotics were given) with the client's response of receiving antibiotics. This was presented as a simple proportion of the clients who did not receive antibiotics, while their record showing that they were treating with it and it is used as an estimate of the amount of misreporting of actual drug use in this group.

Problems in the data collection among follow up patient was the difficulty in locating clients. The period of recalling was another problem since clients might have difficulty time in recalling whether or not she received any medicine, especially when they are not able to read. Every effort, however, was made to locate and interview those clients who were the most recent attendees of the centers.

Objective 2: Identification of factors associated with high prevalence of complaints of vaginal discharge among low risk women seeking reproductive health care.

Two qualitative methods were used to collect information to attain this objective, focus group discussions (FGDs) and in-depth interviews. Low risk women were invited to FGDs to identify the terms they use for vaginal discharge, including any terms used to refer to different types of discharge. These FGDs were also used to document women's definitions and perceptions of normal and abnormal vaginal discharge.

A total of eight FGDs was conducted, two in each of the four provinces. Two health centers among already selected health centers in each province were randomly selected. The selected health centers in each province were as the following:

Kampot province (OD Kampot)

1. Health center Kraing Ampel
2. Health center Koh Toch

Kampong Cham province (OD Krek)

1. Health center Kandol Chroum
2. Health center Tek Chrao

Kampong Chhnaing province (OD Kampong Chhnaing)

1. Health center Svay Chrum
2. Health center Cheng Kreav

Siem Reap province (OD Sothnikom)

1. Health center Dam Dek
2. Health center Kampong Klaing

For each province, the FGD was done in the village where the 2 selected health centers located. The first eight women (RTI clients) who visited the health center the day the research team arrived were invited to join the FGD. If the number was not enough, the most recent RTI clients in the record would be invited to attend the FGD in order to get eight women in the session. FGDs were led a moderator, supported by a transcriber who will take notes and record the discussions with a tape recorder.

In addition, in-depth interviews were used to collect data on low risk women's perceptions of normal and abnormal vaginal discharge, and the reasons for these perceptions; their understanding of the causes of vaginal discharge; the severity of vaginal discharge and its effects on a woman's health; the types of vaginal discharge for which a woman should seek treatment at a health facility; and their understanding of the conditions associated with vaginal discharge such as lower abdominal pain, that would require a woman to seek treatment at a health facility.

In-depth interviews were conducted at the health centers below (the same health centers as the follow up of the RTI clients):

Kampot province (OD Kampot)

1. Health center Kraing Ampel
2. Health center Trapaing Sangke
3. Health center Prey Khmum
4. Health center Kampong Treng
5. Health center Koh Toch

Kampong Cham province (OD Krek)

1. Health center Daun Ttey
2. Health center Trapaing Pring
3. Health center Beik Pi
4. Health center Korng Kang
5. Health center Tek Chrao

Kampong Chhnaing province (OD Kampong Chhnaing)

1. Health center Kampong Chhnaing
2. Health center Psa Chhnaing
3. Health center Prey Khmer
4. Health center Pong Ro
5. Health center Long Vek

Siem Reap province (OD Sothnikom)

1. Health center Dam Dek
2. Health center Kean sangke
3. Health center Kampong Klaing
4. Health center Khchas
5. Health center Dan Ron

The first two RTI clients visited the health center the day the research team arrived were invited to participate in the in-depth interview. If any individuals refused to the interview the third or the fourth or even the fifth client would be invited. If there is no RTI client, the two most recent RTI clients in the record would be invited for the in-depth interview.

To analyze data from FGDs and in-depth interviews, content analysis was applied. This analysis would generate better understanding of what women mean when they describe problems of their reproductive tract, and how problems were grouped and ranked in terms of its severity. In addition it would help defining how the words and constructs used by clients related to the biomedical constructs of providers, and identify key concepts to build a common understanding of what women and providers mean.

To sum up, the data analysis methods were both quantitative and qualitative. The quantitative analysis would use the secondary dataset from the national STI survey 2001 in order to investigate the sensitivity, specificity, positive predicted value and negative predicted value of syndromic approach when using to manage STI cases among women attending reproductive health clinics. In addition, the result of from qualitative analysis would be presented in narrative form.

Table 1: Overview of Methodology

Objectives	Target Population	Data Source	Ns
1. Access the factors associated with over diagnosis and over treatment of cervicitis			
a) Health care providers understanding of normal and abnormal vaginal discharge and associated symptoms, and diagnosis and prescription practices	Providers	In- depth Interviews	96
b) Health care providers over treatment and under treatment with antibiotics	Women attending reproductive health clinics	National STI Survey 2001	451
c) Misreporting of actual use of antibiotics	RTI clients who reportedly received antibiotics	Interviews	40
2. Access the factors associated with high prevalence of complaints of vaginal discharge	Low Risk Women	Focus Group Discussions	8
		In-depth Interviews	40

4- RESULTS

4.1 Finding from the STI National survey 2001

4.1.1 Demographic Characteristics

In the 2001 STI national survey, 451 women attending reproductive health clinics, with the mean age of 26.5 years old, were recruited. About 99% of them speak Khmer and approximately 62% aged between 20 years old to 29 years old.

4.1.2 Sexual experience

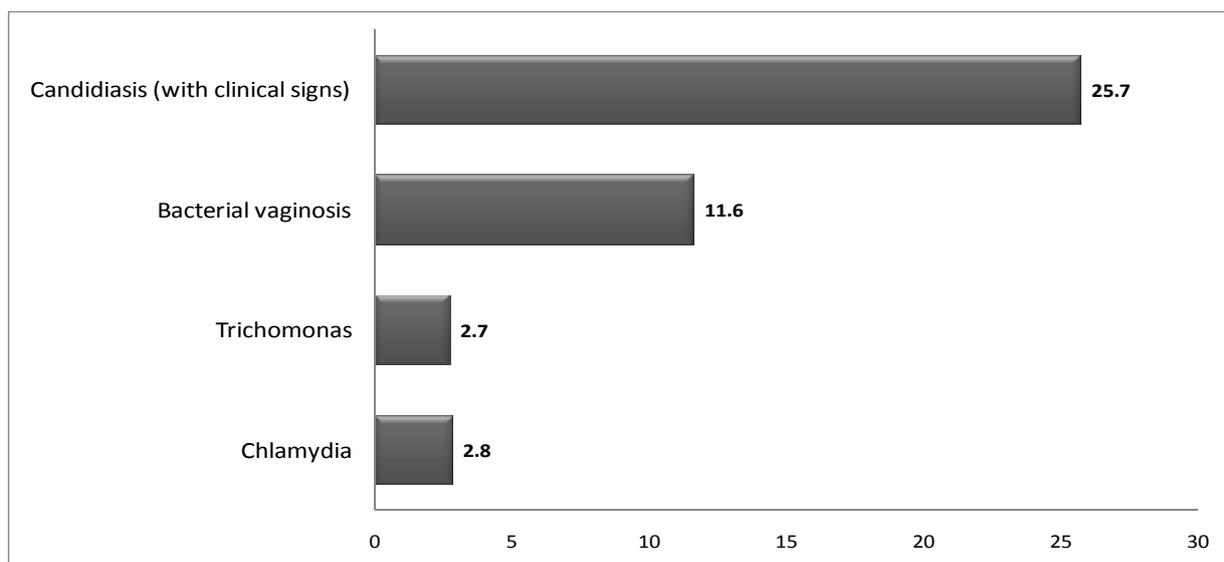
Almost all of women attending reproductive health clinics and agreed to participate in the survey were married women (98.6%) and only 0.7% was never married. The reported age at first sex was 21 years old. Furthermore, 85.8% reported having their first sex at the age between 15 years old to 24 years old.

Table 2: Demographic characteristic of women attending reproductive health clinics

	RHC Women (n=451)
Mean age	26.5 years old
Age groups	
<15	-
15-19	9.1%
20-24	38.6%
25-29	23.3%
>=30	29.1%
Marital status	
Currently married	98.6%
Never married	.7%
Divorce	.7%
Separated	--
Widowed	--
Mean age at first sex	20.9 years old
Age at first sex	
<15	--
15-19	42.8%
20-24	43.0%
25-29	11.1%
>=30	3.1%

4.1.3 Prevalence of STI infections and other reproductive tract infections

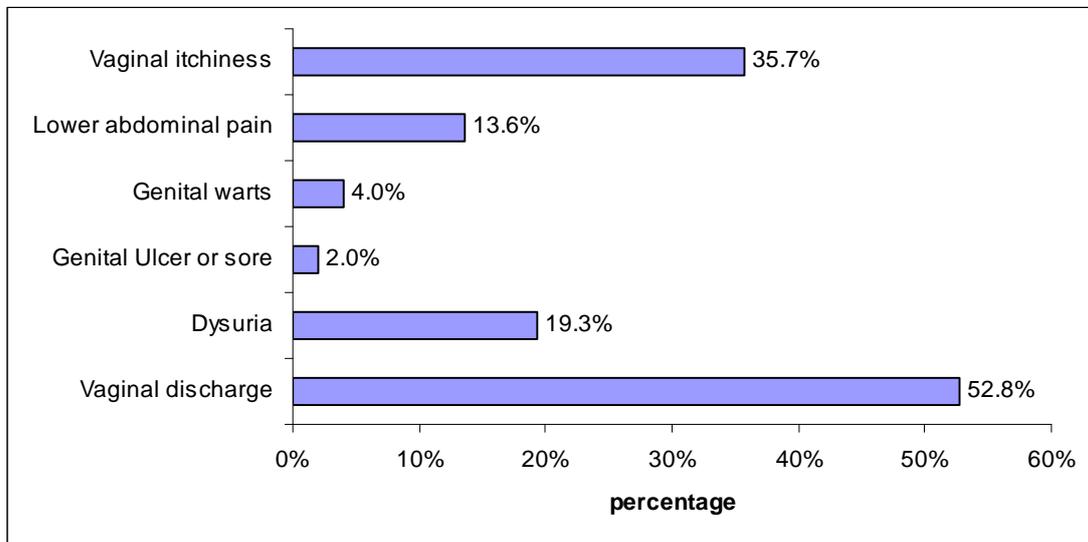
Generally, women attending reproductive health clinics have a low prevalence of any STIs (6.1%). There was no woman positively tested for Gonorrhoea. However, only 2.8% and 2.7% of women were suffering from Chlamydia and Trichomonas, respectively. Surprisingly, about 11.6% of women in the national survey were found to have bacterial vaginosis and 44.6% found to have vaginal candidiasis. However vaginal candidiasis without any symptom or sign cannot be translated as infection. Only 25.7 % are symptomatic candidiasis.



Despite having low prevalence of STIs, about half of women complaining of having vaginal discharge and about 36% of women reported having vaginal itchiness. These findings are consistent with the high percentage of women suffering from vaginal candidiasis.

With physical examination, about only 30% of women found to have vaginal discharge and about one fifth of all women having cervical erosion. It has also been found that women with vaginal discharge were more likely to have infected by bacteria vaginosis (OR=1.7, p=.04). The green and white color vaginal discharge were also strongly associated with the presence of candidiasis, with the odd ratios of 5.1 (p=.01) and 2.2 (p=.04), respectively.

Figure 1: Reported reproductive track symptoms



4.1.4 Risk behaviors and vulnerability

Although approximately 65% of women attending reproductive health clinics reported having vaginal discharge or lower abdominal pain, very few of them reported having high risk behaviors. For example, only 2.5% of them reported having more than 1 sexual partner. In contrast, some women acknowledged that their partner went drinking and dancing or had sex with other women (40%), their partners had some symptoms (2.9%) and their partners were ‘womanizer’ (7.3%). This reflects that, women themselves do not have significant risk behaviors towards STI infections, but their husbands do.

4.1.5 Associations between genitourinary symptoms and STIs

Since the prevalences of STIs among women attending reproductive health clinics were low, the analysis to examine the associations between genitourinary symptoms and the presence of STIs could not be performed. However, results from other female group in the 2001 STI survey; female sex workers, showed that only having fever is strongly associated with have cervical infection (OR=3.5, 95%CI: 1.4 – 8.4) and having any STI (OR=4.1, 95%CI: 1.6 – 10.2). However, these associations were only found in univariate analysis. Paradoxically, vaginal discharge, dysuria, lower abdominal pain and itching were not significantly associated with having either cervical infection or any STIs.

Besides, some clinical symptoms such as; purulent cervical discharge, cervical friability and cervical erosion have shown potential link with cervical infection in the univariate analysis. However, their estimates are not precise.

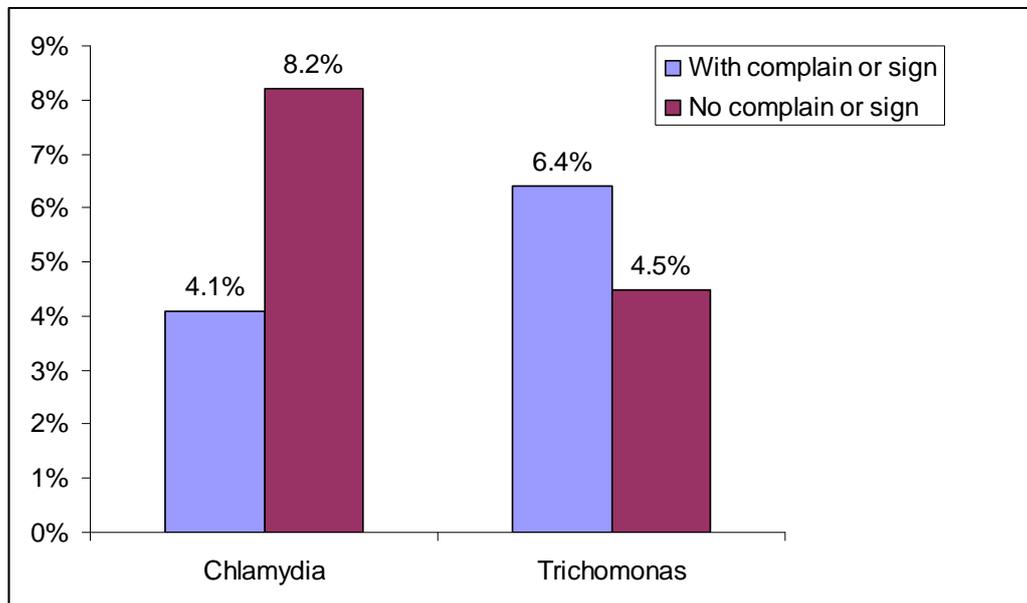
Table 3: Associations between clinical sign and STIs (among direct female sex worker in 2001 STI survey)

	Cervical infection		Any STIs	
	OR	95% CI	OR	95% CI
Vaginal discharge	1.4	.82 – 2.5	1.4	.82 – 2.3
Purulent vaginal discharge	17.0	2.4 - 148	10.7	1.2 – 92
Cervical friability	1.6	.99 – 2.6	1.4	.92- 2.3
Cervical erosion	2.7	1.3 – 5.4	1.8	.91 – 3.6

4.1.6 The STI prevalence among women complaining of vaginal discharge and/or lower abdominal pain

Since 2001 STI survey collected specimen for confirmed diagnosis STI in laboratory, it is possible to compare the proportion of women who truly have STIs between a group of women who reported of having vaginal discharge and/or lower abdominal pain and the group that have no symptoms. As result, the proportion of women who have positive test for Trichomonas in the group with complain or sign was not significant different from the group who had no complain or sign. For those who test positive for Chlamydia, paradoxically, those who reported no symptom or any sign of vaginal discharge and/or lower abdominal pain were found to have the prevalence of Chlamydia two times higher than the group who present symptoms and/or signs.

Figure 2: Proportion of STIs among women with and without vaginal discharge and/or lower abdominal pain



4.1.7 Sensitivity and Specificity of the syndromic approach on vaginal discharge

It has been found that 46 female out of 427 women attending reproductive health clinics selected for 2001 STI survey were diagnosed as having cervicitis based in place syndromic approach for vaginal discharge. From STI lab, only 12 women, out of 427, were found to have positive test for Chlamydia. Assuming the results from STI lab were our gold standard, we could set up cross tabulation as follow;

Table 4: Sensitivity and Specificity of the provider used method

Providers decision	<i>STI laboratory results for Chlamydia</i>		
	Positive	Negative	
Having cervicitis	0	46	46
No cervicitis	12	369	381
	12	415	427

From the above 2x2 table, it has been found that sensitivity of the method provider used was 0%. That is; none of the true case was detected through the use of in place syndromic approach for vaginal discharge. On the other hand, the specificity of the method providers used was 88.9%, which means that about 11% of women, who have no disease, were over diagnosis as having

cervical infection caused by Chlamydia (false positive). Consequently, health providers might also over treat for cervicitis 11% of women who were actually not suffering from cervicitis.

4.2 Finding from Qualitative analysis

4.2.1 Sample size

From the fieldwork, 114 patients and health providers were in-depth interviews. In addition, 8 focus group discussions, in which 8 participants were participated, were conducted.

Table 5: Number of participants in each data collection tool

	In-depth interview	Focus group discussion	Follow up interview
Health providers	75	--	--
Patients	39	84	23
Total	114	84	23

4.2.2 Emerging themes

Five interesting themes have been emerged from in-depth interviews and focus group discussion of women coming to health centers for their vaginal discharge and health providers who manage STI cases through the use of syndromic approach for vaginal discharge. Those themes are; knowledge about vaginal discharge, over report of vaginal discharge, effect of vaginal discharge on women, over diagnosis and over treatment of cervicitis, effect of syndromic approach on the treatment of cervicitis and the new practice of syndromic approach.

4.2.2.1 Information regarding vaginal discharge

Normally, vaginal excretes secretion to clean itself and to maintain its acidic environment. This vaginal secretion is vaginal discharge. Therefore, physiologically there are normal and abnormal vaginal discharges. The different between the two are often based on its color, smell, the characteristic of the substance, as well as other clinical sign.

To women with low risk of having STI, vaginal discharge was commonly called '*Tlaak sar*' which means '*white discharge*'. One health worker remembered that one of her patient called vaginal discharge as '*Reak sar*' which means '*white diarrhea*'. In addition, '*Red diarrhea*' was considered as sever abnormal discharge. Based on this definition, it might be possible to imply

that the severity of vaginal discharge had been defined based on a continuum of color which ranging from white to yellow and to red. This continuum represented the aspect of vaginal discharge from normal to severe discharge. Discharge with yellow color was the most common symptom reported when women described the characteristic of their discharge which led them to seek care at health centers.

Similarly, one of the women explained that *'abnormal discharge has yellow color and later it becomes ripped – ripped [reddish] is similar to having period'*. So, the red color may be described when there is abundant amount of blood in the discharge or even bleeding from vagina.

'Normal vaginal discharge is transparent and mucus, with slight discharge, however I'm sure about it'

'Normal discharge likes banana resin and there is no lower abdominal pain'

Many women were not capable of distinguishing normal from abnormal discharge despite the fact that vaginal was the symptom that causes them to come to health centers. Very few knew that having abnormal discharge had link with the presence of infections in their reproductive tracts. Some women believed that their vaginal discharge was caused by using condom or having frequent sex. Other women tried to link their vaginal discharge to other sources such as food, some practices or even the existence of parasite in their body.

'Baby girls who were breastfed for long period of time will have vaginal discharge when they grow up'

'Eating egg plant or bamboo shoot or Sa-om (a kind of leaves) in the evening also cause vaginal discharge'

'Having intestinal worms also cause vaginal discharge'

'I was told to drink hot water to prevent vaginal discharge...'

One woman believed that taking 'hot drug' would cause the discharge, however she failed to elaborate what was considered as 'hot drug'. Moreover, many women acknowledged that they did not know the cause of the vaginal discharge and they were curious about the cause of their discharge.

'I don't know what cause of vaginal discharge'

'I have discharge since I was 15-16 years old...before I got married'

'I have heard that vaginal discharge is transmitted by partners who had other partners'

'I don't know what causes vaginal discharge, but I had a feeling of burning in my throat, lost appetite and then having abdominal pain'

'I used to hear that vaginal discharge is caused by unhygienic or unclean body'

It appears that women who have vaginal discharge got information from two sources; 'closed female relatives' and 'health professional'. In other words, we can categorize these sources into formal and informal. The former represents the sources of information delivered by skilled health workers or other types of training about the discharge. Interestingly, very few of participants learnt about their vaginal discharge from formal source of information.

'I know it [discharge] from my mother...I only knew what she knew'

From one focus group discussion, all participants agreed that they got their knowledge about vaginal discharge from their parents or older generation.

*'I got knowledge from my ancestors, such as my mother...'
'...my sister-in-law told me that I had vaginal discharge'*

There is one example in which health care worker or television was having role as source of vaginal discharge for women. However, very few women said so.

*'I learn word vaginal discharge from a health worker'
'I heard that [vaginal discharge] from TV'*

From health worker perspective, vaginal discharge is technically called 'leucorrhoea' and the common cause of vaginal discharge among these women was not having STIs but the hygienic problem. That is; their infection was not only transmitted through sexual contact, but the lack of body sanitation.

'... Cause of discharge is the lack of sanitation. In cities, women usually have bath in bathroom, so they can take off all their cloths and wash their body thoroughly...while women in rural areas are having bath with their clothes on... and they use water from pond or streams'

'Some vaginal discharge is caused by the lack of body sanitation'

'Vaginal discharge caused by cervicitis is transmitted from her spouse'

'Vaginal discharge is caused by Chlamydia, Gonococcus, Trichomonas, Candidas'

'We should also look for additional information such as history taking, profession, partner having STIs symptom or risk behaviors'

Interviewing with trained health workers revealed that majority of them was able to describe the characteristic of normal and abnormal vaginal discharge.

'Normal vaginal discharge is odorless, uncolored, like white egg, and it occurs during pregnancy, breast feeding, after intercourse, pre-menstruation, painless, during sexual intercourse'

'Abnormal vaginal discharge is purulent, bad smell, slight or large quantity, pain during intercourse, blue or yellow, associated with clinical sign and itchiness'

The fact that vaginal discharge can have unknown causes make it harder for women who are suffering from it or health workers to understand and identify the main cause of vaginal discharge. In this case, health care workers have to face with uncertainty when trying to make diagnosis or treat it and it's even harder to explain to women who are suffering from it.

'Many women reported having vaginal discharge even before she has sexual relationships'

Health care worker observed that the knowledge about vaginal discharge is low among women who presented with this symptom.

'Very few patients (2/10) know that they have vaginal discharge. Majority of them complain of being permanently wet on their genital region or lower abdominal pain'

Although vaginal discharge is commonly reported when women seeking services at health centers, women themselves still considers this symptom as a shameful disease. This may be because women believed that vaginal discharge is one kind of sexually transmitted disease. So, when having it, it implies that their husbands or women themselves maybe having multiple sexual partners.

'Some patients are so shy...they hide it [vaginal discharge] and said that they are suffering from lower abdominal pain...later they reveal that they have vaginal discharge'.

4.2.2.2 Over report of vaginal discharge

Based on the response from in-depth interview and focus group discussion among women participants, it is clear that, to these women, vaginal discharge is considered to be an illness, not a symptom resulted from an illness. In Khmer (Cambodian language), vaginal discharge is called ‘*rok talak sar*’ which means ‘*white discharge illness*’.

‘I’m wondering why women suffer from such disease [vaginal discharge]. It is not treatable’

‘When I have this disease, I go to clinic to seek treatment’

Thus, all aspect of vaginal discharge is perceived as a disease with different of severity and women are expected to be immediately treated. Consequently, women become very concern about their vaginal discharge.

‘Vaginal discharge, without treatment will cause cancer, especially for blue discharge so I need to seek care at health center’

‘Vaginal discharge may cause malformation on unborn baby’

Furthermore, women will not feel relax when having been told that their discharge is normal and no medicine is needed. The lack of knowledge about vaginal discharge may also push women to desperately seek treatment.

‘I’m concern if I have vaginal discharge, I might be infected by HIV or other STDs’

‘Even vaginal discharge likes normal; I have to seek care at health centers because I don’t know its cause’

‘All women should go to seek care at health center for any kinds of vaginal discharge but for me, I go there only if I have much money’

‘If vaginal discharge is abundant, profuse, we need to seek care if delayed; it will become severe and incurable’

‘I went to the consultation, I did not receive any drug, and then I went to the market (pharmacy)’

So, it is clear evidence that the commonly reporting of having vaginal discharge may have association with the lack of knowledge about normal and abnormal discharge as well as the over concern about the consequences of having vaginal discharge.

4.2.2.3 Effect of vaginal discharge on women

As we discuss above, the effect of vaginal discharge on women is considerable. Vaginal discharge poses burden on the well being of women in all aspect of life; financially, physically and mentally.

In addition to their household expense, women who suffered from vaginal discharge have to spend additional money to treat it and since this symptom is often recurrent, women may spend a lot of money to control it.

‘Having chronic vaginal discharge may weaken women; consequently, they can no longer work productively and leading to losing support for family’

Physically, women who have vaginal discharge often complaint of weakness and having hot feeling in their chest and it also affect the appearance of women

‘Women skin became dried, darker...look unhealthy...’

‘Chronic vaginal discharge without treatment will affect woman’s health severely till die’

In addition, women are also showing very stressful feeling and worries about vaginal discharge.

‘...feeling shameful...’

‘I have heard someone said something about discharge and I’m worry that later I will have cancer... that’s why I’m seeking treatment from all sources’

‘I heard having vaginal discharge may make women weaker and thinner and ultimately die...’

4.2.2.4 Over diagnosis and over treatment of cervicitis

It has been found that women with vaginal discharge, even they have normal vaginal discharge, were treated by health workers at the health centers. However, the purpose of this treatment is not for treating the discharge but is to compensate the time patients spent for coming to health center. This practice often lead to the over treatment. On the other hand, patient who are seeking treatment from health centers always expect to receive some medications for their complained symptom or disease, therefore, without getting any medication for their trip to health centers may discharge them to come back next time and they may go to pharmacy to buy drug when they have diseases in the future.

'If the discharge is normal, I give one capsule not for treatment but for patients who came to the center, if we don't give them anything, I think, it is not good... at least we give them 'Paracetamol...'

This practice is commonly observed at health center. Moreover, it is consistent with what a patients described when they came to visit health center for their vaginal discharge.

'I went to a health center and I met with male health providers. He asked me what I came for. I said I came for. I said I came for drug for vaginal discharge. He asked little amount of discharge or a lot? I said, medium. He asked if it smell. I said no. Itchy? I said no. Do you have any abdominal pain? I said no...then the health professional gave me prescription paper to pick up drug from pharmacy... I got two types of medicines; yellow tablets and white tablet and he did no do any physical exam'

Another factor that also contribute to the over diagnosis and consequently over treatment of cervicitis is lack of capability among health workers regarding the management of vaginal discharge. This is true, because there are very few doctors working at health center level. In case of doubt, some health workers often provide treatment for abnormal vaginal discharge that includes all vaginitis or cervicitis. This type of treatment is not specific and it just simply leads to over treatment of cervicitis.

*'When we are not sure we just think of cervicitis and treat accordingly... this prove to be more effective – patients reported having no vaginal discharge for long period of time'
'I don't know which one is cervicitis or vaginitis... I just gave information for vaginal discharge'*

'I think the treatment for both, cervicitis and vaginitis, is better than any treatment for individual disease because the treatment is almost the same, we just add more antibiotic'

In addition, health workers considered cervicitis is one of the major diseases causing vaginal discharge, so they are willing to over treat this disease rather than failing to treat it. Again, this practice will lead to over treatment of cervicitis at health center throughout the country.

*'When using speculum and seeing red cervix, I have to treat for cervicitis...I've rather over treat as cervicitis rather than I let cervicitis goes untreated'
'In case we are not sure whether it is cervicitis and there is no clear history we treat as cervicitis to prevent untreated cervicitis'*

Another important factor that leads to over treatment of cervicits is the failure to strictly follow the algorithm of syndromic approach. That is; health worker may use their own way to manage

the symptom of vaginal discharge. For example, health workers may include the distance of patient residence into his/her consideration before prescribe drug to patients with vaginal discharge. Since the health provider believe that living far away from health center may prevent patient to come to seeking treatment for their severe disease on time. Therefore, they are better give treatment for their cervicitis which is considered to be more serious than vaginitis.

For example, one of the health care providers said that *'I do not always treat vaginal discharge as cervicitis, mostly I treat it as vaginitis. But if I'm not sure and patient is living far from health center (4 to 10 km) – it depends!'*

It has been found that some health providers have not put their best effort on seeking for the cause of vaginal discharge. It may be possible that those particular health workers might be not capable of doing their task or too busy with other jobs or even they do not care about making accurate diagnosis.

'Patient has vaginal discharge and I considered it as STI and treat with STI treatment drug'

Some other health providers acknowledged that they cannot make an accurate diagnosis because they always do not have enough time as they wish. Having very short consultation time with patients does not allow health workers to gather all information they need to make a good diagnosis and they couldn't clearly explain to patient what had happened.

'we cannot provided 10 minutes for each patients...3 minutes is the most (it's not the principle)... since doctor have to run out-patient consultation, treat in-patient, attending meetings,...it is causing poor quality of services'

To sum up, some factors such as; lack of knowledge on how to manage vaginal discharge, shortage of time, lack of regular supervision on the implementation of syndromic approach may attribute to the over diagnosis of cervicits and consequently its over treatment.

4.2.2.5 Effect of syndromic management on the treatment of cervicitis

Thus far there is no criteria to evaluate whether the use of syndromic approach success or not. One common practice often used at health center is the return of patients. That is; if patient return with vaginal discharge after treatment, that will be considered as a failure. However, it is possible that recurrence of vaginal discharge among treated patients does not always mean the treatment is bad since vaginal discharge can be caused with varieties of causes.

'if women return to the clinic complaining the same discharge means the failure of treatment'

Some health providers said about advantages of syndromic approach such as; its effectiveness, simplicity and the clarity of its guideline. Some said that the effectiveness of syndromic approach is very high. Syndromic approach can be used in the areas where the human resources are limited and health infrastructures are poor. Syndromic approach does not require much training for health worker who use it and there is no medical devices needed.

'Syndromic approach has a success rate of almost 100%'

'It is very good especially for places where there is no lab and no midwife to speculum examinations'

Some health workers completely trust the instructions given in the syndromic approach and they completely follow those instructions without questions when managing vaginal discharge.

'The treatment follows the syndromic approach, which is on my table...I exactly follow the chart...I don't need to think because everything on the chart had already been studied'

However, many disadvantage of syndromic approach have been mentioned by health providers. After having been using syndromic approach some observed the gap in making diagnosis of vaginal discharge when using no physical examination such as speculum.

'If we got wrong or incomplete information from patients...our diagnosis and treatment will be wrong'

Sometimes using syndrome approach does not guaranteed that the responsible agents have been eliminated, since the treatment is develop to attack STIs as the whole package, which is very different from treating STI individually. This type of treatment may result in not only the

resistance of antibiotic but also it waste of medicines. Another consequence of over use antibiotic is the damage the useful bacteria in vagina and then it intensify vaginal discharge.

'Syndromic does not consider drug resistance'

'Over treatment with antibiotic will cause drug resistance, side effect, fungus – candidiasis..., waste of drug...'

'If following syndromic approach, it wastes of medicines because we give 2 drugs for two diseases, but treat only one'

Although, it has been claimed that syndromic approach does not required a lot of training, but training is essential. Without training, health workers are not able to correctly follow the algorithm of the syndromic approach. At the health center level, it has been observed that there is still a problem of shortage of health workers who have trained in syndromic approach. Therefore, at some point there is no trained health worker to manage vaginal discharge. Consequently, management of vaginal discharge based on syndromic approach might not be correct.

'The one who trained in using syndromic approach do not treat... while the one who didn't train treat...'

Another weakness of syndromic approach is there the use of some sensitive questions in the process of making diagnosis. Women patients are not able to talk freely when they are asked by health workers on their sexual practices, and it is even worse when being asked by male health workers. So, when male workers assess the risk behaviors of women who have vaginal discharge, there will be a real challenge and the information they got from female patient might not be accurate.

'If the patient looks well behave, I'm not dare to ask if she have had extra marital parnters'

'For married women, I do not dare asking if they have sexual partner other than their husband because I'm afraid they get upset...'

'Asking sexual history to differentiate cervicitis from vaginitis is difficult, especially I'm a man'

Some health workers found out that some instruction in the guideline are too hard to follow. For example, to treat sexual partner of women is not easy to manage. Some health worker are afraid

that by asking women's partner to treat for STIs, the disease status of women will be uncovered and women might be abused by their husbands or partners about having STIs. Secondly, some male partner or husband do not willing to cooperate with idea of treating both of them or get rid of the STIs.

'I found that treating sexual partner is very difficult only at my center, but at all health centers...one way I can do is to treat wife without revealing to their husbands'

In addition, some health worker recognize the problem of over treatment of cervicitis based on the use of syndromic approach and other factors such as; the lack of knowledge of using syndromic approach, the lack of consultation time with patient, the difficulty in asking sensitive questions and other practices. Thus, the report on the prevalence of cervicitis or vaginitis associated vaginal discharge reported from health center though out the country is not reliable.

'The use of syndromic approach will over treat a lot of diseases and collectively in the whole country it will affect the report...National center for HIV/AIDS will not understand when analyzing the report'

4.2.2.6 New practice of syndromic approach

Generally, it has been observed that the usage of syndromic approach among health centers in Cambodia does not follow the same algorithms. There are some common practices found at some health centers in addition to syndromic approach and those practices may lead to over diagnosis and over treatment of some uncommon STI infections such as; cervicitis.

The sole use of syndromic approach is become uncommon now and some of health provider report no longer uses syndromic approach. Some of the reason for not using only syndromic approach is lack of success in treating vaginal discharge.

'I used to use syndromic approach but now I forget it all'

Instead, in order to increase the effectiveness of the syndromic approach some health providers have modified their practices by adding the use of speculum. This practice is also recommended by WHO to use elsewhere, but not in Cambodia. The processes of vaginal discharge management commonly used in some health centers selected for the study are:

- asking any sign before having discharge...such as abortion
- asking about husband STI status
- Duration of discharge
- Discharge characteristic and other related symptoms
- Use speculum in women is not pregnant

There are other factors health providers have to think pay attention in order to improve their quality of their STI management cases. Originally, syndromic approach has been developed to implement in the areas where the STI prevalence is high, such as some country in Africa.

Therefore, in Cambodia, where the STI prevalence is not very that high, the sole use of syndromic approach in Cambodia may not be as effective as expected.

'I'm not sure if we just asking...For me I need to use speculum to confirm what I thought about the source of discharge'

'If we are not sure of cervicitis, we follow the syndromic approach and it may also need to use speculum. If the patients have a history of having cervicitis we don't need to use speculum'

'First asking history of the patients and their partners, then asking characteristic of discharge. Then [I] use speculum to check'

'The use of syndromic approach only may success about 80%, if we additionally use speculum we may increase the effectiveness to 100%'

Although, the diagnosis of vaginal discharge is correct, the success of the treatment is not effective if the patient does not follow health provider instruction on the use medicines. For example, level of adherence is vital. Some patient report having severe side effect and reported of stop using prescribed drug.

'Some patients do not try to take medicine as we prescribe (low adherence), example; sometimes I give 56 tablets of Erythromycine ...the patients took it for only 3 days then stop...thus there is no effect'

The use of speculum has been seen as a confirmed diagnosis tool for treatment of vaginal discharge, because the patients might be not able to provide accurate information regarding to their symptoms. Therefore, if we only based on algorithms that use only information health providers collects from patients may not be accurate. So, the use of physical exam is required.

'It effectiveness is about 80% because some patients hide some symptoms or risk behaviors...thus we misdiagnose the disease...in my opinion I think we need to use speculum plus asking history to get 100%'

'I think syndromic is not enough, we need physical examination...I have met 2-3 cases in which patient complaining of having lower abdominal pain and vaginal discharge and when I did physical exam, I found appendicitis...'

'If patient complaints of having lower abdominal pain, I have to use speculum to exam before giving treatment'

'If we are not sure whether cervicitis or vaginitis, first we ask for history...and if still not sure we use speculum'

Some health workers suggested that speculum should use when there is a case of doubt or when the disease looks serious.

'I need to use only when the discharge is serious'
'If we use speculum we can differentiate cervicitis'

However, some health providers may also cautious about the practice of using speculum in addition to the application syndromic approach because of the cultural sensitivity. Women usually do not willing to allow men to perform the speculum examination and men themselves also feel uncomfortable doing it. As the result, some men may be reluctant to make diagnosis of vaginal discharge by using speculum.

'We don't use speculum because we are men'

One of the most important factors is time. The shortage of consultation for patients is responsible for most of reasons of the failure of the treatment, no matter whether the speculum is used or not. Within a short meeting, health providers cannot collect all the useful information regarding the symptom and they also are not able to explain to patient what were happening, who to use prescribed medicine correctly, and what the patients are expected to comply in order to treat the disease they have.

'I don't know how to use capsule ... and the capsule are here, I only take the tablet...they did not tell how to put the capsule into vaginal'
'The doctor do not explain anything because there were a lot of patient waiting'

Enforcement of compliance is very important because low compliance may result not only the failure of the treatment but also the occurrence of drug resistance. Moreover, low adherence patients may return to clinic and reporting the same vaginal discharge, this will lead to the confusion among health providers to reconsider their diagnosis and they may try to over treat in order to eliminate vaginal discharge.

'I have vaginal discharge all the time and when I take the medicine, the medicine have strong effect – I lost my appetite, so at the beginning I take the tablet, then I skip it then I retake it'

5 DISCUSSION

Through the use of content analysis five main themes have been emerged from in-depth interview and focus group discussion of health providers at health centers and patients who sought treatment for vaginal discharge.

No theme is sufficient, or necessary to explain the objectives of the study. However, it has been observed that these themes are interacting in order to explain why there is problem of over reporting of having vaginal discharge among women seeking health services and the report of cervicitis and over treatment of cervicitis.

Over reporting of abnormal vaginal discharge is responsible by both patient and health provider factors. It is commonly found that women found all vaginal discharge is a kind of a disease and sometimes 'a chronic disease'. Moreover, the knowledge about vaginal discharge among women seeking services at health center is relatively poor. Majority of women have no idea about what might cause them to have vaginal discharge and since vaginal discharge is one of a non specific syndrome by itself, it cause a lot of misunderstanding among women in general, and specifically among women who are suffering from this symptom. In addition, there is clear evidence that women who came to seeking treatment for vaginal discharge at health centers may feel very dissatisfy if they haven't received any medication for their complaint symptom, even though that is vaginal discharge is a normal one. The worry, the lack of knowledge may make women to exaggerate the intensity of the symptom or even give inaccurate of the characteristic of the vaginal discharge.

What are worse, health providers who meet with these patients very frequently do not have enough time to ask about the characteristics related to the symptom women complained and physical exam are very rarely conducted. Consequently, health provider may diagnose normal vaginal discharge as abnormal vaginal discharge just because they have based their decision on false information about the characteristics of the normal vaginal discharge. Subsequently, the over treatment of vaginal discharge may follow.

In terms of over diagnosis of cervicitis over hypothesis is the use of syndromic approach for vaginal discharge, knowledge of health providers about STIs and the lack of time for patients are the underlying factors. ***Syndromic approach for vaginal discharge is not a specific algorithm for treating cause of cervicitis. It may be useful for the management of vaginitis, but not cervicitis.*** From flowchart of syndromic approach for vaginal discharge, the difference between diagnosing vaginitis versus cervicitis is only affirmative responses of the few questions on risk behavior of women as well as their male partners.

Risk assessment:

1. Age >25 years-old
2. Single but sexually active
3. Have new partner in last 3 months
4. Have more than 1 partner in last 3 months

If the answers are “yes” for 2 or more questions, treat for cervicitis.

Interestingly, those questions are very sensitive to women in communities. Actually, having extramarital sexual partner among women is a sin in Cambodian society and women who came to the clinic may not willing to inform their health providers even if they were asked these types of questions in secure settings and they completely feel that their answers to those questions will be kept confidential. What is worse, some health providers are men and asking such questions to women patient are inappropriate. However, from the observation, due to the space constraint in the health center, many women are sitting in the close approximately from the table where other women and health provider discussed about their symptom. In these insecure settings and the lack of ability to handling sensitive questions among health providers may lead to the over diagnosis of cervicitis.

One of the practice commonly found during the field work also contribute to the over treatment of cervicitis. Majority of health providers believed that cervicitis is severe than vaginitis. It

means that; women who have intense characteristic of vaginal discharge, such large amount of discharge or intense pain is more likely to be cervicitis than vaginitis. Consequently, health providers will give cervicitis treatment to women. Besides, in case health providers are not sure about their diagnosis, they often provide both treatment (vaginitis and cervicitis) to women because they do not want to miss to treat cervicitis. Again, the lack of time for consulting with patients may make the matter worse because it need time to make patient feel comfortable at the clinic and feel open with health providers. Therefore, patients may only partly tell health providers about their symptoms and since the consultation time does not allow health providers to search for the other missing information, it makes the diagnosis indecisive. Consequently, health providers are willing to treat women with abnormal vaginal discharge as cervicitis.

Another hypothesis of over diagnosis cervicitis is that some health workers may pretend as they treat cervicitis, in stead they try to illegally taken drug for cervicitis to sell at the market. However, after conducting in-depth interview with some patients who received treatment for cervicitis, there is no evidence to support this claim. Surprisingly, an unexpected theme has been found; the lack of knowledge about their symptom among women with vaginal discharge and more importantly the low knowledge about medicine treated for cervicitis. That is; some patients, even have received appropriate drug, they do not know how to use some of the prescribe medicine. In addition, some prescribe medicine have strong side effect and it make the level of adherence among patient very low. As result, the prescribed vaginal discharge does not disappear and when women return to health center with recurrence of vaginal discharge, health provider are more likely to upgrade their treatment to cervicitis. Thus, the over treatment of cervicitis has commonly been observed in many health center throughout the country.

Some health providers report of using speculum in order to confirm their diagnosis. The use of speculum is found by health providers a supplement to the use syndromic approach, since speculum allow health provider to make the diagnosis on their physical exam rather than just base their decision merely on what patient report, which is often found inaccurate. However, some male health providers hesitate to use it and unfortunately, the study failed to ask women who have vaginal discharge about their feeling with speculum is routinely use at health center for women with abnormal vaginal discharge.

6 RECOMMENDATIONS

There are in general three points to be considered in order to deal with the over reporting of abnormal vaginal discharge and over diagnosis of cervicitis and over treatment of cervicitis.

The knowledge of women in communities about vaginal discharge should be raised by providing health education related to reproductive health. Doing so, might give opportunities to women to be able to identify abnormal vaginal discharge from abnormal vaginal discharge by themselves. Similarly, women may become more capable of describing symptoms accompanying the vaginal discharge. Consequently, this accurate information may help skilled health providers to make a better diagnosis.

With good knowledge about vaginal discharge, women may be realized some cause of vaginal discharge such as hygiene. The lack of body sanitation may also be the cause of abnormal vaginal discharge. Thus, women maybe change their attitudes and practice toward their body sanitation and as result they could get rid of their vaginal discharge without using any medicine. However, improper hygiene such as vaginal douching could lead to develop reproductive tract infection.

It is recommended that health provider should find more time for patients. Time for consulting patients is very vital in eliminating many factors leading to over treatment of cervicitis. With enough time, health provider could creating environment that allow patient to be open to them, and they could also use different methods to approach patients in order to obtain some sensitive questions related to sexual behaviors. In addition, health provider could explain clearly about the symptom women are suffering. Consequently, women are more likely to understand what is going on in their body and they may be more capable of dealing with their symptoms. Likewise, with more time, health provider could give clear instruction about the prescribed medicine, as well as to enforce the adherence among women who received the treatment. More time also allow health provider to perform the speculum examination, which may result in relatively accurate diagnosis.

Knowledge of health providers should not be ignored. It is very important that the knowledge of health providers regarding the management of STIs should be up to date. With ongoing training,

health providers maybe able to deal with patients with vaginal discharge by making realistic diagnosis and appropriate treatment.

Syndromic approach for vaginal discharge should be modified since the sensitivity of this approach is too low and some risk assessment is not applicable in the real situation, particularly if the prevalence of STIs is low. Treatment of vaginitis should be considered first. Nevertheless, health providers should provide both treatment for vaginitis and cervicitis when women present with severe vaginal discharge. This practice may lead to over treatment for those who have severe vaginal discharge but under treatment for those who not severe or no symptoms. However, these forms of cervicitis do not bother women very much since it has no severe symptoms.

The use of speculum is also recommended by many health providers. Some health providers found out that the use of speculum is very vital when there is doubt when making diagnosis. It might not be possible to applied speculum examination to all women coming to health centers with vaginal discharge, but it is recommended to use speculum when patients suffered from severe abnormal vaginal discharge and women are not able to provide clear information about their symptoms. Moreover, the use of speculum should also be used when the cause of vaginal discharge is in doubt.

In sum up, to increase the knowledge of women about reproductive health and hygiene of their body may help reduce the prevalence of vaginal discharge. In addition, with sufficient knowledge about vaginal discharge women are able to give accurate information regarding their abnormal discharge to their health providers and ultimately, the health provider could generate accurate diagnosis. Moreover, the time for health providers to consult patient should be extended since the time is vital for health providers to make their services become more effective.

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