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**Research on Reproductive Health
in Viet Nam**
A Review for the Period 2000-2005



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Abbreviations

ARH	Adolescent Reproductive Health
CDK	Clean Delivery Kit
CHC	Commune Health Centres
CM-5	Child Mortality Under 5
CPR	Contraceptive Prevalence Rate
D&C	Dilatation and Curettage
D&E	Gestation Dilatation and Evacuation
DHC	District health Centres
FP	Family Planning
FSW	Female Sex Workers
HIV/AIDS	Human Immune Virus/ Acquired Immune Deficiency Syndroms
ICPD	International Conference on Population and Development
IEC	Information Education Communication
IMR	Infant Mortality Rate
IUD	Intra-Uterine Device
KAP	Knowledge - Attitude - Practice
LBW	Low Birth Weight
MCH	Maternal and Child Health
MDG	Millennium Development Goals
MMR	Maternal Mortality Ratio
MOET	Ministry of Education and Training
MR	Menstrual Regulation
MVA	Manual Vacuum Aspiration
NCPFC	National Committee for Population, Family and Children
NCPFP	National Committee for Population and Family Planning
NGOs	Non-governmental Organizations
Ob/Gyn	Obstetric Genecology
PCPFP	Provincial Committee for Population and Family Planning
PID	Pelvic Inflammatory Disease
PNC	Postnatal care/Postpartum Care
RCT	Randomized Controlled Trial
RH	Reproductive Health
RTIs	Reproductive Tract Infections
SAVY	Survey of Vietnamese Adolescents and Youth
SMP	Safe Motherhood Programme
STIs	Sexually Transmitted Infections
TFR	Total Fertility Rate
UN	United Nations

Preface

This publication is the fifth report in the series of lessons learnt and best practices in reproductive health supported by the United Nations Population Fund (UNFPA) in 2007. This report will serve as a critical review of reproductive health studies that have been conducted in Viet Nam during the period 2000 - 2005 in order to draw out gaps in research, contents to be added, and issues to be updated in the coming research programmes.

The report consists of four main parts. First, it provides information on review methodology as well as how the data was collected and reviewed. Second, it reviews the issues related to research methodology: design, participants, setting, outcomes, and quality of report writing. Third, it provides findings from the research on reproductive health. Fourth, it presents recommendations for research design and topics for the coming period in Viet Nam. Finally, the annexes provide additional and more detailed information to round out the report.

We would like to thank Dr Bui Thi Thu Ha and the research team at the Hanoi School of Public Health for their great efforts to complete this report. I would like to thank Dr. Duong Van Dat and Dr. Le Thi Thanh Huyen of UNFPA Viet Nam for their coordination on this research. We also acknowledge agencies, organizations and individuals who contributed to the success of the study. We wish that the report would be useful to policy makers, programme managers, health professionals, researchers, and donors in designing and implementing effective reproductive health programmes in order to achieve the ultimate objectives of Millennium Development Goal (MDG) and International Conference on Population and Development (ICPD) in Viet Nam.

Ian Howie
Representative
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Executive Summary

A total of 221 studies on Reproductive Health (RH) were collected and reviewed for this report and a systematic review recommended by the World Health Organization (WHO) was adopted for review. The report team also used an electronic database from PopMed and Popline as well as hardcopy searches in different training and research institutions or agencies based in Hanoi. The report used 10 keywords covering 10 contents of RH strategy for researching data and research methodology focused on design, participants, setting, outcomes, and quality of report writing.

This work included several studies on the areas of reproductive health. Some of them used the high ranking of evidence-based design, such as randomized control trial, intervention and cohort, about half used a cross-sectional design, and about one-fifth took a qualitative approach.

About half of these studies focused on both men and women, and some on men only. Most study participants were of reproductive age. And only limited data collection was carried out in remote areas.

Overall quality of reporting was limited. About half did not provide a clear definition of the topic investigated and one-third used random sampling. Only one-third reported an ethic approval and just two-thirds reported on data collection time. Most studies used a basic statistical technique. Few of them used multivariate analysis.

This review also reports findings related to specific areas of RH, such as Information-Education-Communication (IEC), family planning, safe motherhood, abortion, adolescent reproductive health, infertility, reproductive cancers, gender, and sexuality

Included also are recommendations related to the research methods and topics that need greater focus in the reproductive health program.

I. Background

Since the International Conference on Population and Development (ICPD) in 1994, the Government of Viet Nam has striven to implement key elements of the Programme of Action. By the end of 2000, the government had adopted the National Population Policy and a new National Reproductive Health Care Strategy for the period 2001 - 2010, both of which incorporated many elements of the broader ICPD framework.

The country had developed and implemented for the first time its National Standards and Guidelines for Reproductive Health (RH) Services and issuance of the National Safe Motherhood (SM) Master Plan and breastfeeding strategies was aimed at reducing morbidity, mortality, and malnutrition among mothers and infants.

Following Demographic Health Survey in 2005, life expectancy continues to rise in Viet Nam, and is up to 71.5 for men and 73.5 for women. Fertility rate has declined to 2.11 (UNFPA, 2005). Couples have increasing access to reproductive health programs, contraceptives, and information that they need to choose the number and spacing of their children. The contraceptive prevalence rate is 79% with modern contraceptive prevalence rate (CPR) of 57%. These and other gains are profound and far-reaching, as they involve some of the most basic and intimate human experiences: birth, death, and marriage.

However, high population growth remains a concern for the country. Declines in fertility and increased longevity mean that societies, developed and developing alike, are now wrestling with the wide-ranging implications of ageing, including the need for health care, pensions, and safety nets, and to ensure the social integration of older persons.

The high incidence of reproductive tract infections (RTIs) and sexually transmitted infections (STIs) is alarming. HIV/AIDS continues to be of great concern to the government. The HIV prevalence rates for males and females are 0.7 and 0.3%, respectively. The incidence of HIV is particularly high among vulnerable populations. Injecting drug users (IDU) dominate the epidemic with males and youth being more at risk.

Viet Nam is yet to achieve universal access to vitally needed reproductive health services and family planning, which is necessary if the country is to achieve the Millennium Development Goals and advance the status of women. Instead, too many women and girls go without these services, leading to unplanned or mistimed births that keep families in poverty, threaten maternal and child health, and increase the rate at which girls drop out of school. Persistent, widespread discrimination and violence against women and girls, meanwhile, also help to perpetuate the cycle of poverty and poor health.

The UNFPA Seventh Country Programme (2006 - 2010)

The UNFPA Seventh Country Programme (CP7) (2006 - 2010) is aligned with the objectives of the government's comprehensive poverty reduction and growth strategy, the national reproductive health strategy, and the population strategy (2001 - 2010). The goal of CP7 is to contribute to improving the quality of life of the Vietnamese people with a special focus on (i) unmarried young people, (ii) ethnic communities in disadvantaged areas, (iii) migrants, (iv) maternal and neo-natal health and (v) the translation of policies

into routine practice at the community level. In the interventions associated with CP7, there is a component supporting research with priorities on RH and Population Development-related issues in order to provide technical data and input for further intervention. To create a conducive environment for research that will be carried out in CP7 and to verify the contents for focus, there is a need review all previous RH and Population Development related studies from 2000 - 2005 to draw out gaps in research, contents to be filled in, and issues to be updated in the coming research program.

II. Objectives

This review is focused on the following objectives:

1. To collect and critically review research reports on reproductive health during the period 2000 - 2005 (both published and grey literature) by research institutions, government agencies, United Nations (UN) and Non-governmental organizations (NGOs).
2. Analyze the research design, data analysis, and findings of these studies to indicate their strengths and weaknesses as well as gaps for further studies on reproductive health.
3. Based on the need for effective implementation of reproductive health and population strategies in Viet Nam for the period 2001 - 2010, provide recommendations on research topics on reproductive health as well as other needs to further strengthen research capacities for relevant research institutions in Viet Nam.

III. Methodology

This study used the systematic review method recommended by World Health Organization (WHO).

3.1. Criteria for considering studies for the review

This review assessed all identified full-text studies, irrespective of language (Vietnamese or English), published or written from 2000 onwards on reproductive health in Viet Nam. The below are criteria for exclusion and inclusion of papers for review.

Exclusion criteria:

- Studies with no data.
- Studies referring to data collected before 2000. If data refer to a period including the year 2000, and if disaggregating by year is possible, only the data for the year 2000 onwards was taken.

Inclusion criteria: (the following general conditions were sought when considering studies for this review and were used as the first screening)

- Types of studies: no limitation on types of studies.

- Types of outcomes: no limitation with regards to specific outcomes in reproductive health, e.g. prevalence, incidence, mortality, morbidity, KAP or any other associated factors identified during the studies.

3.2. Search strategy for identification of studies

This review was limited to studies published only in Vietnamese or English. The review covered published and unpublished studies dated from 2000 onwards. It employed 10 keywords for reviews, all contents of Reproductive Health Strategy in Viet Nam.

Searching Electronic Databases

The review used PopMed electronic databases for searching studies with the following keywords:

- Reproductive health/ IEC
- Safe motherhood/antenatal and postnatal care/safe delivery/maternal mortality/ pregnancy
- Family planning/contraceptive/condoms/IUDs/Oral pills
- Abortion
- STDs/HIV/AIDS (in which HIV/AIDS has a minor focus)
- Infertility/reproductive cancers/menopause/elderly RH
- Adolescent/adolescent reproductive health
- Sexuality
- Sex education
- Gender equity

Hand searching

All documents published by training and research institutions or agencies based in Hanoi were scanned for relevant research reports or projects and the review team scrutinized reference lists from review articles to meet the set criteria.

Personal contacts

Personal focal points, such as the Department of Reproductive Health, Ministry of Health, and the UNFPA Office also provided data. NGOs and other organizations known to be active in the field were also contacted. Review members approached personal contacts in the field to ask about the existence of other studies and identified datasets.

3.3. Method of the review

Screening and data extraction form

The team developed a special screening form for each full-text evaluated report (see Annex 1). This form collects information on whether the report was included or not, and the reason for exclusion if excluded. For the reports meeting more than one exclusion cri-

teria, only one - following the orders on the screening form - was reported as the reason for exclusion.

Reviewers extracted data from the included studies using a specifically designed data extraction form (see Annex 2). This form includes three modules designed to collect information on (i) the general characteristics of the study, such as design, population, setting, (ii) outcomes: prevalence/incidence of maternal morbidity conditions or factors associated with conditions (iii) quality assessment of studies reporting on RH topics.

Management of studies and data extraction

Endnote reference manager bibliographic software was used to store the citations identified in the search, keep track of them, and detect duplicates. Electronic searches were used and downloaded directly into Endnote. Duplicates were detected and each study was assigned a unique identification number at this point for the review.

All citations identified by the electronic search strategies were evaluated initially according to the screening form (see Annex 1) on the basis of title and abstract (when these were available). Irrelevant records were discarded and full text of the remaining was obtained.

Full text reports were evaluated according to the screening form. Those studies excluded at this stage were listed separately with the reason for exclusion. Data for the remaining studies (i.e. relevant) were extracted by one reviewer using a pilot-tested data-extraction form especially prepared for this review (see Annex 2).

Data was manually analyzed in a specific database and processed with Microsoft Excel.

Review criteria

Reviewers analyzed the studies for the strength of evidence according to their study design as well as the outcomes achieved. Based on guidelines for the quality of scientific studies and strength of the evidence in medicine and public health (Guyatt et al. 1995; Centre for Evidence-Based Medicine 2001), the team developed a hierarchy of study designs to indicate the strength of the evidence (from strongest to weakest):

- (1) *Randomized controlled trials (RCTs)*: studies that involve a random allocation of the intervention and comparison to different study groups, including measurement of the outcomes before and after the intervention has been made.
- (2) *Non-randomized controlled intervention*: non-randomized studies containing before-and-after measurements that compare results in two or more groups. The comparison intervention may be usual care or another intervention. Case control studies, which divide groups based on different outcomes, and then assess prior "exposure" to intervention, could also be considered in this group (especially if the assessment of the involvement in an intervention is made in a nested, i.e., prospective manner).
- (3) *Uncontrolled intervention*: non-randomized studies containing a before-and-after measurement, but without any comparison group for the intervention (a single cohort study).
- (4) *Cross-sectional studies*: studies based on surveys conducted at one point in time without comparison groups.

IV. Findings On Research Methods

4.1. Topic distribution

A total of 221 studies were included in this review. The distributions of these studies according to their topics are presented in Table 1.

The highest number of studies was focused on safe motherhood (26.87%), followed by family planning (18.2%), gender & sexuality (13.6%), and RTIs/STIs (10.5%). Abortion and adolescents were less explored (around 10%) and an even smaller number of studies were collected in the areas of menopause, infertility/reproductive cancers, and IECs.

The distribution consistently reflected where researchers and programmers focus their attention. Safe motherhood and family planning were given high priority. Therefore, many studies were focused on these areas. Other issues, such as menopause, infertility and reproductive cancers, were only recently put on the research agenda and were not provided with clear targets indicated in the reproductive health strategy 2001 - 2010. Meanwhile, reproductive cancers (breast and cervical) were the leading causes of mortality in women. Therefore, this deserves more attention in the future.

4.2. Study participants

More than half of the studies had mixed participants, with both men and women, about one-third with only women, and very modest number focused strictly on men (Table 2). In the past, the main focus of maternal and child health (MCH) was strictly women. But after ICPD, the audience expanded, covering both men and women. This trend was reflected in the wider range of participants.

Contents	Number (%)
Abortion	20 (9, 1)
Adolescents	21 (9, 5)
Gender & sexuality	30 (13,6)
IEC	4 (1,8)
Menopause	15 (6,8)
Infertility and reproductive cancers	13 (5,9)
Safe motherhood	61 (27,8)
RTIs/STIs	23 (10,5)
Family planning	40 (18,2)
Total	221 (100,00)

Participants	Percent
Strictly men	2.6%
Strictly women	38.3%
Mixed	50.7%
Unknown	8.4%
Total (N= 221)	100%

Notably, the studies that only focused on men were rather limited (2.6%), and covered sensitive topics such as sexuality and infertility. Nevertheless, male involvement in reproductive health is an important strategy of ICPD. Therefore, more studies that explore the views of men related to RH are recommended.

Contents	Percent
Adolescents	11.5%
Reproductive age	42.7%
Menopausal/elderly	15.4%
Other	19.8%
Unknown	2.2%
Total (N=221)	100%

The studies covered a wide range of participants, from adolescents to elderly people (Table 3). The main body (42.7%) was at reproductive age, followed by menopausal/elderly (15.4%), and adolescents (11.5%). This distribution is consistent with RH focus, mainly on RH topics at RH ages. However, Viet Nam is approaching an ageing population in the near future and more studies on menopausal/elderly should be implemented.

4.3. Research methods

Study design is summarized in Table 4.

Different types of studies were applied to RH research. Almost half of all studies (42.7%) used cross-sectional designs, followed by a qualitative approach (18.5%), and evaluation/review/assessment (about 15.9%). Other designs, such as clinical, intervention, cohort or longitudinal study, were used in smaller percentages (8.8%; 2.7%; 1.8% and 1.3% respectively).

Contents	Percent
Clinical trial	8.8%
Intervention	2.7%
Cohort study	1.8%
Longitudinal study	1.3%
Cross-sectional	42.7%
Rapid appraisal	0.9%
Assessment -evaluation - review	15.9%
Explanatory study/open label study	1.7%
Secondary data analysis including census	5.7%
Qualitative study	18.5%
Total (N=221)	100%

Compared to the hierarchy of study designs on the strength of the evidence (from strongest to weakest), the proportion of studies with high evidence (RCT/ intervention/cohort/longitudinal/) was very modest (less than 15.0% of total researches).

The findings of researches on RH such as medical abortion or reproductive cancer, would provide much stronger reliability on RH if designs such as clinical trials and longitudinal studies were applied.

Although such designs were rather difficult to follow in reality, this should be considered. In order to provide evidence-based information for policymakers, these studies should be carried out more in the future with sufficient funds and efforts.

Most studies focused on factors associated with conditions under investigation (63.9%), followed by prevalence of conditions (20.3%) and knowledge - attitude - practice (KAP) (13.7%). Least was mortality/morbidity (1.8%) (Table 5). This distribution bears noting. A low number of studies used the epidemiological approach to identify the prevalence or

Contents	Percent
Prevalence	20.3%
Mortality/morbidity	1.8%
KAP	13.7%
Factors	63.9%
Total (N=221)	100%

mortality or morbidity. The majority of researchers tried to explain the KAP and factors associated with condition.

In order to develop any intervention strategy to prevent public health problems, the very first studies should be explanatory, with an epidemiological approach, to identify the prevalence of problems. Once the prevalence of problems is identified, the next step is to develop an in-depth understanding with studies on KAP or factors associated with the issue. Many RH problems were well identified with well-known prevalence, such as family planning or safe motherhood and studies further explored KAP or factors associated where necessary. However, in those issues that are relatively new, such as gender-based violence or infertility, reproductive cancers or menopause, identifying prevalence is important.

4.4. Study setting

Most studies covered both rural and urban areas (42.3%), followed by rural only (26.9%) and urban only (17.2%) (Table 6). This distribution suggested that researchers were interested in both rural and urban areas. Nevertheless, RH indicators were better in urban than in rural and remote areas. And this suggested that more studies on remote and rural areas should be the object of focus.

Contents	Percent
Urban	17.2%
Rural	26.9%
Mixed	42.3%
Unknown	13.6%
Total (N=221)	100%

4.5. Report quality

Contents (N=221)	Percent
Definition of the health topic:	57.3%
Sampling method	
- random sampling	36.6%
- convenient sampling	33.0%
- other	21.6%
- unknown	8.8%
Ethics approval	30.4%
Data collection timeframe	77.5%
Data analysis	
- Frequency	32.2%
- Bivariate	33.9%
- Multivariate	16.3%
- Qualitative	17.6%

The quality of reports was reviewed for several items, such as definition of conditions, sampling, timeframe of data collection, data analysis, and ethics (Table 7).

More than half of the studies (57%) provided a clear definition of conditions under investigation (Table 7). For example, when the study was focused on trials in medical abortion, researchers should have explained very clearly about the definition of medical abortion - the inclusion and exclusion criteria. Unfortunately, this was lacking in about half of the studies and caused difficulties for the reviewers in judging whether the participants were selected properly. This should be improved in the future during the research proposal development process, as should be report writing.

About one-third of studies used random sampling, one-third, convenient sampling, one-fifth, other sampling, and a small number did not report sampling method. Although random sampling provides much more meaning in interpretation of study results, in reality, this was rather difficult to apply. The researchers should therefore take more precautions when interpreting and generalizing findings, when the sampling is not randomly selected and not representative of the study population.

About three-fourths of studies provided data collection time (77.5%). This figure should be improved in the future.

About one-third of studies used only basic statistical techniques (frequency analysis), one-third used bivariate analysis, and less than one-fifth (16.3%) used multivariate analysis. Yet cross sectional studies, in most cases, do not allow evaluating the cause and effect relationship, but can provide some hypotheses on these relationships if an appropriate analysis strategy is used (multivariate). The frequency or bivariate analyses was not sufficient to provide an insight into the relationship between variables. Thus, the data analysis skills should be improved in the future.

A relatively large number of studies used qualitative data collection and analysis. Most of these were a combination between qualitative and quantitative approaches. A limited number of studies used purely qualitative methods. Qualitative data collection allowed researchers to develop insights on problems, particularly with issues considered sensitive in the Viet Nam context, such as premarital sex, abortion, sexuality, and gender. The qualitative method should therefore be explored more in the future.

Only about one-third of studies reported approval of the ethical approval of the work. Bioethics is a new concept for many researchers in Viet Nam and was not reflected in many studies. But this bears improvement in the future, particularly in studies dealing with sensitive issues like abortion, sexuality, and gender. And confidentiality and privacy of participants should always be protected.

V. Findings Of Reproductive Health Studies

5.1. Safe Motherhood

Each year worldwide approximately 529,000 women die unnecessarily during pregnancy and childbirth and most of the cases are in developing countries. Many more, running into the millions, suffer ill health and disability. The global Initiative on Safe Motherhood was launched at a conference in Nairobi, Kenya, in 1987 to address these rates. The aim was to draw the world's attention to the hundreds of thousands of deaths and millions of serious illnesses that afflict women every year. Since that date, efforts have increased worldwide to make motherhood safer, including the establishment of the Millennium Development Goals (MDGs) with many indices related to maternal and child health care. In light of the Millennium Development Goals to improve maternal health, this global Initiative includes selected current approaches to improve maternal health outcomes that appear good or promising, or that demonstrate an innovative approach to address maternal health.

To realize objectives endorsed in the Programme of Actions of the International Population and Development Conference held in Cairo in 1994, on November 28th 2000, the Prime Minister of Viet Nam signed Decision No.136/2000/QĐ-TTg endorsing promulgation of the National Strategy on Reproductive Health for the period from 2001 - 2010.

Safe motherhood is one of the most important contents of the National Strategy on Reproductive Health and Viet Nam has achieved much in this area. The development of the National Master Plan on Safe Motherhood for the period from 2003 - 2010 is an important step toward successful implementation of the National Strategy for Reproductive Health Care for the 2001 - 2010 period, laying the groundwork for attainment national development goals in the 21st century. The National Strategy for RH care sets four main objectives by 2010 as follows:

- Reducing maternal mortality rate (MMR) by 50% (from 165 to 70/100,000 live births)
- Reducing perinatal mortality rate by 20% (22.2‰ to 18.8‰)
- Reducing infant mortality rate (IMR) from 36.7‰ to 25‰
- Reducing low birth weight (LBW) by 25% (from 8% to 6%)

Safe Motherhood means ensuring that all women receive the care they need to be safe and healthy throughout pregnancy and childbirth.

The Safe motherhood program consists of antenatal care (ANC), delivery care, neonatal care, post-partum care (PNC), safe abortion, prevention and RTI control, sexually-transmitted diseases, mother-to-child HIV transmission and implementation of family planning after childbirth [1].

Promoting health is one of the main approach of National Strategy for RH. It appropriates with the approach to achieve MDGs of Viet Nam's government. This approach on

safe motherhood in Viet Nam, following its part, is focusing on reducing maternal and neonatal/perinatal mortality.

This review section focused on maternal mortality, perinatal mortality, ANC, delivery and postpartum care, neonatal care and service provision for safe motherhood programs. Other issues such as abortion, family planning and RTIs were reported in other corresponding sections.

5.1.1. Maternal mortality

Maternal mortality is defined as "the death of a women while pregnant and/or within 42 days of termination of pregnancy, irrespective of duration and the site of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes".

Prevalence

The Maternal Mortality Ratio (MMR) in Viet Nam was reported at 85 per 100,000 live births [2], 165 per 100,000 [1] and 130 deaths per 100,000 live births [3]. The differences in these figures can be attributed to problems encountered with data accuracy and "incompleteness" [4].

A national survey on maternal mortality in seven provinces representing seven ecological regions of Viet Nam indicated limited progress and problems in this field. MMR was different from region to region. It was quite low, for example, in the Red River delta (45 per 100 000 live births) but very high in some mountainous provinces (411/100.000 in Cao Bang) [1]. Other research at the provincial level indicated MMR of 52.5 per 100,000 in Danang [5]. Maternal mortality was also counted among pregnant women in hospitals with the number as high as 56.3 maternal cases per 100,000 live births [6].

The definition of maternal mortality covers all deaths cases related to pregnancy, including indirect reasons. Therefore, it is difficult and costly to accurately measure. Rates and ratios are difficult and expensive to obtain and are often inaccurate because of under-reporting and misclassification. It tends to be under-reported because people are often dying outside the health system, which makes accurate registration of deaths difficult. In some studies, the actual number of maternal deaths was double or triple what was initially reported [4].

Maternal mortality is also misclassified in many cases because health workers may not know why a woman died, or whether she was, or had recently been, pregnant. Deaths are sometimes intentionally misclassified as well, especially if they are associated with clandestine abortions.

Methods used to calculate maternal death rates are often complex and costly to use so the actual number in a specific place at a specific appears relatively low. Thus, very large populations must be surveyed in order to get accurate estimates, which, again, is costly. The relative infrequency of maternal deaths over a short period also means that the rates will appear to "jump", making interpretation of trends over time difficult.

Causes

Most maternal deaths worldwide are due to five major medical causes: severe bleeding (haemorrhage); infection; complications from unsafe abortion; hypertensive disorders of pregnancy; and obstructed labour. Many other survivors suffered from complications of childbirth after delivery. Similarly, major causes of MMR in Viet Nam are related to haemorrhage, which accounted for from one-third (33.3%) to more than half of all such deaths (58%) [1-3, 5, 7]. Other causes were pre-eclampsia (21.3%), infection (16.6%), complications from abortion (11.5%), uterine rupture (4.7%) and ruptured ectopic pregnancy (4.8%) [3]. Almost all women died post-partum, of which more than four-fifths (80-83%) died within one day. The remainder of deaths were within one week after birth [1, 8].

The direct causes of maternal mortality counted for about two-thirds (66.7%) to three-quarters of deaths (76.3%) [3, 5, 9]. Indirect causes accounted for about one-quarter (23.7%) of all maternal deaths. Among these, heart disease accounted for about 26.3%; hepatitis, 10.3%; cerebro-vascular diseases, 10.7%; tuberculosis, 10.5% and malaria: 15.3% [2, 3].

Factors related to maternal mortality

In order to reduce maternal mortality, almost all interventions are based on three delay models in reducing maternal mortality. This model indicates that the first two "delays" (delay in deciding to seek care and delay in reaching appropriate care) were related directly to the issue of access to care, encompassing factors in the family and the community, including transportation. The third "delay", in receiving care at health facilities, was related to factors in the health facility.

Using the 'three-delay' model to analyse factors related to maternal mortality, national level research showed that delays in the decision to seek/reach health care, in referral and transfer of the woman to a health facility and in provision of essential treatment on time, accounted for 46.3%, 41.3% and 40% respectively. These included shortage of health workers, distance from health facilities, poor roads or lack of transportation (particularly in remote and mountainous areas), and local customs in taking care of the woman at home. Culture, tradition, family and other economic factors also hindered access to reproductive health care services [1, 3].

5.1.2. Neonatal and perinatal mortality

A limited amount of research was conducted solely on neonatal and perinatal mortality. According to a report by the Ministry of Health in 2005, from 2000 to 2004, infant mortality in Viet Nam fell from 36.7‰ to 18‰ [2]. However, research conducted in mountainous areas revealed that IMR and perinatal mortality were quite high (42-45‰) in mountainous and remote areas [10, 11].

Ultimately, almost all data on neonatal and perinatal mortality were recorded based on health information systems. Given a more comprehensive surveillance system or research using verbal autopsy, the data would be more reliable and representative of the country [1, 3, 4].

5.1.3. Interventions on reducing MMR and IMR:

Many intervention projects and research aimed at reduction of MMR or IMR were conducted during from 2000 to 2005. Three main strategies were chosen for the interventions as follows:

- Training program for enhancing the capacity of management staff and health workers (including doctors, nurses and traditional midwives). This strategy accounted for four-fifths (83%) of all projects. Training helped to improve capacity in diagnosis and treatment of obstetric complications and skills in postpartum care for mother and child.
- Information - education - communication (IEC) for providing antenatal care information e.g. full and proper pregnancy examination, supplement of necessary micro-nutrition for mothers during pregnancy. This strategy was used by over 60% in research/interventions.
- Upgrading infrastructure of health service delivery points: supplied medical equipment, upgraded physical infrastructure of maternal and child health care facilities [12]

Save the Children US reported two successful models on reduction of MMR. One was "Safe motherhood and newborn care from household to health facility", where pregnant women received care at home or in health facilities, including referral system if necessary. This model was evaluated as "good and effective" in improving quality of maternal and child services, enhancing accessibility, knowledge and practices for women, family and the community. The other successful model was "Maternal and child care - Child survival" which focused on training and IEC for mothers and newborns with other additional support, such as supervision and mobilization of community participation, integrated with breastfeeding and IMCI programmes.

Another intervention model aimed at reduction of perinatal mortality based on a safe motherhood model also showed promising results in reduction of 13% of IMR in mountainous provinces. This model could be applied to other local areas to decrease the perinatal mortality rate [10].

5.1.4. Knowledge, Attitude and Practice (KAP) of women related to SM

Antenatal care (ANC)

Knowledge among women during childbirth consists of knowledge on risk factors, danger signs, time for antenatal check-up, number of antenatal visits, tetanus vaccination, duration for rest before birth, nutrition and vitamin supplements, and HIV testing.

Women's knowledge on ANC varied widely by topic. About 90% knew the importance of prenatal check-ups [13]. However, knowledge on danger signs was poor. Only about one-third of women knew at least three danger signs during pregnancy [1, 12, 14, 15]. In particular, one-third (34.2%) of women knew high blood pressure signs, one-third (34%), anaemia and difficulty breathing, four-fifths knew vaginal bleeding, and more than half (57.2%) knew the sign of no movement in the foetus [1].

Research grouped all knowledge and classified the items from "poor" to "good" on ANC. Scores of 'good' ranged from 34.5% [16] to 40% [14].

About one-tenth to one-third of women did not seek check-ups during their pregnancy [13, 15, 17]. Among these, those seeking at least three antenatal check-ups varied from one-third to four-fifths depending on location and ethnicity [12, 13, 15, 17-31]. On average, the number of ANC visits per pregnancy was 2.7 in mountainous areas and 3.7 in lowland areas [32].

Knowledge on the requirement for two tetanus vaccinations ranged from 16-98.5%, depending on location and types of participants [1, 12-15, 18, 33]. Knowledge of Kinh women was much better than minority ethnic one. One-half to two thirds of women in rural and remote areas did not receive tetanus vaccinations [17, 33] and this may call for more IEC about antenatal care for women in mountainous and remote area. Yet use of iron supplements was reported to be high [18].

Delivery care

Knowledge among women during labour consists of knowledge on danger signs, delivery with trained birth attendant, nutrition and care during childbirth. Few studies investigated women's knowledge during delivery. Although many women expressed a desire to seek the services of health facilities during delivery, many of them could not. Decision on place of delivery was then affected by different factors, such as traditional customs of delivery at home, distance to health facilities, shortage of person who looks after families when delivering, as well as the unappropriate costs or low quality of service at CHCs [34].

The studies consistently showed that about 80% Vietnamese women delivered in health facilities or at home with trained birth attendants [13, 17, 33, 35].

Home delivery rate varied from 2% to 16.7% in lowland areas [18, 33] and from 50 - 58% in remote and mountainous areas [13, 17, 36]. In some rural areas, most cases delivered at home with the assistance of midwives or traditional birth attendants [10]. Among home deliveries, 35.4% of women received a clean delivery kit (CDK) but used only some of the tools [17].

A study in Ninh Binh on home delivery indicated a rate of haemorrhage of 3.3% , 30.6% - umbilical cord cut with non-hygienic equipment, and 41.7% - cord were not hygienic [33]. Complications was reported much higher among ethnic minority women in mountainous area due to poor hygiene, lack of trained birth attendance and old customs [33, 37].

The RH situation among women in ethnic areas was not an encourage one. The CPR was low, the prenatal care visit and low delivery rate at health clinics were not better. Although there was a positive movement toward better RH behaviour among ethnic group, there were still strong harmful rational customs on RH practicing areas [38-40].

Post-partum care

Knowledge on the postpartum period including care, family planning, prevention of infection, hygiene, nutrition and breastfeeding was also recorded but by few studies. In theory, post partum women should receive two postpartum check-ups, one within the first day and the other within 42 days after delivery.

In general, knowledge among women of postpartum care was poor. About three-quarters knew the correct time of weaning/breastfeeding [13, 17] but many ethnic minority

women (54%) did not know how to use colostrum milk [17]. Postpartum women also did not know the correct time to resume sex, did not know about nutrition supplements nor appropriate contraceptive methods [41].

The rate of postnatal care (PNC) visits/check-ups was much lower compared to ANC visits. It varied from 23.8% to 70% depending on province. About one-quarter to two-thirds of postpartum women took vitamin A after delivery [14, 17].

The quality of intra-partum care was also found to be unsatisfactory. Only one-third (31.0%) were encouraged to receive routine post-partum examinations within 42 days of delivery [19]. And while other research, showed good practices where 55.3% of women received postpartum care [16]. However, this did not clearly explain how to measure good or poor practices.

The prevalence of breast-feeding also varied from study to study. In general, breastfeeding in remote and mountainous areas was about a half to two-thirds of all births [17, 42, 43]. However, many ethnic minority women had not used colostrum milk before breastfeeding and about half of the children studied received other food (such as rice) within their first month [17]. In contrast, the prevalence of breastfeeding among Kinh women seemed to be much higher with prevalence at more than two-thirds [35, 42].

After giving birth at the health facility, women returned home and adhered to a variety of traditional postpartum practices with family and the community. A number of qualitative and quantitative studies looked at traditional customs of women during postpartum period. The postpartum customs consists of variety of practices such as diet, hygiene and healing activities. Many women practiced these customs with belief in 'wind prevention', staying by the fire, abstaining from contact, and abstaining from bathing. The duration of each custom was described as seven to 100 days. These traditional postpartum practices were reported differently between Kinh and ethnic minority women [12, 34, 41, 44]. Some practices were classified as beneficial. However, many others were considered neutral and/or potentially harmful [41].

Factors related to KAP on SMP

Many researches focused on factors related to poor KAP. Some socio-economic factors, such as low education, young age, religion (Christianity), ethnic minority status and income of mother had a positive significant relationship with antenatal practices [12, 14, 17, 41]. But other factors were considered as barriers for women's access to ANC and delivery care, such as poor knowledge on ANC, distance to facility, shyness and new migrant status [34]. Poor quality of care also reduced women's access to health services [12, 15].

Regarding the postpartum period, women who attended ANC displayed better practices at delivery, and those who showed better practices at antenatal and delivery care had better practices in post-natal care as well [17]. Regarding traditional postpartum customs, these practices were embedded by cultural and social factors. Local beliefs, customs, and referral to significant female relatives played key roles in women adhering to these practices [12, 15, 34, 44, 45].

5.1.5. Reproductive health care services

The National Standards on Reproductive health services provide clear standards for infrastructure, tools/equipment and reproductive health services at all levels. These standards apply to RH services, including SM, FP and ARH, RTI, safe abortion and other related services. An assessment of RH services focused on three areas: physical infrastructure, tools/equipment, health personnel and delivery of services.

Infrastructure

Physical infrastructure is one of the most important factors for ensuring quality of services. In MCH facilities, this refers to signboards announcing working hours, electricity, water, bathroom, toilet, waste treatment, telephone, function room and IEC materials.

Overall, basic infrastructure was inadequate in MCH facilities in Viet Nam. Only three-quarters of district health centres in Kien Giang, about half of district health centres in Ha Tay had regular grid electricity. Less than half of the health facilities had clean water yet over two-thirds of district and commune health centres had toilets and bathrooms [12, 32, 46-48]. And some facilities did show generally good conditions [49].

Conditions at facilities in provinces or districts that had been the subject of interventions/projects were generally better. In Nghe An province, almost all (more than 90%) of public health services had adequate basic facilities (electricity, safe water supply) and an examination room with full privacy, adequately clean [50].

Although all facilities provided some treatment of medical waste, main methods at the district level were burning and land fill. Telephone, which was considered as extremely important for emergencies, was available at all district level facilities but not at all commune-level sites [12].

National benchmarks for reproductive health state that a health facility must have a delivery room, a prenatal examination room, a family planning room, a gynaecological room, and a counselling/obstetric room. However, not all district and commune health centres had enough of these separate rooms, and many were shared for other uses. This practice hinders privacy and confidentiality of clients [12, 51].

IEC materials on SMP were also insufficient at sites at the district and commune levels. A severe shortage of almost all IEC materials on newborn care and ante-intra-postpartum care was also reported [12]. This was consistent with a review of research on a safe motherhood intervention model, which reported that about two-thirds (60.1%) of intervention/projects implementing IEC activities referred to all three stages of ante-intra and postpartum care but less than 10% IEC materials referred them [52].

Tools/medical equipment

The number and type of articles of medical equipment for care is stipulated in the national standards for essential for obstetric (MOH Decision No. 1419/ BYT/QD issued on August, 23rd 1996). An assessment in selected provinces in three regions of Viet Nam revealed that medical equipment at both the district and commune levels had all types of the required equipment, but insufficient quantities, including for the most essential items, such as newborn scales, vaginal valve, and instruments for delivery assistance

[12]. Another research also pointed out the fact that after 4 years of intervention, only about a half (49%) of CHCs in Nghe An province had delivery kit [51]. The situation was better in projects where received the intervention/project [10, 53-55].

Regarding essential drugs, most health facilities stored only 70% of required essential drugs mandated by the Ministry of health. CHCs also suffered a greater shortage of essential drugs than did district facilities and a limited number of health facilities had specially-designed drug stores that locked in the case of dangerous items. Nor were they able to keep other essential drugs in a secure place [12].

Health personnel

As stipulated by the Ministry of Health, district health facilities must have doctors specialised in obstetrics/gynaecology, secondary midwives/assistant doctors specialized in paediatric and obstetric care, and intensive anaesthetics. CHCs should have a secondary midwife or an assistant doctor specialized in paediatrics/obstetrics or a doctor. However, most of the research reported a lack of doctors, especially in intensive anaesthetics in all district health facilities. Similarly, not all CHCs had enough human resources as required and The shortage of staff was considered as a barrier in performing quality SMP services [12]. Some concerns were reported regarding the low performance and high turnover due to lack of training, low subsidy, and temporary works [56].

Consistent findings from research showed that the knowledge and skills of health providers in SMP were rather limited. Many health workers at the grassroots level had not received any re-training after graduation from medical university or secondary medical schools [12, 52]. And few could list long-term contraceptive methods such as IUD and sterilizations (5-8%) [57].

Although many provinces were the subject of interventions to improve the capacity of health personnel through different training programs, the materials were neither standardized nor applicable to practice. The resulting recommendation was that training should be done together with upgrading health facilities, particularly equipment and drugs [52].

Delivery of services

Although many users were satisfied with RH and FP services, many others reported a need for better health services, particularly regarding counselling, supply and prices [47, 58-60]. Poor counselling for family planning services was consistently indicated in all studies. Most contraception was also given without explanation and this was not sufficient to meet the needs of clients [61]. Researchers attributed this to the persistence of unfavourable views on condoms and oral pills, that condoms decrease sexual pleasure; and pills are ineffective or cause side effects (headache).

Regarding ARH, respondents consistently reported a lack of services in different reports [20, 47, 58, 62]. Reasons differed. They included cultural barriers, policies on provision of ARH, lack of facilities, lack of equipment, poor knowledge and skills of health providers.

Regarding abortion, in order to reduce the abortion, family planning services should be

made available to all clients, including adolescents, with good access and high quality of services. Counselling on family planning services should also be improved. Health providers only talked about the benefits of contraception why they inadequately addressed the side effects or other personal matters.

5.1.6. Other issues related to SM

Low birth weight

Low birth weight (LBW) is when the weight of a newborn baby is less than 2500g. Reducing LBW is also a priority in Viet Nam to achieve the Millennium Development Goals and National Strategy on Reproductive Health in 2010. Yet there has been no study to identify the prevalence of LBW at the national level. On average, the weight of newborns in the study period was 2911.4g (boys 2961g, girls 2856g) and length was 48.3cm (boys 48.6cm, girls 48cm) [63].

Some studies in the survey identified prevalence of LBW in some specific areas. It was about one-tenth of newborn babies [17, 63]. However, that data might under-represent the real figure because many newborn babies are not weighted after delivery, especially those delivered at home in remote areas. This rate of un-weighted newborns was reported at more than 50% [17].

Some factors related to LBW have been revealed as low maternal height (<150cm) and low number of ANC visits [63, 64]. Other factors associated with low birth length include low maternal weight (<45kg), maternal vertex peripheral less than 54cm, placenta weight less than 500g and maternal BMI less than 18.5 [63].

Incidence of low birth weight can be reduced, however, if women take iron supplements and folic acid for three to six months before pregnancy and start weekly intake of supplements during pregnancy. This is considered as an effective and safe approach to prevent and control iron deficiency and anaemia in women [65].

Anaemia

The prevalence of anaemia (Hb less than 11g/dl) among rural pregnant women was quite high in these studies (43.2%) and severe anaemia (Hb less than 8g/dl) was 0.5% [66]. Several factors related to anaemia among pregnant women were identified, such as taking iron supplements, consumption of eggs, and preference for Western medicine. Duration of pregnancy and hookworm infestation significantly and negatively correlated with Hb concentration [66].

In general, taking iron supplements during pregnancy was reported as an effective way to reduce anaemia and LBW [65, 67]. However, reduction of the anaemia rate was not given a high priority in the community. Meanwhile, the survey team found two major factors for why participants continued taking iron supplements: fewer dizzy spells (50%) and concern for the better health of their newborn baby (54%). When asked the reasons for taking iron tablets frequently for at least five to nine months, the most important factor women cited was "a frequent supply of iron tablets" [67].

Preterm birth

Preterm birth is relatively frequent in Viet Nam. It counts for about one-tenth of all newborn children (11.8%). Physical work during pregnancy, two or more prior spontaneous abortions, history of preterm birth, vaginal bleeding, inadequate prenatal care during the first 20 weeks of gestation, and history of IUD use with removal less than 12 months before the current pregnancy are all associated with increased risk of preterm birth. Beyond established risk factors, these data implicated agricultural work and physical work, as well as history of recent IUD use [68].

Depression among postpartum women

Currently, all efforts from the Government are focused on reducing maternal mortality. As a result, almost all interventions and research measured only maternal physical health and emotional health is eclipsed. Only one study has measured depression in postpartum mothers using the Edinburgh Postnatal Depression Scale (EPDS) score. It was found that prevalence of postnatal depression and "the blues" among women was quite high. Among these women, one-third (33%) had EPDS scores higher than 12, considered as depression, and nearly one-fifth (19%) acknowledged having suicidal thoughts. About two-third (77%) of cases were correctly classified in a model which included unwanted pregnancy, lack of a permanent job, <30 days complete rest after childbirth, an unsettled baby, not being given special foods, avoiding proscribed foods and women being unable to confide in their husbands [69].

The research revealed that symptoms of depression were more common among parturient women in Ho Chi Minh City than reported rates in developed countries and is at present unrecognized. This may call for further research on the topic in order to improve maternal and child health.

5.2. Family Planning

Family planning saves the lives of women and children and improves the quality of life for all. It is one of the best investments to help ensure the health and well-being of women, children, and communities. Contraception saves lives by preventing unwanted pregnancies and reducing the risk of maternal death. The positive outcomes of birth spacing in the reproductive health of mothers and overall health and well-being of children is well-known. Contraception further improves reproductive health outcomes by reducing the risk of abortion-related death and disability [70].

Over the past 30 years, there have been tremendous advances in the development of new contraceptive technologies. New methods have been introduced - such as combined oestrogen and progestogen injectable contraceptives, combined hormonal patches, combined hormonal rings and implants. Existing methods are also constantly being refined and improved, e.g. oral and injectable contraceptives with reduced doses of hormones and more effective intrauterine devices that contain copper or that release progestogen levonorgestrel. Many of these products are easier to use and safer than older contraceptives, for example causing fewer side effects or requiring fewer clinic visits. In theory, therefore, they have considerable potential to increase contraceptive use and reduce discontinuation rates [70].

However in reality, policy and planning, factors, which are considered as determinants, are still not adapted to the needs. Research on bottom-up planning pointed out that most staff did not have required professional skills at planning, about two-thirds at the provincial level did not have any training in planning and most population staff at the commune level did not know clearly and full the criteria for identifying goals and activities in the plan [57].

5.2.1. Fertility

One of the main objectives of the Population Strategy for 2001 - 2010 is to achieve the average replacement birth rate levels in 2005, and by 2010 in the outlying, remote and poor areas. In practice, there have been sustained decreases already, reaching to replace total fertility rate (TFR) in 2005 [72]. According to the NCPFP, total fertility rate reduced from 2.4 in 1997 to 2.33 in 1999, and then to 2.11 in 2005 [73, 74].

Fertility rate in the surveys was associated with geographic location and socio-economic status. Women in urban areas and women with higher income and education levels had lower TFR [75]. Conversely, in mountainous areas, age at the first marriage was earlier (7.7% of H'mong minority women married at 13 to 14 years old, 32.4% at 15 to 16). Number of children was also higher (desired number of children was 4) [76]. People received the incentives from government, and those with higher incomes were more likely to have fewer children. The opposite was reported for people working with business and in manufacturing areas [75].

The average number of children also differed by religion. Christian women seemed to have more children than Buddhist women (0-2 children on average) [77]. Some data on unmet needs for contraceptive methods was reported. About 76% of delivering was as expected, 14% as not "right time", 7% as unwanted (44% for the fourth child). If we could expel all unwanted children, TFR would be at 1.6 compared to 1.9 of the survey [78, 79].

Despite reduced fertility rates, there were still many challenges apparent in the reviews for the country to achieve the 2005 replacement rate. These included large gaps in incomes and socio-economic status of women and children, low investment in rural and mountainous areas, and poor training for population collaborators. To overcome such challenges, health planners have considered the cost and benefit of urbanization, to reach better gender equality, to allocate funds more appropriately for remote areas, to upgrade the HMIS system, to develop the standard level for commune level, to provide better incentives for health providers and to provide equal investment for children and youth [72].

5.2.2. Contraceptive prevalence rate (CPR)

CPR has steadily increased in recent years, from 63.2% in 1996 to 73.9% in 2001, and 76.9% in 2005 with rate of modern contraceptive methods up from 52% in 1996 to 61.1% in 2001 and 65.8% in 2005. The lowest rates were in the highland areas of the country (66% of areas surveyed) and the highest were in Red River Delta. CPR increased with age, education and number of children as well [79].

Contraceptive use as well as the knowledge, was also addressed in the reviews. IUDs were the most common method named by the majority of people (99%); followed by condoms and oral pill [60, 78-80]. IUDs were also the most popular method, accounting for about two-thirds of users (CPR of 55.7%); followed by oral pills (10.0%); condoms (7.8%); and female sterilization (7.7%). Withdrawal (pulling out) counted for 16.8%. Specific method of CPR also differed by province. For example, condoms were the highest in Kon Tum, at 41%, while others were much lower [79].

Respondents' reasons for not using certain contraceptives were mostly due to a fear that it would fail or that they wanted to conceive. Men were overwhelmingly cited as making the main decision whether or not to use contraception, and method used [81]. Those who refused to use contraception in the next 12 months claimed low frequency of sex, inability in the woman to get pregnant and health reasons [74, 79, 82-86].

IUDs

The IUD rate was high in 1995, and had decreased gradually to 2000, yet the CPR of IUDs remained the highest in all recent researches. Women who had borne children were more likely to use IUDs than those who had not. The average number of children among women who used IUDs was 2.2 [87].

The main reasons for choosing IUDs were safety, effectiveness and convenience. Nonetheless, some concerns related to IUD also were reported, such as high failure rate (about 5%); notable side effects like stomach ache, haemorrhage, pelvic ache, headache, menstrual disorder, and high rates of RTIs [87].

Average time of IUD use was 31 months and the cost per year was 8,869 VND (US 50 cents) per person [87].

Hormonal contraceptives

Few studies examined the efficiency of oral pills [9, 23, 51, 88] yet this was generally found to be high, at 97.4%, and the majority of users were satisfied with method. Timeframe for use was 1.9 years, with rate of continuity of 85.4% and rate of discontinuation 14.6%. In general, there were no abnormal symptoms reported. About one fifth of users reported some side effects such as feeling sick, headache, weight gain and menstruation disorders. However, these symptoms gradually disappeared after continued use.

Most clients received counselling on use of these contraceptives and were monitored during the process. Any reasons for changing method were mainly related to lack of information, misunderstanding, inconvenience or , perceived risk of cancers [23, 51, 88].

Injectable contraceptives (DMPA) were also investigated [89]. Clinical trials compared the side effects (PID, cervical cancers) of IUDs with DMPA and studies revealed that few were reported among the users and risk of STIs was moderate.

Condoms

The CPR for condoms has increased in recent years. However, the rate was still limited to less than 10% [74]. The majority of users reported condoms for contraception and a lesser number reported a double goals of contraception and protection against STDs/HIV/AIDS [59, 90].

Most users had good awareness of and experience with condom use and the "OK" brand was the most popular [91]. High risk groups such as female sex workers were more likely to report use of this method [91].

Main reasons respondents cited for not choosing condoms were gender issues, cultural barriers to purchasing condoms, reduced sexual desire, reduced sensitivity, unpleasant smell of certain brands (OK); problems with one-size-fits-all, poor durability, and limited choice. These reasons did not differ much with education and area [59, 74, 82, 91]. Main reasons for discontinuing use were mainly related to desire to try a new method and desire to have children [74].

Many respondents, particularly young people, unmarried people, migrants, manual labourers and truck drivers were less consistent in condom use. Respondents said they were also more unlikely to use condoms if they believed their partners looked healthy, if they were drunk, or when condom was not available. Price of condoms was generally acceptable for most people [59] but the majority of current condom users would prefer "free market pricing" (500 VND/piece or 30 pieces per US dollar) [82].

One study also explored the issues related to female condoms. According to users, female condoms helped women feel safe, comfortable, and active without distraction from pleasure of the partner. However, some concerns related to method were indicated, such as inconvenient insertion and large size for body type. Smaller sizes would be desirable for Vietnamese women, respondents generally noted, particularly for young unmarried women [92].

Sterilization

Male sterilization was introduced in Viet Nam in the 1990s but the rate has decreased considerably over the last few years for several reasons. Although many clients reported better sexual health or no change in sexual desire, many others rejected the idea of male sterilization. Reasons mainly related to high failure rate in the first year of (45.3%), complications (20.8%), infection (13.4%), bleeding (5.8%) and pain in the testicles (41.9%) [93]. Some clients regretted undergoing the procedure, because they wanted more children, of their children became sick, death of wife/husbands, or divorce.

A big longitudinal study from 1998 to 2000 in five provinces compared the efficiency of three methods: tubectomy, vasectomy and quinacrine non-surgical sterilization (QS). The tubectomy had the lowest failure rate at 1.0%, followed by vasectomy at 4.1% and QS at 13.2%. The study concluded that QS was not a safe and effective method in Viet Nam, similarly to the recommendation of WHO [94].

5.2.3. Sources for contraceptives

There were different sources for contraceptives noted in the surveys: free distribution through Provincial Committee for Population, Family and Children (PCPFC), social marketing of contraceptives by DKT International and all levels in the provincial RH network as well as drug stores [95]. The majority of contraceptives were supplied by public facilities, like commune health centres (CHCs) - 45%; hospital - 22% [79].

Generally, access to contraceptives was fairly good and better in urban areas. But some late delivery of oral pills and condoms in rural areas was reported [96]. In some areas, about 50% facilities reported running out of stock in the previous six months and 20% had never stocked condoms [95]. However, in some large cities like Hanoi, the provision of FP to adolescents was well-accepted [97].

As estimated, the Government of Viet Nam was instrumental in increasing the supply of condoms from 98 million in 2000 to 140 million in 2005 with a target of 198 million by 2010 for family planning, and from 95 million to 137 million in 2000 with a target of 199 million for STD/HIV/AIDS prevention by 2010. Government sources supported 40% of required condoms in northern provinces, 30% in coastal and central provinces and 20% in southern provinces including the Mekong River Delta. About 25-30 million condoms per year were also smuggled in [95]. However, subsidy of condoms across a wide range of the population has led to distortions in the development of free market delivery systems as well as to lower the perception of condoms' value in general. This work was also hampered a high rate of turnover among population collaborators (as high as one-third) [56].

At present the only non-commercial organization with the appropriate social-marketing skills to take a lead role in a portfolio management approach for contraceptives has been DKT International [82]. Lack of coordination among channels and lack of coordination among governmental organizations, as well as a weakness in producing condoms has led to difficulties in managing general distribution (only 31% of collaborators participated in free distribution and social marketing) [74, 95].

5.2.4. Intervention

Little intervention or research has been conducted on family planning. But in what has occurred, the main goals were to reduce abortion rates or increase contraceptive use [10, 53, 98]. For example, one intervention on a new population - family health worker model showed that CPR, crude death rate, abortion rate, malnutrition and prevalence of antenatal care visits in communities which applied the new model were much higher than the control community. Research also showed that initiation of family planning is likely to be more effective for women when men are actively involved, as male involvement in family planning is an instance of behaviour change [98-100]. The results were also promising in reduction of abortions and the increase of IUD use. The provision of computers and training of qualified staff proved necessary for management of the project.

5.3. Abortion

Legal abortion was introduced in Viet Nam in 1960s as a right for women, but services were limited. Abortion rates increased rapidly to reach levels that were among the highest worldwide. Abortion rates among married women seem to have stabilized but a new phenomenon has appeared, i.e. increasing numbers of abortion among young, unmarried women.

The most commonly used method in Viet Nam for termination of pregnancy from two to 12 gestational weeks is the manual vacuum aspiration (MVA), known as the menstrual

regulation (MR) method if performed at up to six weeks of gestation. Dilatation and curettage (D&C) is also still used in facilities lacking MVA, which is the preferred method.

A medical abortion method, using mifepristone and misoprostole, was introduced in 2002 and may be used at up to seven weeks (49 days). Between 12 and 18 weeks of gestation, dilation and evacuation (D&E) is used to terminate a pregnancy. According to the recent Vietnamese National Standards and Guidelines for Reproductive Health Care Services, women seeking abortion should be informed about contraceptive methods by a counsellor specially trained in contraceptive counselling [101].

5.3.1. Rate of abortion in Viet Nam

The abortion rate in Viet Nam is very high and varies according to studies. It was reported at about 2.5 per woman in the past (Goodkind 1995), and more recently was about 2.8 per woman [7]. It accounted for about 40.7% against deliveries.

The National Committee for Population and Family Planning (NCPFP) reported the rate at 1.5 - 1.7. In fact, this rate increased by 9% compared to the goal of decreasing rates to 30% [73, 74]. The rate was higher in urban areas and lower in rural areas. Figures were highest area in the north-west of the country followed by the north-west and Red River Delta areas; lowest was the Southern Central Coast. Other areas were around 0.7% to 1% [74, 102]. These abortions were mostly performed at hospitals or clinics at different levels, mostly by vacuum extraction. Few were medical abortions [103].

Abortion rates at 17-20 weeks accounted for 48.1% of these figures and the rate of instances later in the cycle accounted for 9.1% and increased by year [103].

5.3.2. Perception of abortion in Viet Nam

In Viet Nam, the foetus is seen as "belonging to the domain of nature", and an early abortion is therefore a morally neutral act. But in the "social-spiritual" view the foetus is a cultural being and abortion at any stage of gestation is consequently a sin. Late term abortions are considered morally wrong. People therefore tend to harbour considerable moral scepticism toward induced abortion, particularly if it was performed in the late stages of pregnancy [104].

Students revealed a general disapproval of adolescent pre-marital sexual relations and abortion, but also an empathic attitude and willingness to support young women who bore the consequences of unwanted pregnancies [105].

5.3.3. Characteristics of women seeking abortions

Most women who sought abortions were at reproductive age (50%) and few (15%) were adolescents. The rates varied depending on the study. The highest proportion was for married women and about one-fifth to one third were young and unmarried [7, 103, 106]. Many of them had no children previously and about half of them had previous abortions (up to eight cases) [103, 107]. Younger women were more likely to have late abortions [108]. Women who had been abused by husbands or boyfriends were also twice as likely to have had multiple abortions [96].

Awareness of methods of family planning was low among women who has sought abortions [106]. About two-thirds of married women who have sought abortions reported using some kind of contraception. The most common were IUD, oral pills, and condoms. Few unmarried women in this group reported practicing family planning in. The main reasons for lower use of contraception were fear of side effects such as bleeding, back pain, reduced sexual pleasure and cost [73, 78].

5.3.4. Reasons for abortion

Reasons for abortion differed among studies. The main ones were "do not want more children"; small child; single (unmarried); "do not want to get married" (in cases where marriage would be required); inconsistent use of contraceptives or use of less effective methods; and "do not use of contraceptive method due to fear of side effects" [7, 61, 109, 110].

About one-fifth of women used abortion to terminate pregnancies and two-thirds of aborted cases were fallers using a contraceptive method [78].

5.3.5. Quality of abortion services

Abortions were mostly performed at hospitals or clinics at different levels. Most were vacuum extraction and few were medical abortions [108].

Surveys assessed different factors when investigating the quality of abortion, such as facilities, skills of health providers and counselling services. In only one study was the facility was sufficient [7]. In other studies, the facilities did not meet requirements on technical and hygienic conditions. Lack of equipment, lack of drugs and lack of IEC materials were also reported in these studies [110].

The low performance of health providers in abortion services was also a consistent factor in all studies. And while health providers specializing in Obstetric/Gynaecology (Ob/Gyn) were trained on abortion techniques, only 50% of them could perform the services [109]. Most did not follow all of the steps in national standards, such as prompt testing, physical examination, counselling and sterilization procedures [109]. Very few health providers administered the quick test; blood test and physical examination before abortion and about one-fifth to one-third did not counsel women before the service. And few knew the consequences of abortion. They proceeded (incorrectly) as if abortion were one kind of family planning method [61, 96, 106, 110].

There were also contradictions between cultural norm and the responsibilities of health providers regarding abortion. Although they were not favoured on counselling premarital sex and abortion services for young unmarried adolescents, they still expressed the caring attitudes for unmarried coming for abortion [101]. Adolescent sexual and reproductive health still creates ethical dilemmas for future midwives in Viet Nam. This was very useful for the medical universities/secondary medical schools to consider on delivering training programs for students. The program should not only cover the technical procedures of abortion services, but also the moral reasoning around ethical dilemmas [105].

5.3.6. Medical abortion

Clinical trials were conducted in different hospitals in provinces in Viet Nam to assess the inclusion of mifepristone and misoprostol for early pregnancy termination following the Viet Nam National Reproductive Health Guidelines in 2002. The areas of focus were Ho Chi Minh City and Hanoi. The purpose of all clinical trials was to assess how to move from clinical research to widespread public sector availability. The sample size of some studies was large and representative in number of provinces.

The RH standard for medical abortion by 49 days using mifepristone and misoprostol was effective, safe and well-accepted by women [111]. Only a few minor concerns were reported, such as bleeding, pain/cramps, costs and complexity of procedures/observation, and these were still tolerable. Home administration of misoprostol was assessed in different studies. Location of misoprostol administration did not affect efficacy rate. Medical abortion with the option of home administration of misoprostol was also assessed as safe and feasible for introduction into the Vietnamese health care system [112].

In order to expand medical abortions to a larger setting, it would be necessary to plan for supplying drugs at affordable prices and plans should incorporate ways to reduce the high price of mifepristone and deal with provider expectations of extra allowances, as with surgical abortion. Making medical abortion a viable option for most Vietnamese women will require provision at commune-level clinics through mid-level providers, and with home use as an option. Other challenges include the use of misoprostol alone and regulating provision in the private sector [113].

One study assessed the misoprostol for cervical preparation prior to D&E and the feasibility of MVA for the use of D&E with late abortion cases. The result of study confirmed the procedure may be appropriate in other low-resource settings lacking safe, effective abortion services in the second trimester [114].

5.3.7. Complications of abortion

Two longitudinal studies were conducted to identify the prevalence of complications with abortions in Thai Binh and Nam Dinh provinces. The prevalence of complications varied from 1.5 to 2.1% and included shock, haemorrhage [109, 110]. One month after abortion, the complication rates were higher (about 10%). The main causes were infections, cervical inflammation, bleeding and endocervicitis. Late complications were infections and menstrual disorders. Rates of complications were also higher for abortion than for menstruation.

5.3.8. Intervention to reduce rates of abortion

Only one intervention was aimed at reducing the abortion. This achieved good results with the reduction in general abortion rates of 12.75% and reduction in abortion/deliveries of 6.34%. The increase on contraceptive use of modern methods. The study concluded that interventions aimed at providing counselling on abortion, for instance that discussion of severity, consequences and risks associated with abortion might be key topics to help reduce rates and increase the use of contraceptives [8].

5.4. Reproductive Tract Infections

Reproductive tract infections (RTIs) are infections of the genital tract. This is a broad term that includes sexually transmitted infections (STIs) as well as other infections of the reproductive tract that are not transmitted through sexual intercourse. They affect both women and men. STIs in most cases have much more severe health consequences than other RTIs [70].

RTIs are caused by organisms normally presented in the reproductive tract, or introduced from the outside during sexual contact or medical procedures. In women, overgrowth of endogenous micro organisms normally found in the vagina may cause RTIs (yeast infection, bacterial vaginosis). Medical interventions may provoke iatrogenic infection. In men, sexually transmitted infections are much more common than endogenous or iatrogenic infections [70].

5.4.1. General prevalence of RTIs

The prevalence of RTIs among women in Viet Nam is high. However, the data on prevalence of RTIs is inconsistent among studies. Some studies revealed that about half of women had some gynaecological and/or lower reproductive symptoms [45, 115]. In other studies, the rate was much higher and accounted for about three-quarters of women [116, 117]. Up to 80% of women have had some clinical symptoms, of which two-thirds were diagnosed with RTIs [10]. However, it notes that these studies used health facility based sampling.

In a reproductive health setting such as antenatal and family planning clinics, non-sexually-transmitted diseases and RTIs are usually more common than STIs (WHO 2005). Among pregnant women, about one-fifth to half of women were diagnosed with one type of RTI. However, the rate of RTIs varied according to diagnostic tests in terms of sensitivity and specificity [118]. The rate of STIs among pregnant women was lower [60].

Bacteria, fungi or viruses are the main causes of RTIs. According to some research, fungal RTIs (Candidiasis) were the most common and accounted for about one-fifth of cases. Following was hepatitis B (one-tenth) [10, 116-118]. However, other research reported that bacteria was the most common cause, accounting for about half of cases studied [45]. In addition, Human Papilloma Virus (HPV) with DNA+ was found in one-tenth of respondents in research in one large city. In that study, HPV 16 was the most common types of HPV infection in the population research [119].

Gonorrhoea, chlamydia, syphilis, chancroid, trichomoniasis, genital herpes, genital warts and HIV are the most common STIs worldwide [70, 120, 121] and the trend is similar in Viet Nam. Gonorrhoea was the most common, accounting for about one-tenth to one-third of the population. Following was chlamydia and/or syphilis, which accounted for about one-tenth of population. Least was HIV/AIDS [48].

STIs were higher among high-risk groups such as female sex workers (FSW) and STIs clinic patients. HIV/AIDS was highest among these groups as well, accounting for about one-sixth of respondents, followed by syphilis, gonorrhoea and/or Chlamydia. The rate

of STIs among IDUs was about one-third to half, and was lower among FSW, which accounted for about one-tenth [120, 121]. Among young military recruits, Chlamydia or/and gonorrhoea and/or syphilis accounted for the highest figures [60, 120, 121].

5.4.2. Characteristics of RTIs

The rate of STDs varied widely according to geographic location, sex, age, marital status, and occupation of respondents. The rates among rural people were higher than among urban populations. Women were more likely to report of having STDs than were men and those who had STDs previously were more likely to have them than were newly identified cases [45, 116].

Research in one rural area showed that the middle-aged women were more likely to report of having RTIs than were younger or the older women. Rates of RTIs among women aged 26 - 45 were about half to two-thirds, while rates among women aged 19 - 25 or above 45 were only about one-third [10, 122].

HPV was more likely among younger groups than those 55-64, and the rate was about two to three times higher [119]. People, who were using IUDs were more likely to report of having RTIs than other [10, 45].

Housewives were more likely to report having STDs than were women who worked in the fields [10, 122]. Farming women and women involved in fishing were also more likely to report having STDs than were officers [10, 116].

Different STIs/RTIs tended to overlap in a clinical setting, especially in women. Symptoms noticed by patients, and even the clinical signs found by health care providers, were often similar, making the distinction between sexually and non-sexually transmitted RTIs difficult to discern. This lead to late diagnosis among many young unmarried women [10]. About two-thirds of patients noticed symptoms such as penile/vaginal discharge while few people detected other symptoms such as genital tract pain, scrotum or testicle pain, and lower abdominal pain. These symptoms seemed disappear after a short time [122].

5.4.3. KAP related to RTIs

Most researchers agreed that knowledge on RTIs is still poor in Viet Nam. About one-tenth of women did not know any symptoms or prevention methods. One-third of women did not know any causes. The most common cause identified was poor personal hygiene [10, 123]. Few youths, meanwhile, knew that unsafe sex with FSWs and sharing syringes were high-risk behaviours [6].

This poor knowledge was related to unhealthy behaviour. About one-sixth to one-third of pregnant women had some RTIs symptoms but did not seek any health examinations due to the fear of side effects that the therapy may have on their babies [123].

About one-third to half of STI patients followed advice or experience from friends and relatives without seeking any medical attention. Among those who sought out health professionals for RTIs/STIs, only one-third of them followed the treatment [122].

A very small number of youths detected their STDs and all of them chose public clinics for treatment [6]. About half of women did not having appropriate personal hygiene, such as daily vaginal washing [115] and most of young students had not received appropriate training on reproductive health and sexuality [124].

5.4.4. Factors related to RTIs

Few researchers tried to identify factors related to RTI(s). Most focused on high-risk groups, such as female sex workers (FSWs). One study showed that for sex workers, negotiating condom use was the lead factor in protection against STI infection. Consistent, successful negotiation on condom use was common among FSWs, who had fewer clients, understood how HIV was transmitted, and who had not reported ever having any symptoms of STIs [125]. In contrast, other factors, such as low income (approximately \$32 US per month), young husbands and pain during sex from gonorrhoea and/or Chlamydia (in FSWs) increased the risk of infection [48].

5.4.5. Role of the private health sector in dealing with RTIs

In addition to public health clinics, sites in the private health sector such as private pharmacies, have become increasingly important in counselling for, detecting and managing about half of all STIs [122, 126]. Nonetheless, it is worth notice that some treatments put forward by private pharmacies did not follow national guidelines in most cases.

In general, more than a half of patients did not ask for, nor did they receive, receive any advice from pharmacists and one-quarter had questions on sexual activity overall. Very few asked about the health of their partners. And although financial incentives were the priority for private pharmacies, they have tended to refer cases to doctor for treatment after the appropriate intervention [127, 128].

5.4.6. Intervention model

Four interventions were implemented and mainly aimed to increase knowledge on STIs. One intervention in an urban setting found that community volunteers and Project Working Group were effective methods for achieving community-based management with support and direction by the government. This model contributed to an increase in knowledge among drivers and boat crewmen in naming STIs diseases and methods of interventions. It also increased the use of condoms in the target intervention group [129]. Other intervention projects noted that by increasing the knowledge of participants could achieve a reduction in the rates of RTIs among reproductive aged women [130-132].

5.5. Adolescent Reproductive Health

A total of 20 research were collected in the survey; the main topics were contraception, sexual maturity, premarital sex, teenage pregnancy, abortion, STDs and HIV/AIDS. There was no study to explore one ARH topic exclusively and rather a combination of these topics was more the focus at varying levels. However, none of the studies reviewed focused strictly on teenage pregnancy and abortion for unmarried adolescents.

5.5.1. Sexual maturation

Sexual maturation involves different topics, such as menstruation and hygiene, possibility of conception, need for contraception and prevention of unwanted pregnancy. Findings showed low knowledge on the menstrual cycle and fertility. Only 44.6% of adolescents gave the correct answers [133].

Knowledge on conception among adolescent was also low. Only a limited number understood the possibility of pregnancy (15.9% correct), period for conception (29.1%), and signs of pregnancy (41%). Knowledge among male adolescents was higher than that among females, and older (20-24) was better than younger (15-19) [134]. Information on sexual maturation is extremely important for adolescents and should be improved in the future.

5.5.2. KAP related to ARH

Contraception

A large number of studies explored the knowledge and use of contraceptives. Most consistently listed were condoms, oral pills and IUDs in that order [62, 134]. But few people could correctly describe these in detail (6,8%) [70].

Knowledge on the benefits of contraception was also limited. Women scored higher than men, urban higher than rural [135-137]. But there were differing figures on the use of contraception during sex. Some reported a high rate of use [133]; and some low or inconsistent use [62, 134].

Adolescents mainly used ineffective methods, including withdrawal (pulling out) and periodic abstinence. Among those who did not use any contraceptives, sexual relations were often occurred unexpectedly [136].

Use of condoms was generally very low [70]. Males usually held prerogative in deciding whether or not to use condoms during sex. Main reasons preventing male adolescent condom use were perceived confidence that the female partner was health and unavailability of condom when needed. And main reasons preventing women from purchasing or using condoms were possible negative perception as being 'promiscuous' in society and legal issues. Use of condoms in Viet Nam has traditionally been associated with prostitution and 'sex without love' [70, 91, 135]. Other reasons also were also indicated, such as unpleasant smell of the condoms themselves, size, and poor durability [91]. Some suggestions also mentioned offering different types of condoms (size, colour, smell and points of sale).

Surveys also revealed that the perception of abortion as a means for preventing pregnancy was quite common [134]. Findings showed that little discussion on FP actually occurred in this respect. Unmarried men were also more likely to discuss sex during studies while women felt uncomfortable or expressed difficulty when talking about these issues. Passiveness of unmarried women in making the decisions on use of condoms and other contraceptives was also commonly reported [136]. Thus, negotiation skills for both male and female adolescents should be addressed in the future.

Sexual activity

Studies explored different views on premarital sex and pregnancy outside of marriage. While some supported premarital sex, others opposed it [70, 91, 135].

Rates of premarital sex were consistently reported as low [62, 70, 133, 134, 138]. SAVY indicated that about one-third of urban men and one-quarter of rural women reported premarital sex. This also occurred more frequently among older adolescents and upper secondary school pupils.

Teen pregnancy

Only one study investigated teen pregnancy. It found that pregnancy at young ages increased the risk of eclampsia threefold, abnormal delivery 1.5 times the average risk of complications 1.5 times the average, risk of preterm twofold, risk of underweight birth 4.5 times the average and risk of infant mortality 2.5 times [139].

STIs and HIV/AIDS

Researchers also evaluated knowledge on STDs and HIV/AIDS. In general, this was limited. About two-thirds of adolescents knew the ways in which these diseases are transmitted as well as methods of prevention. About one-third to two-thirds knew that anyone could be infected by HIV/AIDS, and also methods of prevention. This knowledge was lower among out of school adolescents [70, 88, 137].

5.5.3. Prevalence of risk behaviours among adolescents

Adolescents reported several risk behaviours and prevalence differed according to behaviour. About one-tenth of adolescents were smokers and SAVY reported that alcohol and drug use was the most common risk behaviour [70]. About one-third used alcohol. Drug addiction was less common, accounting for about 5% [140, 141]. Studies found the most common reasons for drinking alcohol were socializing with friends, celebrating holidays or weddings, and sharing happiness or "sorrows". Peer pressure was also revealed as an important reason. Data also revealed a strong association between alcohol use and unsafe sexual behaviour due to lack of control while drunk.

Exposure to environments with many risk factors, such as unprotected sex and drug use, was another potential risk for STDs and HIV/AIDS [51, 138]. And risk was increasing, particularly among migrant groups [135].

In addition to these risk behaviours, other health problems also were reported among adolescents. Digestive problems were highest, followed by vision problems for urban adolescents. Chronic diseases such as asthma, rhinitis and gastro-enteritis were also reported among adolescent, but accounted for an insignificant proportion. Men had higher risk than women, but they also felt more stronger than women [70, 140]. Rural adolescents were more vulnerable than urban youth to high school drop-out, lower literacy and low attendance, less access to information and less knowledge on RH, hence a need for increased attention in these areas.

Age, gender, living situation, single-parent household, school drop-out, chronic disease and risk behaviours were identified as determinants of adolescent quality of life [140].

Some studies indicated other issues, such as lack of knowledge on client's rights, accessibility, and confidentiality as risk factors [62].

5.5.4. Protective and risk factors

The reviewed studies indicated different factors related to ARH. These were classified into two groups: protective and risk factors.

Parents

Family was considered a protective factor [70]. Most parents did not want their children to have sexual relationships while still of school age/premarital sex [137]. They also played the main roles in supporting financial conditions. In addition, they also had a significant impact on mental and psychological life of adolescents since adolescents were less likely to be prepared with psychological change.

Education

In the survey, school environments became more supportive for adolescent development over time [70]. The school system in Viet Nam has become relatively responsive to HIV/AIDS prevention, but was still not completely sufficient at the time of survey. Several issues still needed to be resolved such, as lack of coordination/guidance from Ministry of Education and Training (MOET), lack of funding, lack of indicators for monitoring and evaluation, quality control, and lack of reference materials [138].

Compared to HIV/AIDS prevention programmes, RH education in schools was not adequately addressed. RH materials and information were not available at colleges/universities or in school programs [138]. Information on puberty and menstruation was also weak in the ARH programmes [142].

Other factors

The highest priority for adolescents was work and employment [70]. One study used the ACASI computer model for data collection on adolescent health issues. This data collection technique has higher prevalence rates for sensitive and stigmatized behaviours compared to pencil and paper survey and researchers should consider on using it for future studies dealing with sensitive and stigmatized topics [143].

Some studies also explored the need for sex education for adolescents. Most parents felt more comfortable discussing the changes in psychology and physiology during puberty with sons (over daughters) and how to keep relationships in the "friendship" level [144]. However, most of them reported a need to talk to their children on issues related to puberty, especially gender and sexual health [145], and the need to improve their own knowledge. Girls were more interested than boys in asking their parents about issues related to puberty and the order of priorities was: menstruation, changes in the body, friends, relationships and psychological changes. Unfortunately, knowledge among both parents and children on such topics was limited [145].

IEC activities had important significance in education on sexual perception and behaviours. Person-to-person communication played a major role in safe sex for adolescents. However, communication faced some constraints (capacity to disseminate timely, precise

and condense information to its target group). Mass media also had difficulties in providing sex education to young people due to low capacity.

5.5.5. Intervention

Only one intervention study was conducted successfully on ARH. Those who participated in the project reported a higher ideal age for marriage for both men and women, higher ages for parenting and better knowledge on STDs (transmission), on HIV/AIDS prevention, prevention of pregnancy, use of condoms and more frequent discussion on ARH. However, the study found limited success in increased social support for ARH and improved availability and accessibility of RH services for adolescents. The lack of a needs assessment and poor IEC materials was the chief limitation [146].

5.6. Infertility

Infertility is the inability to create or sustain a pregnancy after one year of consecutive attempts. This includes recurrent miscarriage and can apply to both women and men. In primary infertility, pregnancy has never occurred. In secondary infertility, one or both members of the couple have previously conceived, but are unable to conceive again after a full year of trying.

Infertility can be due to many causes. Studies have shown that a little more than half of cases of infertility are a result of female conditions. The remainder is caused by sperm disorders and by unexplained factors. Most types of infertility are treatable. In some cases, in-vitro fertilization and other lab procedures may be used to ensure fertilization, and special medical care or medication may be required to enable the pregnancy to come to term

5.6.1. Prevalence of infertility

About 13 studies on fertility were reviewed including prevalence, diagnoses and treatment and KAP of respondents. Although there was no research at the national level, the overall data showed the increase of infertility rates.

The infertility rate was differed among studies. About 1.7% of women age 25 to 49 could not get pregnant. The levels of childlessness and infertility among women age 40 to 44 in Viet Nam were 0.9 and 0.8% respectively (in the five lowest levels), and among women age 25 to 40, were 1.3% and 1.1% [147]. In Thai Binh province, the rate was lower, at about 0.7% [148]. Secondary infertility was higher, accounting for about 6.0 - 7.0% [148-151].

5.6.2. Characteristics of infertility

Sex and age are the most common factors related to infertility as reported by the researchers. However, there was no consistent conclusion among the prevalence of infertility by sex. A study at the National Hospital of Obstetrics and Gynaecology showed that women with initial infertility accounted for about three-quarters of cases. Men accounted for smaller proportion (about 1%). In about one-quarter of cases the cause was

unidentified [152]. And in other studies, results were different. Men as the primary causes accounted for one-third of the cases and women just over half. In primary infertility, men counted for a higher rate than women. In secondary infertility, women accounted for two-thirds of cases while men account for about one-sixth [149, 151].

The age of infertile respondents was around 25 to 36 for women, with two to eight years unable to conceive [153]. Among clients unable to conceive, STIs were often present. About one-sixth of infertile patients were infected with Ch. Trachomatis [154]. Another study showed frequent pelvic inflammatory disease in women [152]. IUD use also was reported as a factor related to infertility [152].

5.6.3. Causes of infertility

Different causes of infertility have been investigated in both men and women. Among men, low sperm count was the most common cause [152] followed by low rates of live sperm, and low progressive motility of sperm [148].

The main causes in women were obstructions in the fallopian tube, RTIs, ovulation induction and polycystic ovarian syndrome (PCOS) [151, 152]; or inflammation [150].

Artificial abortion was the main cause of tubal infertility, accounting for one-third of cases, followed by PID (one-quarter), complications from IUD use (one-tenth) and pelvic surgery (one-twelfth) [149, 155]. Women who had previously experienced miscarriage, abortion, ectopic pregnancy or Caesarean section, were also more likely to experience infertility [152, 156].

With regards to secondary infertility, induced abortion accounted for a half of cases followed by pelvic inflammatory disease (one-third), and pelvic surgery (one-tenth) [152, 156].

5.6.4. Knowledge on infertility

Research showed that infertile couples still had misconceptions about infertility and its causes. They used other terms for it, such as child lateness, and childlessness to mask the reality of having no children. Many couples even denied the concept of infertility and particularly men refused to seek professional treatment. The concept of secondary infertility was also unfamiliar to many couples, and this might be extended the time for health care treatment. Adoption and foster care, meanwhile, were not common among infertile couples [157, 158].

5.6.5. Consequences of infertility

Among infertile couples, women often assumed all blame and had to bear physical, emotional and sexual violence as a consequence [157] and under these circumstances, infertility hampered their ability to live "normal" lives. They tended to be regarded as "inferior" in all relationships, then, because in Viet Nam, children carry on the family's heritage and "harmony", and are regarded as insurance for parents in old age. Infertile couples are then regarded as 'having problems' or, in traditional, spiritual terms 'unrighteous in their behaviour in previous incarnation'. Thus they are isolated from social activities and seek answers through prayer in a pagoda or sacred places to find "safe and sound emotions" [157].

The stigma of infertility and subsequent discrimination against infertile women is socially and culturally upheld not only by in-laws and family members but also by peers and community members including friends, neighbours, and colleagues. Women confronted with infertility face a life crisis, which leads to psychological distress [158].

Furthermore, infertility treatments are not covered by health insurance due to policy on population. Moreover, the cost of modern techniques, such as IVF, is high \$US2000 - 5000, and success rate is less than 25%. Only national hospitals could provide such modern treatment. In addition to these visible factors, other invisible barriers also hinder infertile couples in accessing health services: the paradox between social and cultural desirability and infertility; cost of treatment; over population and the rights to conceive are all factors [157].

5.6.6. Diagnosis and treatment for infertility

Different methods have been employed in Viet Nam in diagnosing infertility and treatment. In the review these tended to be listed in order of prevalence: laparoscopy, ovulatory stimulation, intra uterine sperm insemination (ICSI), in-vitro fertilization (IVF), intracytoplasmic sperm injection and laparoscopic tubal anastomosis [151, 153]. Up to this point there has been insufficient evidences efficiency or cost effectiveness.

One hospital-based study showed that intra-uterine sperm insemination had a higher successful fate and increased the number of frozen embryos compared to in-vitro fertilization (IVF). Evidence also suggested that combined IVF and ICSI in the same women may increase success rate [151, 159].

Laparoscopy was also considered as an effective tool to diagnose and treat infertility [150]. Ovary-fallopian tube X-rays proved valuable in diagnosing a "blocked situation", with high sensitivity but low specificity [152]. Other research revealed that hysterosalpingography (HSG) was efficient in investigation of the patency of the fallopian tubes, as well as in the treatment of tubal occlusion [155]. Yet to date there has been little comparison between the former two methods and the latter two [151].

A detailed study IVF was conducted in 2002, where high numbers of embryo were transferred. Data showed that younger age and secondary infertility were the main factors in success of IVF. However, researchers noted that after six years, success of this method was lessened [153]. Other clinical trials also compared the effectiveness of micronised vaginal progesterone and Crinone in luteal support of frozen embryo transfer (FET) cycles of IVF, but the difference between the two was insignificant [160].

5.7. Reproductive Cancer And Menopause

5.7.1 Menopause

Menopause occurs when a woman has had no menstruation for 12 consecutive months and no other biological or physiological cause can be identified. It is the end of fertility and the end of childbearing years. A woman may still, however, be able to become pregnant even when 12 consecutive months have passed with no menstruation. Often, a

woman knows she is approaching menopause when her menstrual period starts changing. The medical terms for this are "peri-menopause" and "menopause transition" This normally begins when women are in their 40s [161, 162].

Changes in menstruation (perimenopause) begin about six years before full menopause, when the levels of hormones produced by aging ovaries fluctuate, leading to irregular menstrual patterns (irregularity in the length of the period, time between periods, and level of flow) and hot flashes (a sudden warm feeling with blushing).

The survey team noted few studies on menopause in Viet Nam. The most common symptoms of perimenopause, such as hot flashes, fatigue and sleep problems made, up about two-thirds of cases [162]. About half of the respondents also noticed lessened sexual desire during the menopausal period [163]. Other changes included night sweats, mood swings, vaginal dryness, forgetfulness, trouble sleeping and fatigue (probably from the loss of sleep) [161, 162]. A study with 600 respondents in one city in Viet Nam found that the ages for the onset of changes in menstruation and menopause were around 45 to 50. They were not specific to race, religion, education or occupation [161-163]. There were also associations between the average menopausal age, age at the start of changes in menstruation and length of regular menstrual cycle (≤ 40 days) [161]. The longer the menopausal period, the more serious the vaginal prolapse reported [163].

When women approach menopause they are more likely to suffer from cancer of the reproductive organs, such as cervical and breast cancer. But few studies focused on identifying the relationship between menopause and reproductive cancer.

5.7.2. Prevalence of cancer in the reproductive organs

The survey team found that most research on reproductive cancers was small in scale. The results are therefore not representative of the whole country nor can they be compared to each other with biostatistically significant evidence. According to one study conducted in eight provinces, the rate of cervical cancer and breast cancer was about 25‰ in the community, and a 0.5‰ of them were in the metastagenicity stage [164]. Ho Chi Minh City ranked highest in prevalence of cervical cancer, at about 20‰ [119].

Research also revealed the differences in prevalence of cancer by geographic location. The rate among women in urban areas and northern provinces was higher than that of women in rural areas and south provinces [164]. There was little evidence for related factors.

5.7.3. Morbidity/mortality of reproductive cancers

The survey found no study on general data for mortality or morbidity related to menopause or reproductive cancers. According a survey of cancer pain at the tertiary level, head and neck cancer accounted for two-thirds of painful cases from moderate to severe pain, followed by gastrointestinal cancer (50%) and breast cancer (44%). Pain interfered with patient's work, enjoyment of life, daily activities, sleep, mood, and relationship with others (from one-fifth to one-third of cases). Gender, having had chemotherapy, and performance health status were also significant predictors for pain severity. Surgery, radiation, age and education were not found to be significant factors [165].

Another study evaluated the relationship of patient-reported duration of signs of breast cancer to survival in participants in a clinical trial of adjuvant hormonal therapy. The results revealed the limited impact of delays in diagnosis of less than six months. Delays of more than six months appeared to have only marginal impact on survival [166].

5.7.4. KAP on menopause and reproductive cancers

Women's knowledge on menopause and reproductive cancer was poor. A majority of women did not know any symptoms of cervical cancer [164]. Only about one woman per thousand knew some symptoms. This was partly due to a lack of information on this topic. Only about one-sixth of women had some information from the media [162].

5.7.5. Factors related to reproductive cancer

The studies in this survey did not confirm family history of breast or ovarian cancer as indicated by records, and differences in survival times among patients may be more related to genetics [167, 168]. However, the studies confirmed the relationship between parity, age and alcohol consumption and breast cancer. Women who were 25 years or older at first birth had increased risk of breast cancer compared with women aged less than 25 years at first birth (OR, 1.53; 95% CI, 1.20-1.95). Women who consumed alcohol also had increased risk of breast cancer compared with women who did not (OR, 1.85; 95% CI, 1.32-2.61). And compared with study controls, OR estimates for breast cancer by parity and age at first birth were significantly associated with cancer status. Family history, age at menarche, cumulative lactation, body mass index, and education, meanwhile, were not found to be significantly related to breast cancer risk [168].

The studies also found that human papilloma virus (HPV) was the most relevant factor in cervical cancer. This cancer was concentrated mainly in women aged 30 to 49, combined with HPV infection (76%). HPV 11 and HPV 16 were the most common in Viet Nam and screening for HPV is essential [169].

5.7.6. Diagnoses and treatment of cancer of the reproductive organs

Most of the research on cancer of the reproductive organs has been hospital-based and focused on certain types of diagnosis or treatment. Some tests were introduced for diagnosis of cervical cancer, such as GPBL for the HPV virus [169] or HPV, and HLA-DQB1 genotyping using cervical smear DNA, and Pap smear. The results suggested that cervical smears were an effective tool for the development of cervical cancer biomarkers [170].

In treatment of breast cancer, adjuvant post mastectomy radiotherapy (RT) treating trial on premenopausal women with clinical Stage II-III, RT improved disease-free survival and overall survival of women. However, the treatment only benefited patients with hormone receptor-positive tumours [171].

Another study was carried out from 1999 to 2004 to help establish nationwide cervical cancer prevention. This study noted that "real-world" obstacles to successful cervical cancer prevention are more related to people than to technology and that such obstacles can be appropriately managed through a systems approach focused on programmatic quality rather than through ideological commitments to technology. A focus on personnel, such as training and working conditions, are more important than technology itself [172].

5.8. Gender And Sexuality

5.8.1. Gender in sexuality

Perception on gender and sexuality is different among men and women. A common belief found in studies was that men were "strong, generous and free". They were considered to be noble, decisive, independent, dignified, generous and able to protect others, able to face difficulties, ready to take risks and to conquer, "thirsty" for freedom and willing to sacrifice [173].

Studies also found that sex is the "men's pride", the basis of his self-confidence, generosity, and ability and confidence to conquer. However, men surveyed seemed unaware that women place less importance on male sexual performance. According to studies, women value the family more than other issues, including sex. For the women in the studies, family "could not be changed" and "they would rather live alone with their children than marry" [173].

Most single men and men in relationships mentioned that their wives or partners "need their faithfulness most". Men also noted conflicting expectations from different women. However, most couples were uncomfortable talking about sex or family planning with each other and had strict ideas about women's "innocence" [173]. Only about one-quarter of couples reported a having discussions on sexuality or family planning [174] and the wife usually played a passive role in sexuality.

Despite the common notion that sex was the "men's pride" and basis for his self-confidence, men in they surveys still had sexual health problems and those problems needed to be cared for. Some studies explored the perceptions of rural Vietnamese rural men on male sexual problems and how these concerns were shaped by social, political, economic and cultural context surrounding them. One survey in Mungken, a rural Vietnamese town, concluded that male sexual concerns were the products of contrasts in understanding and conflicts among men about life, their role, and their bodies in a changing social and economic context [175].

In order to increase sexual desire and to attract partners, some men tried on different types of the penile implants available in Viet Nam, the survey found. Research teams investigated this practice through the perspective of the sexual partners involved, and their effects on sexual health [176].

Ethnic minorities, such as Dao, H'mong, Thai den and Khmer people practiced traditional social standards, which influenced their sexual perceptions and behaviours. These were early marriage, principles for selecting wives and husbands, and sexual behaviour. Social changes and economic improvements were key factors facilitating the positive development of social relations including sexual perceptions and behaviours. Population and family planning policies also affected the decision on number of children and sexual activity among these ethnic minorities. The people were aware of the significance of this policy and knew about the role of contraceptives [177].

Other studies explored the notions of morality and consent in sexual relationships [64, 178] as well as sexual exploitation of young women due to migration and other related factors at the national, communal, familial and individual levels [179].

5.8.2. Domestic violence

The UN Declaration on the Elimination of Violence against Women (1993) defines violence against women as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or mental harm or suffering to women, including threats of such acts, coercion or arbitrary deprivation of liberty, whether occurring in public or in private life."

Violence by a male intimate partner (also called "domestic violence") is widespread in Viet Nam. However, in studies surveyed there was a great deal of variation from province to province and from setting to setting within the same province. This has become quite a common topic for debates in different forums, workshop and conferences around the country. However, it was still somewhat difficult to evaluate the gender-based violence in Viet Nam due to a lack of [180]. Usually, it was investigated under three common types: physical, sexual and mental violence.

5.8.3. Prevalence of domestic violence

Violence against wives by their husbands is the most common form of domestic violence in Viet Nam and most research on this topic has been qualitative. However, some studies have combined qualitative and quantitative methods.

Some research explored domestic violence against women in the 12 months before the survey as well as over the lifetime of respondents. The Viet Nam Women's Union (VWU) reported that 3% of women had been beaten by their husbands in the previous 12 months in a 2002 study. But that rate also varied greatly, and reached as much as 50% according to other studies [106, 181, 182]. Some studies explored domestic violence among specific groups, such as veterans or military; the rate was moderate-low to moderate-high [184].

Physical violence was the most frequent and easily recognized type of domestic violence. Actions where the man throws something, pushes, shoves or beats a woman or twists her hair, were the most common [182, 185]. Mental violence was also quite common although the rate differed among studies. About one-fifth of women experienced some type of mental violence, such as verbal abuse, scolding, prohibiting freedom or neglect by the husband [182].

Forced sex was described as the most common sexual violence, although sexual violence also was the less frequently reported [106]. According to one study, the prevalence of sexual violence was about one-fifth of respondents [182].

5.8.4. KAP related to domestic violence and gender equality

Awareness among women on domestic violence also was varied among studies. Most women surveyed had heard about the concept of gender equality, but very few understood it and many believed that gender was the same thing as sex [144]. Violence was described by women not only as physical but also, primarily, as affecting women's mental health status. Mental violence was exemplified as verbally offending, ignoring or humiliating a woman [182, 186]. However, many respondents also regarded husbands' verbal abuse against their wives as acceptable in family life. Only a few women knew about sexual vio-

lence in these studies while intimate partner violence was considered to be a "private matter", occurring in the home away from relatives, neighbours and the local community [182, 186].

Most women accepted domestic violence and only violence with severe consequences, such as wounding or drawing blood, was considered as domestic violence. Only very serious cases would seek health care [182, 186]. Many respondents also regarded husbands' verbal abuse against their wives as acceptable in family life [182, 186]. Thus, many of them would not take action while others "cried" and some approached authorities for help [181, 185].

5.8.5. Cause of domestic violence

The main causes of domestic violence were related to housework; teaching and feeding the children, husbands' gambling and drinking [182]. Age, education, duration of marriage, social support, financial status, number of children, husbands' drinking or drug use were also significantly related to domestic violence and gender attitudes [84, 182, 185].

In these studies, the root cause of gender-based violence was unequal gender relations. Men are more powerful than women and women are expected to be subordinate to men, and respond to all their demands [106]. This had an effect on respondents' actions against domestic violence [187].

Data revealed that both men and women were expected to perform specific roles in reproductive health. A woman's primary roles in northern Viet Nam were socially constructed as that of wife and mother. She was expected to behave in a faithful and obedient manner with her husband. Yet it also emerged that men's marital and sexual roles were less clearly defined by traditional norms and were more permissive in their tolerance of premarital and extramarital sex. For women, however, these activities were socially condemned [188].

The fear of a "reputation" was largely related to social norms of the husband's role in regards to extramarital sex. However, the fear was mediated by the context in where they worked. Weak network tied to a village and available money contribute to extra marital sex [189].

5.8.6. Consequences of domestic violence

The consequences of violence were more severe for women than for men, even though a significant difference was not reported [190]. The mental effect was more severe, such as sleeplessness, breakdown and a desire to divorce [182]. Divorce and deteriorating family finances were reported as serious consequences, not least for the children [186]. Among couples experiencing unidirectional violence, female victims of partner violence reported significantly poorer family functioning than male victims of partner violence. The effects of male-perpetrated partner violence on perceived family functioning may be larger than that of female-perpetrated partner violence [36].

5.8.7. Social and health care support in domestic violence

Knowledge of gender-based violence was high among health professionals. A high rate of health workers said that all actions that harm women in physical, emotional and sexual

aspects are gender-based violence. And almost all said that rape of women and children is a severe action that violates the law [36].

Currently, there is a lack of regulations on management of all health profiles/records on gender-based violence issues [36] and cooperation between local authorities and the health sector is weak. Local reconciliation groups, comprised of trusted community members, only play a role in mediating, while health professionals remain uninformed about prevalence rates, and are reluctant to intervene [186]. It was recommended that a resource network on gender-based violence against women should be established in order to improve the situation and empower local women [36].

5.8.8. Intervention

Survey teams found only one intervention study to combat violence against women and to support victims, in Soc Son, Hanoi, from 2002 to 2005. Findings showed that trainings, workshops, and programs to develop manuals for health providers all helped to improve awareness among health providers. They then participated more actively in the prevention of violence against women through screening, documenting and supporting victims. There was a significant improvement in changing the knowledge of women with regards to gender equality, and in the proportion of health providers who provided emotional support to victims as well as health providers who collaborated with local organizations (police, authorities and women union) in dealing with domestic violence. However, there was still a gap between knowledge and practice among health workers in supporting victims [191]. A pilot project conducted by the Women's Union on gender also showed the feasibility of a gender-based approach in reproductive health and family planning at different levels [84].

5.8.9. Gender in reproductive health

Preference for sons

Gender inequality was also very clearly reflected in the case of sex selective abortion. Women in the study expressed a need to guarantee their status and position in families and the community. Sons are generally preferred for three reasons: (1) high symbolic value, given the importance of carrying the family line; (2) high social value because they give status and legitimacy to adults who have them; and (3) high economic value, because they're responsible for their parents in old age and have more earning power. In Viet Nam, this constitutes a legitimate basis for sex-selective abortion. Mothers struggle for 'identity' and survival, and sex selective abortion could help them in that struggle. In spite of the costs of sex-selective abortions, the payoffs in their daily lives, then, largely justify their actions [188].

Increasing daughters' value, therefore, may be the only sustainable and viable option for winning the battle against sex selective abortion. Fundamental changes in children's gender roles will take time, but are the only effective way to reduce the strong demand for sex selection of children. Policy initiatives focusing on the girl child are absolutely necessary. Programmes aimed at increasing daughters' self-esteem and self-assertiveness, among other initiatives, would better equip women to reflect upon their reproductive choices and decisions when they become mothers [188].

Men's involvement in family planning and reproductive health:

Few studies explored the topic of male involvement in RH and FP was explored by few studies [36, 81, 98, 99, 144, 192, 193]. The differences between men and women were reported in specific RH activities and these reflected the influences of the social, cultural, political and economic context of the country. Although the majority of women were aware of and supported the use of contraception, the final decision on use of contraception and family size was still not made. The actual application of contraception mainly rested with women and a low proportion of men used male methods, such as condoms, withdrawal, vasectomy, or abstinence. Most men said that they did not like condoms due to the inconvenience they posed, reduction of pleasure and lack of need if the couple was faithful and had no diseases [173].

Family planning is therefore more likely to be more effective for women when men are actively involved. Male involvement in family planning was an instance of behaviour change and some studies used a Trans-Theoretical model (TTM) (model of behavioural change) to test men's involvement in general contraception and IUD use by their wives. The studies validated the tools for data collections and conducted a baseline and intervention using TTM as the theoretical framework. The study found that women's education and age, spontaneous recall of modern contraceptive method, disadvantages for IUD, and self-efficacy for contraception - and for convincing wives to get an IUD inserted (or continue use) - were significant predictors of men's readiness to accept IUDs. Interventions that are targeted at change, that seek to reduce cons and that increase self-efficacy have the potential to influence male involvement in adoption of IUD use by wives [193].

Women's age, educational level, religion, income, and gender attitudes were significant factors in certain decision, such method of contraception method and abortion [181].

Trafficking in women

One alarming topic in gender inequality is the trafficking of women. Quantity, scope and scale have all grown in Viet Nam in recent years. The pattern of trafficking in women has grown more sophisticated and aggressive in Viet Nam and violations against women's rights was more serious. The Government of Viet Nam has issued a number of policies and has taken measures against trafficking of women, and recorded certain initial results. However, much more intervention is needed at the national level to meet the reality of the situation [194].

5.9. Cross - Cutting Issues

5.9.1. IEC on reproductive health

Different IEC channels have existed in RH in Viet Nam. The most common sources for RH information, according to the survey, were mass media, such as TV and radio. There were also printed materials, such as books, newspapers, and leaflets. Health workers, population collaborators, friends, relatives [40, 195] also played a role in increasing IEC. Printed IEC materials were more likely to be available at commune health centres or from population collaborators [38].

Quality of IEC materials was modest, however. Most RH and FP information was poor in content and not appropriate in terms of language [40]. Messages on family planning were the most popular and well-known by the population, followed by reproductive health and safe motherhood. Sterilization delivery kit and urgent contraceptive method were least known. Awareness of FP and RH messages in mass media programming was highest in lowland areas, followed by upland areas and married women were better informed than adolescents [73].

Access to IEC materials was better in urban than in rural and remote areas. Notably, access to IEC information was most difficult for ethnic minority groups due to language barriers. Most materials were produced in Vietnamese and not targeted to include ethnic minorities. TV was also difficult to access in mountainous areas due to lack of electricity [38]. Access to media also increase with age and education [73].

Many other studies explored certain topics related to IEC on RH, such as sources of information and the need for information for different groups. However, only four studies looked exclusively at the impact of IEC on reproductive health. Most of these studies were done with ethnic minority groups, where access to information was rather limited. These studies identified the types of IEC existing in local areas, quality of materials, access and impact on reproductive health and the need for IEC on RH [38-40, 133, 136, 137]. Generally, IEC materials had a solid impact on improving knowledge on RH, but were limited in changing attitudes and behaviours. In urban areas, mass media had limited roles as well, while local radio had a greater impact [40].

Regarding adolescent reproductive health, the information in studies surveyed was too general. Integration of ARH in school in subjects such as biology and civil education was limited [70, 137, 196]. And the information mainly focused on childbearing, paying little attention to adolescent sexuality and reproductive health needs [105].

Most adolescents expressed a desire for more ARH information and the need for information differed according to ages. For young adolescents (10-14), the information on physiological changes at puberty, relations with friends, friendship and love was more appropriate. Those who were older wanted information on sex, conception, pregnancy and contraception, and STDs/HIV. Males needed more information on their roles and responsibilities in ARH and females wanted to know more about hygiene, behaviour with boyfriends, and unwanted pregnancy [135].

This information should be easy to access, for example, in the 'friendly corners' at the library, reading rooms, or house of culture with sufficient communication. Adolescents in the surveys also need to be informed of the concept of clients' rights in reproductive health.

The reports consistently revealed that the knowledge of sources of FP method was high. The most common source was drug stores and then, the friendly corners [133]. But survey teams also recommended a more suitable ARH model including life skills and healthy life education at the national level

5.9.2. Monitoring and evaluation

Monitoring, supervision and evaluation are considered to be a main strategy for managing and improving the quality of provision of RH care in order to achieve national strate-

gies in this area. But indicators are limited in the scale of current reporting as currently regulated by the Health Management Information System, and Statistical Reports by the Department of Reproductive Health at the Ministry of Health.

This survey observed several studies aimed at assessing baseline and end-line results [32, 59, 60, 73, 79, 88, 96, 135, 197-199]. Surveys on RH services were conducted in several projects, providing an overall picture prior to planned intervention. The results of these surveys were used for training, planning, IEC/BCC, upgrading health facilities, and monitoring and supervision to improve the quality of RH services in these sites. The results of end-line surveys began to show changes in monitoring indicators toward the achievement of project goals/objectives.

The survey also looked at some midterm assessments of projects [46, 132] and M&E showed changes indicators as well as a need for improvement in certain issues or adjustment of strategies toward end of project if necessary. Besides these, some other purely M&E studies were conducted [90].

Survey teams also observed that baseline/end-line surveys, mid-term reviews and M&E studies served as essential tools for M&E in this survey and contributed towards the realization project goals. These proved critical for assessment of project performance. In the recent years, there have been many improvements in the system of reporting, filing records and collecting data on RH services in Viet Nam; more valuable information was collected to monitor and to evaluate the implementation of target indicators for RH care facilities. However, that information reflect mainly the quantitative aspect rather than the qualitative and services have not followed a unified procedure of monitoring indicators and supervising quality, although MOH did develop guidelines for M&E for RH services in 2005.

5.9.3. Retraining for health cadres

Retraining for health personnel, including managers, doctors, nurses, midwives, and health collaborators is a vital strategy in RH projects, and this was adopted by about 83% of all RH projects [12].

Careful selection of participants and good training programmes for midwives in Nghe An project, in one study, served as an example of a successful strategy in improving the delivery of care in the project site [54]. In addition to professional training programs, other training programs for health staff are also important, such as for population collaborators in improving networks [56]. A training programme for private pharmacies in dealing with RTIs/STIs also served as a good model for involving networks in prevention [128]. Other projects reported better project management, including in reporting practices when training on basic computer skills for project staff [53].

5.9.4. Policy on RH

Few of the studies addressed the issues related to policy on RH. Most aimed to review implementation of policies on RH, such as the implementation of population and family planning in some mountainous areas [76]; or quality of family planning services for adolescents [97]; or the implementation of social marketing of RH services for women and youth in some provinces in [47, 200].

There were two reports on the review of implementation of RH strategy after five years [201], and a review of implementation of population strategy after five years [72]. Regarding gender equality, there was one report on the situation analysis and policy recommendation to promote the advancement of women and gender equality [106].

All of the reports focused mainly on identification of the current situation related to RH indicators (family planning, population, RH services) and was compared with goals and objectives (indicators), providing recommendations for achieving goals/objectives. None of the studies aimed to review the RH policy process: how policy was made, whether this was evidence-based policy or not, and whether policy implementation was effective in practice. Nor was there in-depth study of policy content and context related to RH. It would therefore be useful to have some policy assessment related to RH strategies and policy in the future.

Although several RH studies conducted in recent years served as useful references for development of important policies and guidelines related to RH, such as a National Plan for Safe motherhood, many others still did not communicate the results to policymakers and the link between research and decision-making systems remains weak.

Policymakers need "the right information in the right form at the right time". In Viet Nam, the policy brief, or fact sheet, is the common form for policy communication strategy, and presents information on magnitude/dynamic of problems, causes of problems and political context, outlines the basic actions that can be taken, as well as possible outcome.

There is also another important approach to conveying research results to policymakers, and that is via the media. Once the mass media take up an issue, the likelihood that policymakers will become interested in it increases dramatically, particularly if the issue has a high public profile. In order to attract the media, research results have to be condensed and simplified, and must be put into a media-friendly context. The more the media reports about an issue, the higher it will climb on the political agenda, and the higher it is on the political agenda the greater will be the impact achieved by research.

Effective communication of state-of-the-art research to policymakers and the media will help to ensure that decisions RH issues do not become prey to populism or irrationality.

VI. Conclusions

This review was conducted using a systematic review framework recommended by the WHO. This framework allowed reviewers comprehensive tools to review research on RH conducted from 2000 to 2006. The findings were made in two parts: research methodology and findings of reports. The findings suggested that much effort had been invested in RH and many studies conducted on diverse topics with both a medical and public health approach. And a more social than epidemiological focus was reflected in this review.

6.1. Research methods

Topics

Over two hundred studies were conducted in different topics on RH. Fewer were conducted in other areas, such as RTIs/STIs, gender & sexuality, abortion and adolescents, menopause, infertility, reproductive cancers and IECs.

Participants

Most research included both men and women. However, men tended to be less of a focus than women. Although research covered a wide range of participants, from adolescents to elderly, the main population was reproductive age, followed by menopausal women/elderly people and adolescents. This distribution is consistent with RH focus, mainly on RH topics at RH ages.

Design

Different study designs were applied to the RH field, but stronger designs, such as clinical, intervention, cohort or longitudinal studies were modest and the majority used a cross sectional approach.

Outcomes

Most of the studies focused on factors associated with conditions under investigation, followed by prevalence of condition and KAP. Least was mortality/morbidity. Finally, a lower number of studies used an epidemiological approach to identify the prevalence or mortality or morbidity.

Setting

RH research was conducted in rural and urban areas.

Quality of reports

The quality of research was subject to several mitigating factors, such as a lack of a clear definition of conditions under investigation, lack of reliable sampling method, lack of reported data collection time, simple statistical techniques and a lack of approval of ethical committee on the conducting research.

6.2. Findings

Safe motherhood

In a big scale study conducted in 2002, the maternal mortality rate in Viet Nam was officially reported as 165 per 100,000 live births. The reported MMR was different among regions in Viet Nam, high in mountainous areas and lower in the Red River Delta region. The major causes of MMR in Viet Nam were mostly related to haemorrhage, pre-

eclampsia, infection, and complication from abortion, uterine rupture and ruptured ectopic pregnancy. Three-delay model was adopted for interventions in the SM program. The main approaches in SM intervention were training, IEC, providing medical equipment and upgrading infrastructure.

Data on neonatal and perinatal mortality were recorded based on health information systems. IMR was reduced to 18.1 and neonatal mortality was reduced to 18.1 in 2005. However, this number was very high in mountainous and remote areas. This is a call for researchers using verbal autopsy or global burden disease methods in comprehensive surveillance system to measure precisely both MMR and IMR.

KAP of women in safe motherhood programming was quite good except for postnatal care. The reproductive health of people in remote and mountainous areas was quite poor and home delivery was still common among ethnic minority women.

Other issues, such as low birth weight, anaemia, preterm birth, and depression among postpartum women were also indicated and in particular low birth weight, preterm birth and depression among postpartum women should receive greater focus in the future.

Family planning

FP saves the lives of women and children and improves the quality of life for all. Viet Nam has reached the replacement birth rate and the TFR reached 2.11 in 2005. Contraceptive prevalence rates also steadily increased from 73.9% in 2001 to 76.9% in 2005 with the rate of modern contraceptives rising from 61.1% in 2001 to 65.8% in 2005.

Choices of contraceptive also expanded. IUDs were the most common method, followed by condoms and oral pill. However, some data also suggested that there were still unmet needs in contraception, especially for condoms and oral pill. Among reviewed papers, there was no research on maintenance of contraceptive methods. Research on evaluation of FP intervention was also rare.

Abortion

Abortion was introduced early 1960s and it is a legal in Viet Nam. The abortion rate is very high, at about 2.5-2.8 abortions per woman, or 40.7% compared to pregnancies carried to term. Most abortions were performed at hospitals or clinics at different levels using vacuum extraction, and few were medical abortion. Abortion at 17-20 gestational weeks accounted for 48.1% and the later weeks accounted for 9.1%; this increased by year.

Most women seeking abortions married and from one-fifth to one-third were young and unmarried. Awareness of FP methods was low among them, especially among unmarried women. The prevalence of complications during abortion varied from 1.5 to 2.1% and one month after the procedure, the rate was reported at about 10%. Rates for complications were higher for abortion than for menstruation.

Interventions in reducing abortion were rare. Interventions providing counselling on severity, consequences and risks involved in abortion might, however, be successful in reducing the need for the procedure and in increasing the use of contraception.

RTIs

The prevalence of RTIs among Vietnamese women is high, ranging from half to about 75% of all women. However, health facility based sampling was applied in studies. Among pregnant women, the rate with one type of RTIs was about 1/5 - 1/2 of all cases.

Bacteria, viruses and fungi are the main causes of RTIs. Fungus (Candidiasis) was the most common type of RTIs, which account for about one-fifth of RTI cases, followed by hepatitis B. Other research showed that bacteria were the most common. The rate among rural populations was higher than urban populations and women were more likely to have STDs than men. HPV was more likely to be present among younger than older people and women using IUDs were more likely to report a having RTIs.

KAP on RTIs was poor in general. The private health sector, such as private pharmacies, played a role in counselling about half of STIs cases, however treatment for RTIs/ STDs recommended by these private pharmacies did not follow national guidelines in most cases. Finally, interventions in reducing RTIs were mainly to increase knowledge on STIs for high risk groups only.

Adolescent reproductive health

Among 20 reviewed papers, none explored ARH exclusively. Most addressed a combination of topics on contraception, sexual maturity, premarital sex, teenage pregnancy, abortion and STD/HIV/AIDS with varying degrees.

Knowledge among adolescents on the menstrual cycle, fertility and conception was low. Knowledge among males was higher than among females, and older respondents (20-24) scored better than younger respondents (15-19). KAP on contraception, sexual intercourse, teenage pregnancy and STIs/HIV were limited among adolescents. This resulted in several high-risk behaviours, such as premarital sex, low condom use condoms, and late-term abortion. Other risk behaviours among adolescents, such as smoking, drug use and alcohol use were also reported.

Family and education were cited in most studies as a positive factor in ARH. IEC has also had an important influence on education and sexual perceptions and behaviours. Person-to-person communication still played major role but also faced many constraints. Mass media and school curricula were also lacking in sex education for adolescents. Services, IEC and social support for ARH were also limited.

Infertility

There was no national research on infertility in the surveys. Prevalence of infertility varied. Primary infertility was about 1.7% and secondary infertility accounted for 6-7%. The main cause in females was fallopian obstructions, RTIs, ovulation induction and polycystic ovarian syndrome. Causes in males were low sperm count, low rate of live sperm and low progressive motility of sperm.

Infertile couples still had misconceptions about infertility and its causes. Women often had often borne physical, emotional and sexual violence. And infertility was not covered by health insurance. Ultimately, high cost, low success rate and a limited number of hos-

pitals providing treatment were considered as barriers for infertile couples.

Reproductive cancer and menopause

There has been no national level research on reproductive cancer. According to research in eight provinces, the rate of cervical cancer and breast cancer was about 25‰ in the community and a 0.5‰ in the metastagecicity level. Prevalence of cancer different by geographic location. There was a relationship between breast cancer with parity, age, and alcohol consumption. HPV 11 and 16 was considered as the most relevant factor to cervical cancer in Viet Nam.

Women's knowledge on menopause and reproductive cancer was poor. Diagnosis and treatment was hospital based. Screening for HPV, Pap smear and self diagnose of breast are recommended for cancer prevention in the future.

Gender and sexuality

Little research has been performed on gender and sexuality in Viet Nam. What information there is has focused on gender norms, gender roles, gender in sexuality and domestic violence against women.

Prevalence of domestic violence within the past 12 months has varied from 3% to 50% depending on definition of the term used in the study. Physical and emotional violence were quite common and sexual violence was less frequently reported. The root cause of violence cited was gender inequality and consequences of violence were more severe for women than for men. And there is still a lack of policy and social or health care support for victim of domestic violence.

The review also looked at preference for sons, male involvement in reproductive health and trafficking in women. Preference for sons has sex-selective abortion in some areas and the topic of male involvement in reproductive health was quite rare. Research has also revealed that trafficking in women is increasing.

IEC on reproductive health

Different IEC channels on RH exist in Viet Nam, and the most common sources are mass media. However, quality of IEC materials is only modest. RH and FP information has been poor in content not in languages appropriate for all of those who needs services.

Married women were well informed than adolescents. The accessibility to IEC materials was better in urban than in the rural and remote area. Most adolescents expressed the needs for ARH information according to ages.

Policy on RH

Very few studies addressed chief issues related to policy on RH in Viet Nam. Current studies were focused on identification of situations related to RH indicators (FP, population, RH services) and provided some recommendations for achieving goals. But none of studies aimed to review RH policy processes.

The link between research and policymaking remains weak and advocacy has generally not used study results to communicate with policy makers. Therefore, strengthened communication between researchers and policy makers via media is crucial to improving RH outcomes.

6.3. Limitations

Although the review adopted the systematic review protocol, several limitations should be noted. First, the review was carried out over a rather short period (one month). This did not allow reviewers to search for information in other places outside of Hanoi. Second, due to lack of databases on grey literature, reviewers could not obtain all available reports for review. The information presented may therefore not reflect all trends or perspectives of researchers in RH in Viet Nam. Thirdly, due to limitations in some reports, some information could not be accurately classified and was put under the heading of "unknown" (design, setting, participants or sampling). Finally, the review did not report sample size of the studies, which could affect interpretation of data.

VII. Recommendations

For future research in RH, several issues related to the topics, study participants, design, setting, and quality of reports should be improved

Topics

Topics that were lacking in the research agenda should receive more focus, such as abortion, RTIs/STIs, sexuality, menopause, reproductive cancers, infertility, violence in the workplace, trafficking of women and the impact of IEC.

Design

More studies with highly developed evidence-based designs, such as RCT and quasi-experimental/intervention or cohort study should also be carried out. In order to improve the RH status of local populations, more research/ intervention is strongly recommended for program managers or researchers as well. Comprehensive intervention in upgrading facilities, strengthening personnel, equipment supply, service delivery, and IEC coverage are all points for consideration.

For certain topics, such as reducing abortion and increasing FP use, more operational research is encouraged. Other interventions in improving KAP on RTIs/STDs, as well as developing adolescent reproductive health models, are recommended. And interventions grounded in behavioural change theory would be more effective while qualitative research is recommended on the relatively new and 'sensitive' topics such as gender, sexuality and infertility.

The survey also revealed a strong need for epidemiological studies on prevalence of reproductive cancers and RTIs/STDs. and valuations of the impact of IEC and other interventions, for instance of the safe motherhood program and family planning, would contribute to overall attainment of RH targets.

Study participants

Male involvement is another important strategy in ICPD and interventions in RH should always involve men. Additionally, vulnerable groups such as ethnic minorities, people with low income and educational, and migrants should be engaged more.

Setting

Since RH indicators were found to be poor in rural and remote areas, more studies and interventions should be carried out for a deeper understanding of the true need for services.

Quality of reporting

Researchers should also develop stronger report writing skills. Reports should cover all necessary information, with clear definition of the issue, means of measuring (good or poor) and reports on data collection time.

The rights, privacy and confidentiality of study participants should as well be protected by following standards for research protocols, particularly with potentially 'sensitive' issues such as gender and sexuality. Thus, the survey team strongly recommends that researchers obtain ethics approval before any study is conducted, and this should be mentioned in the research report.

A further recommendation would be to strengthen the data analysis skills of researchers, especially on multivariate analysis techniques. And when interpreting findings, researchers should take more precautions, particularly in cases of small sample size.

Policy communication

Policymaking in any developing country, including Viet Nam, remains ad hoc and still may not fully use research-based information. This is due in part to the poor linkage between the policy research community and decision makers. But developing appropriate communication skills among researchers will bridge this gap. Thus, the survey team recommends training courses on policy communication strategies for researchers to help policymakers and program planners/managers to use research findings to adjust policies/guidelines to meeting the program/project goals.

Finally, in depth study assessing how research findings are disseminated and utilized is important. This will help researchers to see how RH findings contribute to policymaking in Viet Nam, and will also help them to develop better strategies on policy communication in these areas.

ANNEX 1: Introduction of Research Team

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ANNEX 2: Screening form

1. Study in reproductive health topics with following key words in title: Yes/No
 - Reproductive health/ IEC
 - Safe motherhood/ante and post natal care/safe delivery/maternal mortality/pregnancy
 - Family planning/contraceptive/condoms/IUDs/Oral pills
 - Abortion
 - STDs/HIV/AIDS (minor focus)
 - Infertility/reproductive cancers/menopause/elderly RH
 - Adolescent/adolescent reproductive health
 - Sexuality/sex education/gender equity

2. Study with full text available: yes/no

3. Study is reading with English or Vietnamese: yes/no

4. Study with data collection time reported between 2000 - 2005: yes/ no

5. Study reported the data: yes/no

ANNEX 3: Recording/extraction form

1. Design

- a. Cross sectional
- b. Field assessment
- c. Rapid assessment/rapid appraisal with participatory approach
- d. Cohort study
- e. Trial
- f. Incidence/prevalence survey
- g. Case control
- h. Intervention
- i. Randomized control trial (RCT)
- j. Evaluation of program/projects
- k. Qualitative study
- l. Review of program/projects
- m. Longitudinal study
- n. Explanatory study
- o. Open label study
- p. Secondary data analysis
- q. Review of secondary data

2. Types of participants

- a. Sex: Men/Women/Mixed
- b. Age: adolescent/young/reproductive age/pregnancy/pre-menopause/elderly
- c. Occupation: specialist/specific group; list
- d. Setting: urban/rural/mixed/unknown
- e. Characteristics of setting: national/provincial/city - district
- f. Other settings; health facilities; hospitals, clinics, schools

3. Types of outcome

- a. Prevalence/incidence of RH ill health (specific)
- b. Mortality/Morbidity (ill health specific)
- c. KAP
- d. Factors identified other than above mentioned (specific)
4. Quality assessment of report
 - a. Definition of ill health topic
 - b. Sampling method: random sampling, convenient sampling and other (specify)
 - c. Sample size
 - d. Data collection time: Yes (specific), Not reported
 - e. Data analysis: frequency, bivariate and multivariate analysis
 - f. Ethics: yes/no
 - g. Sources of data and state of completion of follow up records: Yes/No
 - h. Reported definitions or/and diagnostic procedures regarding outcome measures: yes/No/No relevance
 - i. Reliability and accuracy of data: yes/no/no relevance
 - j. Generalisation of results according to the types of participants: yes/no/no relevance
 - k. Control for loss to follow up: yes/no/no relevance
 - l. Non - responders in the data analysis: yes/no/no relevance

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