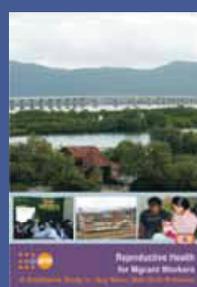


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Compendium of Research on Reproductive Health in Viet Nam for the Period 2006-2010



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HA NOI, 2012

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Abbreviations

A/Y	Adolescent and Youth
ANC	Antenatal care
ARH	Adolescent reproductive health
CHC	Commune health centre
CM	Contraceptive method
CPR	Contraceptive prevalence rate
D&C	Dilatation and curettage
D&E	Dilation and evacuation
FP	Family planning
FSW	Female sex worker
GBV	Gender-based violence
GSO	General Statistics Office
HIV/AIDS	Human immunodeficiency virus
HP	Health provider
IDU	Injection drug user
IMR	Infant mortality rate
INGO	International non-governmental organization
IUD	Intrauterine device
KAP	Knowledge, attitude and practice
MCH	Maternal and child health
MISC	Multiple Indicator Cluster Survey
MMR	Maternal mortality rate
MoH	Ministry of Health
MSM	Men who have sex with men
MVA	Manual vacuum aspiration
NMR	Neonatal mortality rate
Ob/Gyn	Obstetric/Gynaecological
PLWHA	People living with HIV/AIDS
PMTCT	Prevention mother-to-child transmission of HIV
RH	Reproductive health
RHIYA	Reproductive Health Initiative for Youth in Asia
RTI	Reproductive tract infection
SAVY	Survey Assessment of Vietnamese Youth
SBA	Skilled birth attendant
SM	Safe motherhood
STI	Sexually transmitted disease
TFR	Total fertility rate
VHW	Village health worker
WHO	World Health Organization

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DISCLAIMER

The views and opinions expressed in this report are those of the authors and do not necessarily reflect the views and policies of UNFPA

1. Background

In line with the International Conference on Population and Development (ICPD) 1994, Viet Nam's national strategies on population and reproductive health contain policies and programmes aim to improve the sexual and reproductive health of the population.

Data from existing studies demonstrate the great success of national population and reproductive health programmes in the past 15 years. However, research findings also indicate that although maternal mortality has declined in recent years nationally, there have been huge disparities in maternal mortality indicators between regions. In remote and ethnic minority regions, maternal health status is far behind national MDG targets. At the same time, the contraceptive prevalence rate (CPR) for married couples has greatly improved in the past ten years, reaching 80 per cent in 2009. Although the CPR among the young and unmarried population is not available, high abortion rates among adolescents suggest a significantly lower CPR in this population group. There is no available data to measure the achievement of two important indicators of MDG 5b: the adolescent birth rate and unmet needs for family planning. Studies also suggested a significant shortage of skilled health providers in hard-to-reach regions, and called for appropriate policies and guidelines for hard-to-reach populations such as ethnic minorities and migrants in order to achieve the objectives and targets of reproductive health care programmes.

To help the Ministry of Health respond effectively to the sexual and reproductive health needs of population groups in a country that has reached middle-income status, there was a need to conduct a desk review of studies on sexual and reproductive health. This compendium of research studies (2006-2010) is designed to provide evidence that policymakers and programmers can use to develop and implement relevant policies and programmes on sexual and reproductive health for Viet Nam's people.

Structure of the report

The report contains nine main sections:

1. Background
2. Objectives
3. Methodology
4. Findings on research methods
5. Findings on reproductive health topics for studies during 2006-2010
6. Concluding observations
7. Annexes
8. References

Findings are presented in sections 4 and 5, where the specific results of each RH topic are reported. Our some concluding observations are made in section 6 with an aim to orient and improve the quality of studies in reproductive health in the coming years.

2. Objectives

This compendium focuses on the following objectives:

1. Collect and review research reports on reproductive health in Viet Nam during the period 2006-2010 (both published and grey literature) by research institutions, government agencies, United Nations (UN) and non-governmental organizations (NGOs).
2. Identify areas to further strengthen research capacities for relevant research institutions in Viet Nam.

3. Methodology

The compendium is developed based on the systematic review method recommended by World Health Organization (WHO).

This review assessed all identified full-text studies, irrespective of language (Vietnamese or English), published or written from 1 January 2006 to 30 December 2010 on reproductive health in Viet Nam. Below are criteria for exclusion and inclusion of papers for review.

3.1. Selection criteria

3.1.1. Exclusion criteria

- Studies with no data.
- Studies published before 2006 and after 2010.

3.1.2. Inclusion criteria

The following general conditions were sought when considering studies for this review:

- Study design: all qualitative and quantitative, and combined studies.
- Types of outcomes: no limitation with regard to specific outcomes in reproductive health.

3.2. Search strategy for identification of studies

This review includes all studies published in Vietnamese or English, and unpublished data (if collected) from 2006-2010. It employed ten keywords for searching relevant research reports, reflecting the key technical contents of National Strategy Population and RH in Viet Nam.

3.2.1. Searching electronic databases

The review used PubMed electronic databases and other 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/intrauterine device (IUD)/oral pills
- Abortion
- RTIs, STIs/HIV/AIDS
- Infertility/reproductive cancers/menopause/elderly RH
- Adolescence/adolescent reproductive health
- Sexual health/sexual education
- Domestic violence

3.2.2. Search of published studies

All publications of organizations (governmental or non-governmental), institutions, research centres and training centres were searched through direct contact or downloaded from websites. The lists of references from these publishers were also searched if they met inclusion criteria.

3.2.3. Personal contacts

Personal contacts within bodies such as the Maternal and Child Health (MCH) Department, Ministry of Health, and offices of international organizations, agencies and other units in all provinces throughout the country were contacted to facilitate searches. NGOs and other organizations known to be active in the field were also contacted. Review members approached further personal contacts of experts, and referred to other available sources.

3.3. Method of review

3.3.1 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 reports meeting more than one exclusion criteria, only one – following the orders on the screening form – was reported as the reason for exclusion.

Researchers extracted data from the studies that were included 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 or factors associated with conditions, and (iii) quality assessment of studies reporting on RH topics.

3.3.2 Management of studies and data extraction

Endnote (version XIV) 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 abstracts were discarded and full text of the remaining abstracts 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 studies) were extracted by one reviewer using a pilot-tested data-extraction form especially prepared for this review (see Annex 2).

Data were manually analysed in a specific database and processed with Microsoft Excel.

3.3.3 Review criteria

Research team reviewed the studies for **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 (1). We classified studies based on their evidence strength (from the strongest to weakest) as following:

- (1) Level I: controlled trials (randomized or non-randomized) in which the target group for intervention is divided into control and case groups, with a comparison made between these groups, including measurement in both pre- and post- intervention period.
- (2) Level II: cohort, longitudinal or case-control studies. The cohort or longitudinal study is one of measured variables based on a target group over a continuous time. The study, therefore, produces highly reliable evidence to identify the cause and effect of related factors and disease.
- (3) Level III: repeated measure research and cross-over experiment. Although weaker than Level I and II type studies, this type of study provides relevant information and evidence on studied variables.
- (4) Level IV: studies providing the weakest type of evidence, including common study designs such as cross-sectional, secondary data analysis, rapid assessment and qualitative studies.

4. Findings on Research Methods

A total of 483 studies were included in this review, twice the number of those included in the review for the period 2000-2005. This shows the significant development of RH studies in this period. A breakdown of these studies by topic is presented in Table 1.

4.1. Topic distribution during 2006-2010

Table 1. Distribution of topics in reproductive health (RH)

Contents	Number (per cent)
Abortion	37 (7.7%)
ARH	68 (14.1%)
Domestic violence	23 (4.7%)
Elderly	15 (3.1%)
Infertility	16 (3.3%)
Reproductive cancer	42 (8.7%)
SM	118 (24.4%)
RTI/STI	86 (17.8%)
Sexual health	24 (5%)
Family planning	14 (2.9%)
Other topic, or combined	40 (8.3%)
Total	483 (100%)

As in the previous review report, the most common topic for the period 2006-2010 was safe motherhood (24 per cent). However, the second highest (overtaking family planning) was RTI/STI (18 per cent), and the third was ARH (14 per cent). The topic of reproductive cancer was also more widely covered. In general, the number of studies on each topic grew greatly in the period 2006-2010, with the exception of family planning (2).

However, there are few studies on ageing (menopause), infertility or domestic violence.

4.2. Study participants

More than half the studies had a mix of male and female participants, with a similar proportion on women only (45 per cent). Only a tiny number focused solely on men (Table 2). The main focus of maternal and child health (MCH) was strictly on women (as in the previous review), despite the fact that both women and men were invited to participate in this growing number of studies.

Table 2. Study participants

Participants	Per cent
Strictly men	2%
Strictly women	45%
Mixed	51%
Unknown	2%
Total (N = 483)	100%

The studies that focused only on men covered sensitive topics such as homosexuality, sexuality and infertility. However, their number was few and they were solely exploration

studies. Another research topic was male involvement in RH – a topic not focused on during 2000-2005. In future, more should be invested in this area of study to identify and promote the role of men in RH.

The studies covered a wide range of participants, from adolescents to elderly people (Table 3). But as with the previous review, the main study target was those of reproductive age (40 per cent). Studies focused on adolescents (14 per cent) were much more numerous than in the period 2000-2005. More than a quarter of studies had combined participant age groups, and only 4 per cent of studies were on the elderly. The distribution of studies based on topics and ages reflect the true picture of the priorities of RH studies.

Table 3. Age of participants

Age group	Number (per cent)
Adolescents	68 (14.1%)
Reproductive age	200 (41.4%)
Menopausal/elderly	20 (4.1%)
Combined	130 (26.9%)
Other	50 (10.4%)
Unknown	15 (3.1%)
Total	483 (100%)

4.3. Research methods

Study design is summarized in Table 4.

Table 4. Study design

Level of evidence strength	Per cent
Level I (controlled trial)	11.8%
Level II (cohort, case-control)	7%
Level III (repeated measure research, cross-over experiment)	1.4%
Level IV (cross-sectional, qualitative, rapid assessment)	79.8%
Total (N = 483)	100%

Different types of studies were applied to RH research during 2006-2010. The number of higher-level trials such as controlled, intervention, cohort or longitudinal trials increased, and accounted for 20 per cent of the total of reviewed studies (nearly 100 studies). This showed that the result and quality of research in this period was better compared to that for the period 2000-2005. Yet many controlled trials were carried out in hospital settings, and the data analysis was basic, with poor data supervision. Nearly 80 per cent of the studies were of the 'weakest' type, with half of these using cross-sectional design, followed by qualitative and assessment studies.

Similar to the review period 2000-2005, most studies focused on factors associated with conditions under investigation (two thirds); about 8 per cent of studies purely described the prevalence/incidence of a disease; and 20 per cent of studies were about knowledge, attitude, practice (KAP). The lowest number of studies was

Table 5. Findings of studies

Findings	Per cent
Prevalence/incidence	8%
Mortality/morbidity	10%
Knowledge, Attitude, Practice (KAP)	20%
Determinant factors	62%
Total (N = 483)	100%

on mortality/morbidity (10 per cent) (Table 5). This distribution showed that the quality of research reports was better, as more and more researchers could use complicated biostatistics tests to highlight associated factors.

4.4. Study setting

Most studies covered both rural and urban areas (about one third), followed by rural only (34 per cent) and urban only (20 per cent) (Table 6). This distribution suggested that researchers were interested in rural and mountainous areas.

Table 6. Study setting

Settings	Per cent
Urban	20%
Rural	34%
Mixed	37%
Unknown	9%
Total (N = 483)	100%

4.5. Report quality

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

Table 7. Quality of reports

Content (N = 483)	Per cent
Definition of the health topic:	60%
Sampling method	
- random sampling	35%
- convenient sampling	42%
- other	11%
- unknown	12%
Ethics approval	45%
Data collection timeframe	87%
Data analysis	
- Frequency	40.2%
- Bivariate	20.3%
- Multivariate	15.5%
- Qualitative	24%

Only 60 per cent provided a clear definition of conditions under investigation (Table 7) – a rate similar to that of the 2000-2005 review period (57 per cent). This caused difficulties for judging discussions and conclusions presented in the research.

Most studies presented their sampling method. About one third of studies used random sampling, more 40 per cent chose convenient sampling, and the remainder used other sampling methods.

The number of studies that provided the data collection time significantly increased compared to the previous review (87 per cent vs. 77 per cent). Yet, similar to last time, about 40 per cent of studies used only basic statistical techniques (frequency) and one fifth used bivariate analysis. Less than one fifth (16 per cent) used multivariate analysis.

A relatively large number of studies used qualitative data collection and analysis. Most of these were a combination of qualitative and quantitative approaches. A limited number of studies used purely qualitative methods.

About half of studies reported the approval of an ethical research committee. A notable point is that many trials in hospital did not report the approval of an ethics committee.

5. Findings on Reproductive Health Topics for Studies During 2006-2010

5.1. Safe motherhood

5.1.1. Maternal mortality

5.1.1.1. Maternal mortality ratio

Maternal mortality is defined as “the death of 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”.

Update data indicate a sharp decrease in the Maternal Mortality Ratio (MMR) in Viet Nam between 2000-2010. The Multiple Indicator Cluster Survey (MISC3) in 2006 estimated MMR at 162/100,000 live births (3). This MMR estimate stayed the same for the period 2006-2009. This could be seen as a reasonable rate when compared to the 2002 rate of 165/100,000 live births (4).

In 2008, WHO estimated a much lower rate of 56/100,000 (5). During the period 2006-2010, two surveys on maternal mortality and neonatal mortality in the whole country and in 14 provinces in 2009 supported this trend, showing an MMR as low as 63/100,000 live births (6). The official data of the 2009 Viet Nam population and housing census presented an MMR of 69/100,000 live births (6, 7).

As stated in the research review 2000-2005, the difference in data among reports was the result of different data collection methods and data analysis. Yet all estimates highlighted that data on the current health information system could not reflect the true picture of MMR, especially in difficult-to-reach areas. The MMR reported by the studies was often 2-2.5 times higher than that reported by the health information system in the same areas (6, 8).

Studies indicated that the MMR was much higher in mountainous and difficult-to-reach areas. MMR in Son La province (which is mountainous and has a minority ethnic population) was 294/100,000 live births – 20 times higher than the rate in Long An province (a lowland province), where the rate was 11/100,000 live births. Most of the districts with a high MMR were mountainous, with the highest in the northern highland districts. After adjusting the data by region, the MMR in rural and mountainous areas was three times higher than in lowland and urban areas (6). Many women who died were 25-35 years old (more than 50 per cent of cases), and the most common time of death was the last trimester of pregnancy (in three quarters of cases) (6).

5.1.1.2. Causes of maternal mortality

As in the last review, studies stated that the main causes of maternal mortality (accounting for more than three quarters) were direct, including haemorrhage (31.7 per cent), pre-eclampsia (16.9 per cent) and infection (14.3 per cent). The main indirect causes accounted for one sixth of mortality – slightly lower than the world average of 20 per cent (6).

The worst complications were severe bleeding during delivery (69 per cent), and convulsions (28 per cent). More than one third of maternal deaths (36 per cent) had postnatal complications, of which around half involved haemorrhage (43 per cent), and a quarter high fever (25 per cent) (6).

5.1.1.3. Related factors to maternal mortality

Analysed risk factors for maternal mortality using the 3-delay model showed that factors for first delay (delay in deciding to seek appropriate medical help for an obstetric emergency) were ethnicity (Thai, H'mong, Stieng, etc. were more likely to delay); education level (illiterate women or those with only primary education); number of pregnancies (one third of maternal deaths of women living in mountainous areas were among those with more than four children) (6).

Risk factors related to delay in reaching an appropriate obstetric facility (second delay) were lack of transportation for referral, and difficult transportation. The mortality rate of home delivery was as high as 33.3 per cent in mountainous and lowland areas, and 20 per cent in urban areas. About a quarter of maternal mortality happened at home (6). In mountainous areas, death on the way to a health centre accounted for 15 per cent. The average time to the place of death was 74 minutes (6).

Factors related to delay in receiving adequate care once a facility is reached (third delay), were emergency first aid and treatment not being given in time, poor technical skills and poor facilities (6).

5.1.2. Neonatal mortality

Neonatal mortality rate

Currently there is no official national neonatal mortality rate (NMR) for Viet Nam. However, data indicate big differences in the NMR between regions. For example, NMR in six southern provinces is 60/1,000 (9), while the NMR in some provinces in the north, such as Quang Ninh, was much lower at 10-16/1,000 (6, 10-15). The number of neonatal deaths in mountainous areas often counted for two thirds of the total for the whole country (6). Reports showed that about a quarter of deaths happened at home (6) and about 61 per cent of neonates received no health care (16). Two particular times accounted for highest proportion of deaths – during the first 24 hours (46-60 per cent) and the first seven days (80 per cent) (6, 10, 15-18). The average age of neonatal death was 4.8 days (6).

Between 1970 and 2010, the under-five child mortality rate fell by more than 70 per cent. The late neonatal mortality rate fell by more than 50 per cent, while the perinatal mortality rate changed only slightly, to 15 per cent (15, 19). This shows that Viet Nam achieved success in reducing under-five child mortality, but the NMR remains a big challenge.

The rate of stillbirths ranged from 12.5-16/1,000 live births (14, 20). However, research in Ho Chi Minh City revealed that the rate of stillbirth there was much higher at 25/1,000 live births – of which 12.1 per cent occurred during labour (21).

Studies also address the gaps in and inaccuracy of data on NMR in the routine health information system. Many reported that the NMR could be four times higher than that reported by the health information system (22). Of the 14 districts of Quang Ninh province, only one district reported more than 50 per cent of actual neonatal deaths. Of all neonates who died at district hospitals, only 45 per cent had their death registered. The rate in the provincial hospital and Uong Bi general hospital was even lower. Generally, the health system only reported about one quarter to one third of neonatal deaths (12).

The reasons for under-reporting were poor knowledge and skills among health providers and families relating to the importance of filling in death registration forms, including difficulties in distinguishing a stillbirth from a neonatal death – many health providers did not know the definition of a neonatal death. Even in hospitals, about 5 per cent of neonatal deaths were reported as stillbirths (21). In addition, health providers at the grassroots level were unable to identify if the family had tried to hide factors relating to the death. The current health system allows for reporting on the total number deaths but not the cause of these deaths. Besides, there is no neonatal death report form (12). Inaccurate data reflect neonatal mortality as much lower than it is in reality (12).

Causes of neonatal mortality

Many studies agreed that there are two significant risk factors in relation to neonatal death: preterm birth (OR = 11.5) and home delivery (OR = 4-5) (9). Women who gave birth at home often lived twice as far from a service delivery point than women who had facility-based delivery (18). Children from ethnic minorities faced three times more risk of death than those of Kinh people, and the gap was widening. Reports stressed that even for ethnic minority women who had antenatal care (ANC) and gave birth at a health centre, the risk of death for their neonate was higher than that of Kinh people. Male neonates had higher risk of death than females, especially preterm (preterm male neonates had 1.5 times higher rate of death than that of female neonates in the first year of life) (11, 16, 19).

Other factors that increased the risk of neonatal death were low birthweight, a poor economic situation, no ANC visits, a low education level and lack of knowledge of ANC and child health care (9, 11). Children of women with low income and limited education had 2-2.6 times higher risk of death than children of women from other groups. Children of women who had no ANC visit or knowledge of danger signs during pregnancy had higher risk of death, as did those whose mothers were not counselled about danger signs,

who intended to deliver at home, who did not know about labour signs, or who received no postnatal care (11, 18, 23). The children of women who gave birth at home and had no ANC visit had five times higher risk of neonatal death, as reported in some studies (11).

In the first 24 hours of life, neonates who received no essential care had higher risk of death than that of other neonates. The average time to the first health centre was 42 minutes. Some could get there quickly, but others needed five hours to get to the nearest health centre (6).

As with neonatal death, poorly educated, rural women who did not take vitamin supplements during their first pregnancy faced a higher risk of stillbirth (20, 24, 25). Other factors related to a higher risk of stillbirth were: ethnicity (OR = 6.5); home delivery (OR = 6.8) (20); age (over 35 years old – OR = 2.4) (25); hypertension; body mass index under 20 or over 26 (OR = 26) (26); no routine ANC visit (OR = 4.5) (25). Other factors such as preterm birth or placenta infection were reported in some studies, but not all (15, 21).

5.1.3. Antenatal care

5.1.3.1. Antenatal care visits

Rate of ANC visits

Most pregnant women had at least one ANC visit during their pregnancy, and about 70-75 per cent of pregnant women had at least three (10, 23, 27-30). However, studies in rural areas show that about half of women did not have three ANC visits (31, 32). Compared to the results of the last review, there was no progress in rural areas (33). Only 42.7 per cent women had a pregnancy health-check card during their pregnancy, and the rate of women who kept this card at their home was much lower (20.2 per cent) (28)h.

The percentage of pregnant women who had an ANC visit in their first trimester ranged widely among studies, between 50-80 per cent.

Associated factors

Many factors affected whether women received an ANC visit, including their knowledge and attitude about the importance of having regular ANC visits, and having them at the right time. Other factors included the information approach to safe motherhood, education level, economic situation, ethnicity, access to transport etc. Only 27 per cent of women in the poorest group, for example, had at least four ANC visits, compared to 89 per cent of women in the wealthiest group (34). Many other studies stressed cultural factors as being closely related to the number of ANC visits (34).

Most pregnant women (75-90 per cent) understood the benefit of an ANC visit and accepted the treatment offered, including tetanus vaccinations and iron tablets (30, 35, 36). Accessibility to media, especially newspapers and radio, could affect whether women received an ANC visit (32). Of women receiving ANC, about a quarter of them received information from mass media, while only 2.6 per cent from their relatives (29).

Barriers to ANC visits were identified as ethnicity (ethnic people had fewer visits); having more than three children; unwanted pregnancy; low education and age (older women had fewer visits) (32, 37, 38). Many women also cited distance to health centres and no money for transportation as barriers (28-33, 35, 37, 39, 40).

Some factors related to the health system were reported, including health insurance, the professional skills and attitudes of health providers, and health facilities (29, 31, 32, 37, 38). Commonly, women chose nearby health centres such as the commune health centre (47-60 per cent), private clinics (25 per cent), district hospital (18 per cent), provincial and national hospitals (10 per cent) (28, 29).

5.1.3.2. Awareness of women of danger signs during pregnancy

The knowledge of local people about danger signs during pregnancy was poor (28). The rate of women who knew at least three danger signs during pregnancy, intrapartum and postpartum ranged from 20-35 per cent. The most known symptoms by women were severe abdominal pain (71.9 per cent), vaginal bleeding (39.3 per cent), severe headache (22.8 per cent), vomiting and convulsions (>10 per cent). Between 20-30 per cent women and 40 per cent men knew none of the danger signs during pregnancy (29, 30, 35, 40-42).

In the first trimester, one of the most severe conditions needing early diagnosis was ectopic pregnancy. Yet, nearly half of pregnant women knew none of the symptoms of ectopic pregnancy. Knowledge of risk factors was also very poor. Only 10 per cent of respondents mentioned RTI, or their history of abortion or use of intrauterine-devices. Risk of ectopic pregnancy was higher in women with ectopic pregnancy history and women who had already had an obstetric operation (43, 44). The reason for such limited knowledge was the lack of awareness raising of the danger signs by health providers among pregnant women (7.9 per cent) (42).

Poorly educated and agricultural women had lower knowledge of the danger symptoms during pregnancy than those working in the business and administration sectors (40).

5.1.3.3. Diseases affecting pregnant women's health

Urinary tract infection

This was a common disease affecting 2-7 per cent of pregnant women (according to a report from Tu Du general hospital). The rate of urinary tract infection of pregnant women in their last trimester was 1.2 per cent.

Escherichia coli bacteria was the leading cause of urinary tract infection (38.1 per cent), followed by Staphylococcus aureus (33 per cent) and the Gram-negative, rod-shaped bacterium accounted for <10 per cent (45). Other types of bacteria such as group B strep infection (18.1 per cent of pregnant women) were mentioned (46).

Factors affecting the prevalence of urinary tract infection included the number of ANC visits (fewer than one visit), using water from a well and having sex during pregnancy (47, 48).

Toxemia of pregnancy

Pregnant women with abnormal bacterial infection or toxemia were often treated actively. In big hospitals such as the National Obstetric and Gynaecological (Ob/Gyn) hospital, the treatment was effective for 99.5 per cent of women. However, two thirds of women with toxemia chose Caesarean as their main birth method (49).

Diabetes

A study conducted in Tu Du hospital showed that 5 per cent of studied women have a blood sugar level of ≥ 200 mg/dl. The risk of having diabetes increased with age and family history of diabetes (50).

Premature rupture of membranes

Premature rupture of membranes was a dangerous event for both mother and foetus, resulting in the death of 10 per cent of neonates in cases where rupture occurred (51). The most notable symptom of rupture was vaginal fluid. Women who had premature rupture had much higher risk of infection during delivery (OR = 8). The rupture amplified the risk of respiratory failure and neonatal infection.

The diagnosis of premature rupture of membranes improved in the second review period, during which 93 per cent of cases were diagnosed accurately by asking about a woman's history of disease, and by using nitrazine and cytological ferning tests (a test to diagnose premature rupture). However, the accuracy fell to 80-90 per cent if these tests were done separately.

Studies also found that the placenta infection rate was 9-10 per cent. Early use of antibiotics could reduce risk of infection – if used 12 hours after membrane rupture, the risk of infection could be 4.2 times higher than if used more immediately (52).

5.1.3.4. *Ultrasound during pregnancy*

Ultrasound and other medical techniques brought in a new era for health care. Since 2000, women in urban areas have been able to easily access 2D ultrasound services by paying a fee of 20,000-40,000 VND (US\$1.3-2) or about 300,000-500,000 VND (US\$15-20) for a 3D ultrasound. Ultrasound services developed as demand rose. One hospital survey showed that during pregnancy, women were accessing up to six ultrasounds, with many having ten or more (53).

The main reason pregnant women accessed the ultrasound service was to find out about the health of the foetus (53), and many doctors suggested pregnant women should have monthly ultrasounds. Women believed them to be a necessary part of an ANC visit, viewing them

as “scientific” and “progress”. Many doctors considered them a compulsory service when doing an ANC examination (53). However, many women said that they worried about the safety and reliability of ultrasound (54).

5.1.3.5. Diet and work during pregnancy

Most women knew that a healthy diet during pregnancy was the foundation of good mother and child health care. However, about one fifth of pregnant women did not know the basics of a healthy diet, including the need to avoid salty food, eat a variety of food, avoid non-prescribed drugs, and not use purgatives when constipated (29). Most pregnant women had no special diet regime (23). Studies showed that the rate of women who got chronic energy deficiency was 33.6 per cent in mountainous areas (55). Studies of pregnant women who received ANC in hospital revealed that three quarters of them adhered to a good diet (29-32, 35, 37, 39, 40).

Other research showed that the median of urinary iodine for women experiencing stillbirth was 6.3µg/dl – much lower than the minimum urinary iodine requirement for disease prevention ($\geq 10\mu\text{g}/\text{dl}$). For these women, nearly half had average to severe levels of iodine deficiency. The older the pregnant woman, the greater the risk of iodine deficiency. An effective way to prevent iodine deficiency was iodized salt (with iodine between 15-50ppm) – pregnant women could reduce their risk of iodine deficiency by 45 per cent using iodized salt daily (56).

About half of women knew that during pregnancy they should not work hard (or at night) and should take rest breaks if working. Three quarters knew they should not carry heavy things. Hospital research reported that more than one third of pregnant women had good work practices, and had time for exercise (29-32, 35, 37, 39, 40).

Most women understood the importance of daily personal hygiene. Up to 63 per cent of pregnant women were trained in personal hygiene. About two thirds of pregnant women had a bath daily, but about one quarter of women did not know about a good hygiene while pregnant (29).

5.1.3.6. Preparedness for delivery

There were few studies exploring this issue. A research in Quang Ninh revealed that most women prepared diapers and clothes for their baby one to two months before the birth date. However, many ethnic minority women prepared nothing until the expected date of birth (23).

5.1.4. Intrapartum care

5.1.4.1. Delivery place

About 80-90 per cent of women gave birth in a health care facility, of which about 16-30 per cent were at a CHC (27), about half at district hospital (34, 40) and about 4 per cent in a

private clinic. Most women gave birth at the place where they first sought care, except a big proportion (60 per cent) who were referred to a higher level facility after receiving ANC at a first-level facility (16).

The home delivery rate ranged from 8-10 per cent (17, 27, 40). This rate was especially high in mountainous areas, ranging from 23-54 per cent in many districts of the northern mountainous regions (10, 17, 28) or up to two thirds in the Central highland region (29).

Ethnicity played a statistically significant role in the home delivery rate, as did women's education level and distance to the health centre (30). Women who delivered at home were not well assisted by health providers (only one sixth to one fifth of deliveries were assisted) and most assistance was from an unskilled birth attendant (about 40.5 per cent were assisted by traditional birth attendants). Moreover, more than one third of home deliveries were completely unassisted, or assisted only by the women's mothers and neighbours (30). Most home deliveries failed to use sterilized delivery kits and had poor umbilical care (40).

5.1.4.2. Awareness of danger signs during delivery

Women's knowledge of the danger signs during labour was very poor, with 10 per cent of women unable to list any postnatal danger symptoms. "Severe bleeding" and "severe lower abdomen ache" were the most recognised symptoms (over 60 per cent) (28, 30). Fathers' knowledge was also very poor, with between one quarter and one third knowing no symptoms – even easy-to-recognize ones such as severe bleeding, rupture of membranes and fever (41).

5.1.4.3. Maternal and neonatal care during delivery

Research showed that care for women during delivery was limited. Only 50 per cent of health providers performed standard care procedures such as partograph, (once every 2-4 hours), monitoring uterus contractions every 30-60 minutes, or cleaning the urinary tract before delivery. These rates were often higher in hospitals than in CHCs (57).

The rate of other types of care was lower again (provided by only one fifth to one quarter of health providers), such as heart rate measurement and episiotomy. Only 29 per cent of health providers in CHCs and 60 per cent in hospital knew about abnormal heart rate (57). As a rule, if the baby cried out and looked healthy, health providers would focus on the mother's care (23). Most health providers waited for natural placenta removal, and examined the placenta of postnatal women (57).

Most health providers advised women on how to breathe during delivery, and how to improve their comfort level. Only 4 per cent of health providers in CHCs, and 18 per cent in hospitals, provided back massage for women, and few gave appropriate medicines or traditional acupuncture (57).

Further support during delivery was given by only a few. Support from relatives during labour, for example, was observed in only 20 per cent of studied subjects (57). More seriously,

many CHCs did not actively refer women experiencing difficult deliveries to higher-level care facilities, leaving the patients to manage this transition themselves (57).

Other neonatal services were provided at CHCs. Most health providers encouraged skin-to-skin contact between neonates and mothers to maintain the infant's body heat, to develop the emotional relationship, and to trigger breastfeeding (57). However, service delivery was limited. Not all children had silver nitrate drops to prevent gonorrhoea, and few babies were injected with vitamin K1. Many babies who did receive vitamin K1 were given the wrong dose (23). The Apgar scoring system was used in 84 per cent of CHCs and 96 per cent of hospitals to monitor neonates. Many health providers allowed women to leave in the first six hours after delivery, against the National Reproductive Health Standards and Guidelines. More than half of women left the health centre 12-24 hours after delivery (57). In general, the knowledge of intrapartum care among health providers was poor. Research in Quang Ninh showed that only 60 per cent of questions about neonatal care were answered correctly (58).

For home deliveries without a health provider, only 29.2 per cent women were supplied with a sterilized delivery kit. Moreover, only 50-70 per cent of these kits were actually used. The standard practice on sterilized umbilical cutting tools and umbilical care was poor. In more than half of home deliveries the umbilical cord was cut using normal scissors or knives, or a bamboo knife, and tied with thread. Only a few of these tools were correctly sterilized (30). More than half of women used liquid such as alcohol, leaf water (sweet potato, areca leaf, resin) to apply to the neonate's umbilical cord (30).

5.1.4.4. Intervention during delivery

The Caesarean section rate tended to increase during the review period 2006-2010. In many public hospitals, the percentage of Caesareans accounted for over 10 per cent of all births (59). The higher the level of care facility, the higher the number of Caesarean births. One-third of deliveries in Bach Mai hospital (national level), for example, were Caesarean (60). Some researchers pointed out that doctors sometimes made unnecessary recommendations for Caesarean births. Many women were asked to have Caesarean too early, while some women even with severe signs of pre-eclampsia had a normal delivery (28).

The Caesarean section rate was affected by many factors, including location and women's preference. A study in some districts in Ha Noi showed that the Caesarean rate in some urban districts was much higher than outlying districts, with rates of 38 per cent and 22 per cent respectively. However, no comprehensive research indicated differences in Caesarean rate between geographical regions of Vietnam. Apart from the recommendation of health practitioners, other reasons for selecting a Caesarean were the ability to select the date of the birth, and the fear of the pain of a normal delivery – together these accounted for 14.6 per cent of all Caesareans. About 16.7 per cent of women chose Caesarean birth because their relatives suggested it (61). Other research found if women had better knowledge and information about reproductive health, the lower their risk of having a Caesarean birth. The wealthier the women were, the more likely they were to choose a Caesarean birth.

Other factors included the number of children a woman already had, plus her age and weight (59, 60).

Other assisted deliveries, such as forceps delivery, reduced gradually. Forceps delivery in the maternal department of Bach Mai hospital between 1998 and 2002 was only 1.04 per cent. Potential complications of forceps births were cervix and vaginal tears and uterus ruptures, or other complications for the new-born baby such as asphyxia, face bruising, nerve damage and death. These were the main reasons women and doctors selected a Caesarean birth instead of forceps delivery in complicated cases (62).

5.1.5. Postnatal care

5.1.5.1. Awareness of women on danger signs during postpartum period

Women had poor knowledge of the danger signs during the postpartum period. Only half of women knew signs such as severe and prolonged bleeding, high fever, bad-smelling vaginal discharge, prolonged abdominal pain and convulsions. About one fifth of women could identify no symptoms (29).

When danger signs occurred, more than half of women sought health care for monitoring and treatment (57.8 per cent). Unhealthy behaviours such as self-healing and self-cure accounted for 16 per cent and 17.7 per cent respectively, and help from a traditional healer accounted for 5.1 per cent (29).

5.1.5.2. Neonatal practice care

More than one third of neonates were examined in the first hour and first 24 hours after birth. The examinations became shorter after delivery. Only 17.3 per cent of neonates were visited in the 4-7 days after birth (29). Village health workers also performed visits for neonates, but these were quite few (only 15 per cent).

However, about one fifth of women lacked knowledge about care immediately following delivery (40). Only 6 per cent of women could answer common questions on general knowledge on postpartum and neonatal health care (30).

There were many backward customs related to neonatal care (23). Many mothers (13-15 per cent) did “nothing” or “self-treated” themselves and their children within the first week after delivery, (30) or when the baby got ill (9, 63). Some neonates left the health centre straight after delivery, and were taken home to a charcoal fire to keep warm (23).

Women who worked as government officials and who had a high level of education had better knowledge of neonatal care (35). Good practice was different between Kinh mothers and ethnic mothers – the knowledge of neonatal care on the part of many ethnic women was almost non-existent.

5.1.5.3 Postpartum care practice

The percentage of women who received care from health providers (a midwife, assistant ob/gyn doctor) within the first week of delivery ranged from 30-40 per cent to 60-85 per cent, depending on region and population group (28, 29, 35, 64). For normal deliveries, most midwives appointed a follow-up visit for the women, but only half visited during the first week (28). Studies showed that many health providers did not perform home visits for postpartum women as recommended in the National Reproductive Health Standards and Guidelines (23).

The main causes for not having postnatal care were lack of transport, distance, and lack of knowledge and concern about abnormal signs (17, 30, 35). Besides, women who delivered at home had fewer visits than women who gave birth at a health centre.

Reports suggested that the family played the most important role on postpartum, and neonatal care (23). In Viet Nam, even in big cities, women practiced postpartum care based on traditional eastern medicine – on Chinese yin and yang. These beliefs and practices had been handed down to the women by their mothers and mothers-in-law (65). As a result, postpartum women believed they should avoid exposure to wind, cold and water. During the first week after delivery, women used dry or dampened cloths with boiled and cooled water to clean themselves. The women used warm water for bathing in the first month, as cold water could result in rheumatic discomfort or skeletal aches in older mothers. Even women who gave birth in summer wore warm clothes, including hats and socks, during the first month of delivery. Some did not comb their hair because they believed it might make it fall out in later life. Other practices such as staying inside the home to be protected from wind, lying by a fire to warm the body, doing only light work and avoiding sex also reflected traditional beliefs and practices (65).

Most women believed that they should eat large quantities of food during the postpartum period. However, all women put restrictions on what type of food they would eat. They often consumed ‘hot’ or ‘warm’ food and avoided ‘cold’ food for a month. Meat and eggs, rich in proteins, were regarded as ‘hot’ and were thought to enrich the blood, and help speed recovery after delivery. Fresh vegetables and fruits were considered ‘cold’ and were therefore limited. Commonly, pig’s trotter with papaya or red beans and potato were the favourite foods (65).

Similar to the Kinh women, ethnic women had their own typical postpartum practices such as charcoal fires, lying by a fire, and leg and arm massage within the first 7-10 days. Many women cleaned their body in a herbal steam bath (a mix of many types of leaves) and rarely bathed the whole body in the first week after delivery. Women abstained from consuming oil, and food with a “fishy smell”. They drank herbal water for up to 4-5 months. Many women ate rice with saffron, pig’s trotter and salty braised pork for many months. They had little fresh vegetables and fruit (23).

5.1.5.4. *Obstetric complication treatment management*

Studies in 14 provinces showed that maternal death accounted for 1.34 per cent of all obstetric complications. Research found that health providers could treat many obstetric complications – about half of women who suffered haemorrhage in a provincial hospital were given a blood transfusion (49.6 per cent) compared to that of 19 per cent in a district hospital. To date, the treatment of postpartum haemorrhage with oxytocin and misoprostol has achieved much. Oxytocin and the use of other new equipment increased the cost of a normal delivery from US\$0.49 to US\$0.65, but with a health expenditure of \$30 per capita in 2004, the use of oxytocin in ampoules (at US\$0.05-US\$2 per case of postpartum haemorrhage prevention) was affordable (66). Using the Uniject device adds only a small incremental cost, but helped to solve difficulties associated with using oxytocin in ampoules, especially in emergency cases (67).

However, the rate of correct treatment for pre-eclampsia was low – only 60 per cent of women received oxygen therapy, 31 per cent used diuretic drugs and only 51 per cent used bite blocks. For cases of infection, all women were treated with antibiotics. However some district hospitals in remote and mountainous areas used drugs with a high rate of drug-resistance, with poor results. Meanwhile, uterus rupture treatment often focused solely on saving the women's lives, as the patient was often referred too late (28).

5.1.6. *Depression during prenatal and postpartum period*

Many studies pointed out that the rate of perinatal depression in Viet Nam ranged from 21-35 per cent (39, 68-70). There was no difference between the prenatal and postnatal depression rate. Women who were more likely to be depressed were adolescent, unmarried, from rural areas, suffering violence, worrying about lack of money and food, unable to afford health care, give the baby to a baby sitter, have a cheating husband, and suffer a hostile attitude from relatives-in-law. However, the support of the husband and/or mother-in-law was an important protective factor for the women. Depressed women were more likely to not follow an immunization schedule, and to have babies with a low-birth weight, malnutrition and diarrhoea. Postnatal depression led to many high-risk behaviours. Following a survey, 7 out of 33 depressed women (more than 20 per cent) had suicidal intent (71).

However, depression was not recognized by the community (68, 70, 72). Because of depression, about 60 per cent of Vietnamese mothers lacked confidence in child bearing. The factors related to a lack of confidence were age (youth), being a first-time mother and having achieved higher educational levels (73).

In addition, many health providers recommended traditional medicine as a good way to treat depression, meaning they assumed depression was a medical rather than a social problem (74). In reality, a study on social support showed that women with better social support and cognitive social capital had better health. In particular, babies under a year old whose mothers received much official and unofficial social support were healthier and less likely to get ill (75).

5.1.7. MCH care system

5.1.7.1. Types of service delivery

Safe motherhood services were provided at all levels of the health system, from CHCs to national hospitals, in both the public and private sector. At CHCs, basic safe motherhood service provision included family planning, prenatal care, normal delivery assistance, fluid transfusion, postnatal care, gynaecological treatment and first aid for five obstetric complications. The research results revealed that most CHCs assisted normal delivery and referred high-risk cases (23, 76-80). About 80 per cent of CHCs provided antibiotic treatment and oxytocin, but few could perform other basic obstetric services such as manual placenta removal or neonatal resuscitation (28, 81-83). About 5 per cent of CHCs provided no delivery assistance. At district level, about 87 per cent of hospitals could provide Caesarean section, in which only 43 per cent had a blood transfusion service (28, 81).

However, even at provincial level, only some hospitals can provide comprehensive maternal services as required, for instance, pap smear (57.1 per cent) and cervical electrocautery and colposcopy (64.3 per cent). Other services that were also rarely provided included late abortions (after 12 weeks), neonatal intensive care at district level, and uterus management/manual placenta removal (28).

5.1.7.2. Use of maternal health services

Women's choice of health services depended on many factors, including perception of quality of care, availability, distance to health centre, service fee, ethnicity and sources of information.

Women were more likely to choose public services than private ones, as the quality and quantity of services provided by the private sector have not developed enough, especially in rural and mountainous areas (10, 30, 84). When experiencing abnormal symptoms, most women chose the public health centre as the place for diagnosis and treatment (86.7 per cent) (28). The CHC was the first place from which they sought help (35, 40) resulting in the rate of prenatal service use at CHCs being higher than the usage rate of other MCH services (30). Research in Dak Lak showed that nearly 80 per cent of women had used their CHC to access treatment or drugs within the past year. More than half of women had participated in health discussions or other health communication activities at their CHC, or had received communication materials from it (29).

Wealthier, older and better educated women often gave birth at public health centres. However, for ANC visits, more urban women preferred to use private sector services, which were often provided by the same staff who offer the service in the state health system (10, 30, 85). Women chose the private sector due to shorter waiting times, easier access and the supportive attitude of providers. However, the supervision of the quality of private health care services was still poor.

In contrast, the poorest quintile group (29 per cent), lowest education level (36 per cent) and ethnic women had the highest rate of delivery assistance by private providers (86). Women in mountainous areas and with a poor educational and economic background often chose traditional birth attendance or private providers (86). The reason was that the public services could not be accessed by many ethnic women, especially in remote areas. Poor facilities and limited capacity of health providers were barriers to women accessing the best health services for their needs (29).

Another factor mentioned by only a few studies but which played quite an important role in the accessibility of health services to women was fees for maternal services. Besides the official service fee, informal payments (indirect costs including money and gifts to health providers) also impacted on the choice of health service for the women (87).

5.1.7.3. Conditions of health facilities

Commune level

The infrastructure of CHCs for providing obstetric services was still limited and much lower than the standard level. The number of CHCs with a sufficient number of rooms was low (57, 88). Currently, for example, only one third of CHCs have standard sewage and waste disposal systems that consist of sewage system, container for sharp-pointed objects and a waste basket (13).

Infrastructure for newborn care at CHCs did not meet the required standard, especially in mountainous areas. Many CHCs did not have enough essential equipment such as neonatal resuscitation, or heating systems for newborns (28, 29, 58, 64, 89, 90). In particular, about 5-10 per cent of CHCs did not have equipment for antenatal care, gynaecological examinations, stethoscopes, oesophageal stethoscopes or sphygmomanometer (28). About 20-30 per cent of CHCs did not have equipment for cutting and suturing the perineum, for insertion and removal of IUDs, stainless steel delivery tables, gynaecological examination tables, mobile instrument tables or neonatal scales. Half of the CHCs had no equipment for umbilical cord care, or for checking the cervix (28).

On average, essential drugs were largely lacking at commune level, including antibiotics, sedatives, aseptic and antiseptics, vitamins and minerals (particularly Vitamin K1). The service provision varied hugely among regions, contributing to inequalities in access to reproductive health services that disadvantaged the poor (91).

District level

Infrastructure at district level also did not address demand. Currently, about 10 per cent of district hospitals have no separate delivery room (28). Health education and counselling rooms had the lowest frequency – nearly two thirds of district hospitals did not have them. Only just over one third of district hospitals had a newborn care unit. Many hospitals did not have a generator, heating system or bathroom for neonatal care, or general supplies such as cots, clothes and napkins, bathrooms and baths (13). Most district hospitals lacked

many essential drugs (13). Few had blood transfusion maintenance equipment (about one third) and less than 60 per cent of district hospitals had enough sterilized equipment for blood transfusions and professionally trained staff to use it.

Provincial level

Most provincial hospitals had a separate room for safe motherhood services, and a delivery room and recovery room. But about 20 per cent of hospitals did not have a newborn care unit, and 60 per cent did not have a counselling room (28). Equipment and staff trained to perform blood transfusions were adequate (28).

Although drug and supply management were quite well done, equipment management and maintenance were not (13).

5.1.7.4. Health human resources

Quantity

During the last review period 2000-2005, there were many training programmes and projects aimed at improving health provider capacity in the reproductive health care system. The ratio of skilled birth attendants (SBAs) per 5,000 population for the whole country, and for each category of provinces, exceeds the WHO-recommended ratio of 1:5,000 population (81). More than 86 per cent of deliveries in Viet Nam were assisted by a SBA, of which 87 per cent were assisted by public providers and 13 per cent by private providers (86).

At present, the number of health providers at all levels who are trained in obstetric care – including neonatal care – in mountainous areas was poor (13, 29). Data show a lack of doctors, laboratory technicians and anaesthetists (81). However, by 2010, in a total of 11,112 communes in Viet Nam, 91.3 per cent of CHCs and 86.3 per cent of local general clinics had a midwife/obstetric and paediatric nurses. But health providers at commune level find it difficult to implement safe motherhood services, including neonatal care, in mountainous and remote villages because of transport difficulties. Deployment and retention of maternity care providers in rural and remote areas is also difficult. The Ministry of Home Affairs outlines job descriptions for health staff, and terms of reference for health facilities at different levels; however, this information is relatively general (81). In addition, culture and customs related to pregnancy and delivery, and the mountainous topography are important factors that hinder the accessibility and use of health care services in these areas. Northwest, Central Highland, Northeast, North Central Coast and South Central Coast areas lack skilled birth attendants in remote communes and villages (92).

Professional knowledge and practice of HPs of safe motherhood

The studies not only reported findings about women, but also focused on health workers' knowledge and practice of safe motherhood. In relation to prenatal care, the findings showed that the competencies of health providers were limited. For instance, although many studies revealed that 70 per cent of women were advised on diet, hygiene and dangerous symptoms

(29), only 24 per cent of pregnant women thought that the advice given was sufficient (31). Only 10 per cent of women could list ten or more antenatal care concerns. Only 9-10 per cent of women received a full package of ANC services (23, 33).

The knowledge and practice of health workers on intrapartum care were also poor. Only 26-27 per cent of health providers described correctly the uterus during the second stage of labour as compared to the third. Knowledge about the causes of obstetric and neonatal complications, diagnosis and treatment was limited (28). Few providers could correctly answer questions about intrapartum care, such as cleaning the urinary tract of women before delivery, vaginal episiotomy, oxytocin use, knowledge of the Apgar score, thalassemia and the risk of jaundice as a result of large-dose injections of vitamin K3 (57).

The intrapartum care practices of health providers had many shortcomings and were not uniform (57). More than two thirds of doctors felt confused when treating difficult deliveries or complications. Other difficulties were treatment for pre-eclampsia and vaginal bleeding in pregnant women. Generally, health providers at provincial level had much better knowledge than those at district and commune level, and treatment differed at the various levels (28).

Similarly, research showed that the knowledge and skills relating to postnatal care, and especially neonatal care, of low-level staff at district and commune levels (including paediatric and obstetricians) were very poor. When evaluated, these staff only achieved average or lower scores (as designed by the study). Many health providers did not recognize breathing problems, or refer patients appropriately (13). Supervision for neonatal health care was limited, and there was no community-based referral system. Many CHCs had a phlegm suction unit, but no staff were trained to use it (23, 93). Only about 60 per cent of CHC staff could use phlegm suction units effectively (57).

In general, the safe motherhood skills of health providers were limited. The lower the level of health provider, the poorer their knowledge and practice, and those in remote areas often had worse skills than those in urban areas (58). Village health workers (VHWs) were also mentioned in many studies. Nearly three quarters of VHWs had a primary education and one fifth had no medical knowledge. The knowledge of VHWs on direct, dangerous symptoms during the prenatal, intrapartum and postnatal period was extremely bad (28). The knowledge of VHWs of the danger signs for neonates was poor, scoring only 20 out of 100 in a survey. Most VHWs (80-90 per cent) did not have a normal delivery set, or sterilized delivery kit. The percentage of VHW who practiced postnatal care was 61 per cent, but their knowledge of how to advise new mothers was average (28).

Factors affecting the professional skills of health providers

The first factor mentioned in many studies was the relationship between professional skills and the number of patients – health providers in centres with many patients had more chance to practice, meaning that their professional skills were continually improving. However, the number of deliveries in CHCs and district hospitals was sometimes too few

(57, 94) and health providers did not have much chance to gain experience. Ministry of Health reports showed that up to 15 per cent of midwives had never assisted any delivery (nearly 20 per cent at CHC level, and 5 per cent at district level). Nearly 80 per cent of health providers had fewer than ten deliveries per year (28). A survey in Quang Ninh showed that more than one third of CHCs had less than 25 deliveries per year and 27 per cent had no deliveries (10, 27).

The second factor mentioned in many studies was how health practitioners applied knowledge to their everyday work. Research revealed this process to be very poor. Many health providers said they had difficulty accessing technical documents such as the National Reproductive Health Standards and Guidelines, claiming it had not been sent to them in 2003. There had also been no training for using the guideline. Where the guideline was available, it gave alternative advice to other guiding policy documents, confusing health providers as to which advice to follow in specific care situations. Health providers could not access to the online documents as they did not have an internet connection in their workplace. However, even when they could access these documents, many health providers rarely referred to or applied them in their daily work. Another difficulty was the reluctance to give up traditional medicine practices, such as delaying bathing newborns to avoid hypothermia (93).

Training and updating the knowledge of health providers on safe motherhood was a related factor, in the sense that it was not routinely done. Nearly 30 per cent of midwives and ob/gyn assistant doctors were not continuously trained to update their professional knowledge – particularly health providers at commune level (28). More than half of physicians were retrained on ob/gyn within a year of the survey, but up to a quarter of physicians at commune level were not retrained (28).

Skilled birth attendants (SBA)

The World Health Organization's basic strategy to reduce maternal deaths is to ensure that deliveries are assisted by a skilled birth attendant (SBA). SBAs are trained in the skills necessary to manage normal deliveries and diagnose, manage, recognize and refer patients in a timely way when obstetric complications happen. There are 30 basic professional skills in which a SBA should be proficient. Hence, the minimum duration for a training course to gain these competencies is three years, during which 18 months of midwifery training is a minimum time requirement (95).

Recent reviews showed that training programmes for obstetricians and secondary-level midwives (three year training programme) met the National Reproductive Health Standards and Guidelines. Over 97 per cent of midwives and physicians were trained on the 30 competencies to qualify as a SBA, with 60-80 per cent of nurses trained to treat complicated pregnancy. VHWs were also trained on basic skills in counselling, identifying labour pain, managing second labour stage, and normal delivery assistance. However, the training curriculum focused only on theory, and many physicians were not able to qualify for clinical

practice because they had treated too few patients (20) in training. In fact, even lecturers lacked the relevant paediatric skills and could not teach the competency-based course on neonatal care(81). Nevertheless, the neonatal training programme should be revised.

At commune level, staff were not allowed to assist with a breech birth, or with a cord prolapse case (these skills are included in the 30 vital competencies of SBAs, according to WHO guidelines). This resulted in limited provision of comprehensive emergency obstetric service at this level (81).

The Ministry of Health had no official SBA definition or classification in Viet Nam, with no minimum requirement on knowledge, skills and competencies in obstetric service provision. The definition of a SBA and other standards are now being drafted, which hopefully will create a change in the required competencies of health providers in Viet Nam.

Policy mechanisms related to health workforce management

In recent years the government has championed and implemented benefits and subsidies to attract suitably qualified staff to health care work – especially in remote and difficult areas. This includes hardship and preferential subsidies for staff working in very difficult areas, including an added amount valued at 70 per cent of basic salary. Other policies were implemented widely, such as the 1816 Initiative on staff rotation, and provision of grants for training and re-training in disadvantaged regions. However, the implementation of this initiative encountered difficulties, including development of an appropriate training programme for health providers and deployment and sustainability of trained staff after training (96). In addition, there were many issues that needed to be addressed at management level. Health providers did not have full job descriptions and there was no clear mechanism to distinguish between the responsibilities of obstetric and paediatric departments in neonatal care (13, 97, 98). There was no clear task division, terms of reference, work performance evaluation, or financial incentive, which led to weak motivation. One factor that impacted on the performance of the health system was the salary scale, especially for VHWs. These were staff with a lower level of qualification, yet who were providing primary health care for local people, meaning the subsidy was not equal to the work they were expected to do. Hence, many VHWs did not commit fully to their work (93).

5.1.8. Intervention on MMR and NMR reduction

A number of interventions to improve mother and child health were carried out during the period 2006-2010. Here we summarize the most important ones:

- Commune-based interventions to enhance women's knowledge through training courses (99), improve accessibility of health services, provide treatment for common diseases such as hookworm, and provide iron tablets (100-103) or calcium supplements (14, 26, 104). However, these interventions could have been improved. An intervention to provide iron tablet supplements in Yen Bai province, for example, showed that only 41.7 per cent of women understood the instruction “take one iron tablet weekly”

although most of them received a calendar for the programme. More than 95 per cent of women were informed about the tablet distribution by VHW, but 2.5 per cent received tablets that had expired and could not be used (102, 103, 105).

- Training programmes to build the capacity of health providers, including physicians, midwives, ethnic minority midwives (women from ethnic minorities clinically trained on vital safe motherhood skills) and village health workers. These programmes often used effective new teaching methods, helping to significantly increase the knowledge, skills and systematic approach of health professionals. This included improving the confidence of trained physicians and nurses in dealing with neonatal emergencies and resuscitation (26, 106-110). Monitoring and supervision were also performed after training courses to ensure participants translated their new knowledge into daily practice. Other interventions updated the infrastructure of midwifery centres, including the supply of medical equipment (111).

As mentioned before, rural and remote areas lacked skilled birth attendants. To address this issue, ethnic minority midwifery training courses were organized by Tu Du general hospital and UNFPA. Women from ethnic minorities, often with low education levels but committed to work in their own communities after the course, took part in a hands-on obstetrics training course. The course lasted 18 months, after which graduates were able to assist at normal deliveries, and explore abnormal/dangerous symptoms in order to learn how to refer women at the right time to a higher-level health centre when necessary. Primary evaluations showed that the work of these ethnic minority midwives was good, and suggests that a training model using ethnic minority midwives to serve a local population is feasible. They played an important role in promoting safe motherhood service provision for local people in remote areas, and their cultural advantages (shared language, customs and norms) and enthusiasm were appreciated. However, the fact that there was no official job title for them (they were working as VHWs) created problems, especially in relation to legal protection of their rights and responsibilities. This issue should be addressed soon (112).

Studies also recommended that the sustainability of interventions should be further improved (113, 114).

5.2. Family planning

5.2.1. Total fertility rate (TFR)

From 2000 to 2009, Viet Nam's TFR (i.e. the average number of children born to a woman aged 15-49 over her reproductive lifetime) fell from 2.33 in 2000 to 2.03 in 2009. The crude birth rate decreased from 19.9 per cent to 17.6 per cent and the population growth rate dropped to 1.1 per cent from 1.5 per cent. The national goal for fertility reduction was achieved sooner than planned, as Viet Nam had already achieved replacement level by 2005 (115, 116). In 2009, however, about 28 out of 63 provinces (one third of the population) in Northern Highland, North Central and Central Coastal regions did not achieve replacement rate. Some provinces had a high fertility rate of 5.3 children per woman (115).

As well as different fertility rates among regions, studies pointed to a fertility rate gap between ethnic and Kinh people (117). All ethnic groups in Viet Nam have higher fertility at all reproductive ages relative to the majority Kinh and Chinese. Moreover, the fertility rate was inversely proportional to the standard of living. The higher the living standard, the lower the fertility rate (115, 118). Other factors affecting the fertility rate were lower education level, earlier marriage age, lower abortion rate, and lower contraceptive prevalence rates (117, 119).

The proportion of women having three or more births declined sharply from 21.7 per cent to 15.1 per cent during the period 2002-2010 (120). In short, Viet Nam achieved the fertility replacement level (TFR = 2.1) as set by the National Population Strategy.

5.2.2. Contraceptive prevalence rate (CPR)

Studies showed an increased contraceptive prevalence rate (CPR) for all kinds of contraceptives used by married couples during 2001-2010. CPR increased gradually from 73.9 per cent (by 2000) to 78 per cent (in 2010). Earlier, in 2006, 63 out of 64 provinces (except Kon Tum) had a CPR of 70 per cent or higher (120). Many provinces had a very high CPR (90 per cent) among women who had two living children, such as Ninh Binh, Quang Binh and Ben Tre (121). Ranked by CPR level, there were 19 provinces with a CPR of 80 per cent or higher (30 per cent of whole country), 33 provinces with a CPR of 75-80 per cent (52 per cent of whole country), and the remaining 21 provinces had a CPR lower than 75 per cent (120).

At the same time, the CPR for modern methods increased from 61 per cent to 67.5 per cent (2001-2010) (115, 116, 122-124), while the CPR for traditional methods fell from 23 per cent (in 2001) to 12-13 per cent (in 2010) (116, 119, 120).

CPR differed among regions: it was lowest in mountainous areas (66 per cent) such as North Central Coast and the southern provinces, and highest in delta areas (120, 125). CPR differed widely among women depending on the number of children they had – women with two children surviving had a much higher CPR rate (about 50 per cent) than women with three or more surviving children (about 33 per cent). However, the percentage of women with three or more children who were sterilized was quite high (120).

By age group, the CPR increased with age and peaked in the age group 35-39. These women had the highest CPR – three times higher than the lowest group (women aged 15-19) (120). After 35-39 years old, the CPR declined gradually, but stayed high (60 per cent or higher in women aged 40-49), (though in this group, married women aged 45-49 had a low CPR as they thought that they were menopausal or would have difficulty becoming pregnant) (120). The main reasons for not using contraceptives were the desire for children (38.4 per cent), difficulty becoming pregnant (especially pre-menopausal women) and being pregnant (120).

Similar to the review for the period 2000-2005, IUDs were the most widely used method (accounting for two thirds or more among modern methods), next to the pill (13 per cent), condom (11 per cent), and injections and implants (1 per cent) (123). The number of modern methods used varied. Before 2001, most people used IUDs, condom and the pill, but after 2005, modern methods were supplied, such as injectables and implants (122). Generally, IUDs were the most popular method but the rate of usage tended to decrease gradually compared to the pill and injections (115).

Women with lower knowledge (120), ethnic minority women and women with temporary work had a lower CPR. However, ethnic minority women in some areas had the same CPR using modern methods as the average rate for the country (124, 126, 127). Research on migrant women in Ho Chi Minh City showed a CPR as low as 50 per cent, of which about 23 per cent used IUDs, 11 per cent used condoms, and 7.5 per cent used fertility awareness (36, 128). Other research found that about 7 per cent of respondents accessed health centres for family planning (of which half chose private services) (36).

5.2.3. Contraceptive methods

5.2.3.1. Intrauterine device (IUD)

Studies indicate that the highest IUD prevalence rate was among women aged 20-35 (more than half of married women), while it fell among women in the older group (120).

Generally, women had a good understanding of the effectiveness of IUDs. More than 95 per cent of women knew about them as a family planning method, and could easily have them fitted or removed in a simple procedure with a health provider (129). About half of women aged 25-44 thought the IUD was very comfortable. However, only 10 per cent of 45-49 year olds, and 6 per cent of 15-24 year olds agreed. In fact, most women did not know which IUD model (TCU 380 or Multiload) they were using (about 47.5 per cent of women) (129).

Studies pointed out that there were many associated factors on IUD use, such as occupation, number of children and counselling before use. Female farmers were most likely to keep using IUDs (77.2 per cent) compared to other groups (129). Women who had two living children had the highest IUD use rate (66.5 per cent) compared to women who had one living child (11.1 per cent) and women who had three living children (18.6 per cent) (129). Up to 86 per cent of women were counselled before using an IUD. The counselling providers were population collaborators (40.6 per cent), CHC staff (31.7 per cent), Women Union's members (19.9 per cent), and youth union members (0.2 per cent) (129).

5.2.3.2. Oral pill

Data show that use of the pill increased from 10.7 per cent to 15.5 per cent during 2001-2010 (119, 123). About two thirds of oral pills were distributed from public centres and one third from the private sector (123). Reasons for not using oral pills included fear of side effects (64 per cent) and forgetting to take them (39 per cent) (57).

5.2.3.3. *Condoms*

Condoms maintained the most stable rate of use of all family planning methods chosen by married women, at between 9-11 per cent (116, 120, 123). As in the first review, the main reasons for not using a condom were a reduction in sensation (two thirds of respondents), dislike (nearly half), fear of side effects (one third), and embarrassment when asking for condoms (one fifth) (57).

Condom use among female sex workers (FSW) and intravenous drug users (IDU) was mentioned in many studies. Only 62 per cent of FSW used condoms with irregular clients. This rate was even lower when they had sex with regular clients (41 per cent) and partners (5 per cent) (130). The benefits of using condoms included their widespread availability, from sources such as private pharmacies, karaoke/hotel/massage establishments, health and family planning centres and peers (130).

5.2.3.4. *Sterilization*

Sterilization rates dropped sharply, from 65,000 cases in 2001 to 35,000 cases in 2005. Most women were sterilized following childbirth. Vasectomy also decreased significantly after 2007 (120). Compared to the review of 2000-2005, the lowest failure rate was tubal sterilization at 1 per cent, followed by vasectomy at 4.1 per cent.

5.2.3.5. *Traditional contraceptive methods*

Popular traditional contraceptive methods were abstinence, fertility awareness, and withdrawal. About 14 per cent of couples used traditional contraceptive methods such as fertility awareness or withdrawal (116, 119).

5.2.4. *Factors related to contraceptive prevalence rate*

5.2.4.1. *Failure rate*

Few studies addressed family planning failure rates. Some reported contraceptive method change, and about 55 per cent of users changed their method because of side-effects or health issues. Inconvenience accounted for 18 per cent, and perception of low effectiveness accounted for 24 per cent (131).

5.2.4.2. *Side-effects of contraceptive methods on women's health*

About one third of respondents said that IUDs affected their health, such as back pain (15 per cent), abdominal pain (7 per cent), headache (19 per cent), and longer (30 per cent) or shorter (9 per cent) menstrual cycles. However, more than 90 per cent of women said that IUDs did not have any impact on work performance or their sexual health (129).

5.2.4.3. *Health education and family planning*

Studies showed that family planning is the most frequently communicated topic, including advice favouring: (1) small families with fewer children; (2) child spacing of 3-5 years;

(3) no discrimination between boys and girls; (4) use of contraception (115). Target groups for communication were classified by their characteristics (whether in a couple, male, adolescent, and their ethnicity) so a tailored communications approach could be made (115). Communication methods included leaflets and posters, and information given by village health activists (i.e. population collaborators, village health workers, and members of community based organizations) as well as by health providers when offering clinical services to clients. Some family planning communication programmes for ethnic minorities were also carried out. These interventions developed messages in local languages and showed a reasonably good effect (127).

Studies revealed that two thirds of women received IUDs from CHCs. There was a small difference between urban and rural women in their level of access to information (129). However, female farmers mostly received information from CHC staff (70 per cent); while a smaller number of female workers, union staff, government staff and businesswomen received information from CHC staff (about 60 per cent) (129). In addition, women could access information from other sources such as newspapers, radio and television (40 per cent), union activities (25 per cent), friends (12 per cent) or relatives (11 per cent) (129).

5.2.4.4. Family planning services

Before 1993, family planning services and contraceptive devices were delivered by hospitals and public health clinics at all levels through a 'non-mobile clinic', so women had to go to those places for their needs. Recently, a 'mobile' model of contraceptive supply has gradually been applied, meaning suppliers went to people to provide contraception and family planning services, bringing them closer to users and households. This will be a long transformation process from total government subsidy to co-payment by the user to increase resources for poor, vulnerable people and difficult areas (123, 132). Social marketing of contraceptives was prioritized to help this process (115). However, many women in remote areas found it difficult to access advice and family planning information and service because of geographical difficulties (125).

While health centres provided clinical family planning methods such as IUDs, injectables, implants and sterilization, population collaborators distributed oral pills and condoms. They visited households at least once per month to provide information and contraception, and introduce women who wanted to use IUDs to mobilization groups or health centres. Midwives, ob/gyn assistant doctors and other health providers were trained on reproductive health and family planning basic skills, as per national standards (115).

More than 85 per cent of contraceptive methods were provided by the public sector and the remainder by the private sector. Meanwhile, IUD provision was mostly performed in the public sector (94 per cent), while condoms were mainly supplied by the private sector (57 per cent) (123). However, the government supported only 40 per cent of condom demand for northern provinces, 30 per cent for coastal and central provinces, and 20 per cent for the Mekong River Delta area and northern provinces. Up to 2008, 85 per cent of contraceptive methods were supported by international donors and this resource ended in 2010 (122).

5.2.4.5. Shortcomings in family planning programme implementation

Studies showed that contraceptive methods were not diversified (115, 122). The coordination for contraceptive method distribution was not flexible or active, which led to unsatisfactory supply of contraception in many areas (115).

Many health providers did not follow technical procedures. The counselling service was very poor, especially in mountainous areas. This led to difficulties for clients in choosing a relevant method of contraception. Studies indicated that only one fifth of provincial health providers and one sixth of district health providers performed IUD insertion as per the National guideline (115, 122). Up to one third of health providers failed to ask clients to urinate before fitting, or explain the steps of the procedure in advance (57, 88, 133).

Also, a database on population had not been completely set up. After many changes in organizational systems, the database could not be used although a lot of money and person hours had been invested (115, 122).

Over the past 50 years of implementation of population and family planning, the government management system had been changed many times, during 2001-2010 alone there were three organizational restructures. Currently, is no unified structure at district level. For the last ten years, unstable national and local organization has created many difficulties for implementing family planning programmes (115, 122).

5.3. Reproductive Tract Infection (RTI)

5.3.1. RTI

Similar to the review for the period 2000-2005, the rate of RTI in Viet Nam was high, and varied among studies that investigated different study populations, mainly at health facility settings (40-80 per cent) (134-138). By age, the rate of RTI in the 18-24 age group was highest (85.4 per cent), followed by the 25-40 age group (70 per cent), and the 42-49 age group (60 per cent) (136, 139).

In all types of RTI, endogenous infections accounted for the highest rate, in which 10-40 per cent were fungal infections. Vaginal infection (*Gardnerella* bacteria) accounted for 11-50 per cent and trichomonas infection accounted for 3 per cent (135-142). Other research revealed the bacterial vaginitis rate in asymptomatic pregnant women was 3 per cent, while the rate of participants infected with yeast was as high as 26 per cent (143).

Women aged 24-40 accounted for the biggest proportion of bacterial vaginitis, at 70 per cent of the total. Women aged <24 took the lowest proportion at 4-5 per cent, while women aged >40 accounted for 36-37 per cent.

In addition, family factors, education, occupation, economy and water source affected the rate of RTI (135, 140, 141, 144). In particular, women who practiced vaginal douching or

vulvar washing with antiseptic solution were more likely to have an RTI than those who didn't (OR = 1.7) (141).

RTI diagnosis in Viet Nam had many difficulties as clinical examinations and tests could not be combined in many places. Nearly one sixth of women had unspecified inflammation symptoms which were diagnosed as cervical infection. Tests had low specificity with a high false positive rate (145). One piece of research on RTI showed 83 per cent of pregnant women having at least one RTI through clinical examination, while the lab-tests showed only 54 per cent (145).

5.3.2. STI

As in our previous review, rate of STI depended on location, sex, age, marital status and the occupations of the studied population. The rate in rural areas was higher than in urban areas. Women were more likely to be infected than men (146, 147). For example, the rate of Chlamydia infection ranged widely from 4.3-30 per cent in different study locations (135, 137). The rate of infection among men was higher than women, and the rate among single people was higher than for married people. Chlamydia infection occurred mainly in young people under 25 years (148, 149). Those aged under 30, married women and those in the middle-income group had a higher rate of Chlamydia infection (150). By contrast, other research pointed out that women with a higher education level had higher risk of Chlamydia infection (135). In particular, the rate of Chlamydia among FSWs was higher, ranging from 10-18 per cent (151-153). A similar high rate – 9.2 per cent – was found among pregnant women who had hospital abortions (150). Research also reported that one sixth of women had cervical inflammation symptoms because of Chlamydia and gonorrhoea (136).

Studies found that rapid tests for Chlamydia had low sensitivity (62.5 per cent) although the specificity was very high at 99.5 per cent (positive predictive value was 90.9 per cent, negative predictive value was 96.9 per cent) (154). Polymerase Chain Reaction (PCR) assay method with primers KL1-KL2 and T1-T2 had a high accuracy rate, but were costly and could only be applied in big hospitals (148).

The rate of gonorrhoea was low, ranging from 0.1-1 per cent (135, 138). FSWs had a higher rate at 0.3-3 per cent (151). The rate of syphilis was 7-12 per cent among FSWs, and 3.3 per cent among studied women's populations (151-153).

The rate of herpes simplex virus infection (the common type was HSV-2) ranged widely between the studied areas, from 5-33 per cent; it was highest in southern provinces such as Ho Chi Minh City, Dong Thap and An Giang, and lowest in northern provinces such as Ha Noi and Lai Chau (137, 152, 155, 156). The rate of HSV-2 was higher among unmarried or divorced women, current hormonal contraceptive users, and those who had a history of multiple sexual partners or spontaneous abortion. Women with lower educational attainment and Kinh people had a higher rate. In Ho Chi Minh City, studies pointed out that HSV-2 rate correlated to age at first intercourse, and age at first pregnancy (155). Having other STIs such as syphilis and HIV was associated with a higher rate of HSV-2 (156).

Between 5-11 per cent of women were found HPV positive depending on region (it was highest in Ho Chi Minh City); in this group, type 18 was the highest (31 per cent). Most women were infected with a single type of HPV (73 per cent) and only 30 per cent were infected with two types of HPV. Women who had many partners, lived in urban areas, smoked, did not use a condom regularly and had temporary jobs were more likely to be infected with HPV (155, 157, 158).

Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV)

The rate of HBV infection was found to be between 8.3-10 per cent in small-scale studies (135, 159). The rate among IDU users was similar, at 9.1 per cent (160). Of the total number of pregnant women who had HBsAg(+), about 39.5 per cent had HBeAg(+) (159). Young age, using an IUD and migrant working status of the husband were all associated with an increased risk of hepatitis B (135).

Another type of HCV was emerging among IDU populations, with 46 per cent testing positive. HCV significantly increased in relation to time since first injection, from 30 per cent in subjects with ≤ 10 months' injection risk, to 70 per cent in subjects with ≥ 30 months' injection risk. Other risk factors were increasing age and incarceration in a drug detention facility (160).

5.3.3. Knowledge, attitude and practice (KAP) on RTI and STI

5.3.3.1. RTI

Women's knowledge of RTI was very poor. Only one fifth had heard about RTI, of which one third could list no symptoms. The most commonly known sign was abnormal vaginal discharge (65-70 per cent). Other symptoms were rarely mentioned (137, 144).

The most commonly known causes of RTI were unhygienic behaviour and unsafe sex. Few knew about iatrogenic infection, caused by medical accidents (134).

About one third of women did not clean their genitalia before and after sex. About a quarter did not know how to clean themselves during the menstrual cycle and one fifth had never had a gynaecological examination (144). About 15 per cent of women had had sex despite their abnormal reproductive health conditions (138).

Many women were too shy to have an examination when they had gynaecological problems. Many women did vaginal douching in the belief it was hygienic and would protect against disease, but in fact it was a risk factor that led to vaginitis (142, 161).

Women believed that RTIs were a normal part of their life and they were unaware of the consequences if not treated. Many tolerated and considered RTIs an essential part of womanhood (161). However, up to three quarters of women said that both partners should be examined if infection arose (137, 144).

5.3.3.2. STI

Women had poor knowledge of STI symptoms, causes, treatment and prevention, especially young and unmarried women, and women living in mountainous areas (162). Only about one third of women mentioned common abnormal symptoms, such as heavy vaginal discharge or fishy smells. The percentage of women who knew about vaginal inflammation was even lower (16 per cent) (134, 162). Only 16.3 per cent of women knew that gonorrhoea and syphilis could be fully treated. About half of women (56 per cent) understood that partner treatment was important (162). In particular, up to 14 per cent of women mistakenly believed that HIV could be treated (162), while only one third of women said that condoms helped prevent STIs.

The knowledge and behaviour of men were also poor. Many men said that having sex with FSWs was the only way they could get infected with STIs, and they had no knowledge of the typical symptoms of STIs (134).

Self-treatment, or following the advice of private drug sellers, was very popular. More than one quarter of women with abnormal symptoms decided not to seek examination, or to self-treat following advice from neighbours or private drug sellers (134, 138, 144, 163). Notably, many health providers even supported the women's self-treatment (161). Only when the disease became severe would women seek medical examination (134, 164).

The rate of clients who discussed their health status with health providers before treatment was high (90 per cent) (165). However, most clients were not counselled about health status and treatment of their partner. Misdiagnosis and treatment were relatively common (134).

Male clients rarely chose public health centres for STI diagnosis and treatment, either because there were no reproductive health services tailored for men, or the services were not welcoming enough. Hence, male clients sought health care from private centres (163).

The main information sources on STI were television (99 per cent), radio (81 per cent), newspapers (96 per cent), posters, leaflets, and in school (144, 166). Of these, information about HIV from health providers was the most popular (76 per cent) (165).

5.3.3.3. *Prevention and treatment service provision for RTI and STI*

It was estimated that more than 80 per cent of RTI and STI were treated in private clinics in Viet Nam. As shown in many studies, private clinics often had limited treatment space, poor-quality equipment, no record books and no control for clinic infections. Staff did not possess the necessary up-to-date knowledge and skills for RTI/STI prevention. Patients were not monitored after treatment (134, 164). Moreover, prescribed drugs could easily be obtained from private pharmacies. Wrong diagnosis and treatment were common (134, 164).

In the public sector, infrastructure, equipment and essential drugs for STI treatment were very poor. Most reproductive health centres at district level – or lower – had medicines only for fungal and trichomonas vaginitis, and rapid HIV testing. CHCs did not have the right

equipment for STI diagnosis (134, 164). Besides, RTI and STI management systems had many disadvantages. The STI management organization was not unified and the funding for STI programmes was poor. There was a shortage of management and quality control in private clinics. The partner treatment of STI patients was not effective (134, 164).

Knowledge of health providers about RTI and STI treatment was limited. Many health providers who provided reproductive health services at district level, especially at commune level, did not know about syndrome-based diagnosis and treatment, and most lacked counselling skills. They often did not ask about a client's sexual or RTI/STI history (134, 164). Only 17 per cent of health providers participated in training courses about RTI/STI, and many staff could not correctly classify common diseases such as syphilis, gonorrhoea and Chlamydia. Many misunderstood that behaviours such as sharing clothes, eating and kissing were transmission routes (167).

Clients also had to engage with much bureaucracy in order to receive treatment, rendering the process inconvenient (134, 164).

5.3.4. HIV/AIDS

5.3.4.1. HIV among injecting drug users (IDUs)

The HIV prevalence among IDUs was 30-42 per cent. The cities which had the highest HIV prevalence among this group were Hai Phong (66 per cent) and Quang Ninh (59 per cent), with the lowest being Da Nang (2 per cent) and An Giang (13 per cent) (151, 168). National HIV prevalence among IDUs was projected to stabilize at 30 per cent between 2007-2012. HIV infection also stabilized in the provinces and cities with older epidemics, including Can Tho, Ho Chi Minh City and Quang Ninh. There was evidence also of rapidly rising prevalence of newer epidemics among IDUs in the northwestern provinces of Viet Nam (168-170). Studies showed that HIV prevalence rose fast among IDUs who had been injecting drugs for less than a year (171). Higher education and a lower age were identified as factors protecting against HIV infection among drug users (172).

Most HIV cases were also co-infected with HCV or HBV (172, 173). The prevalence rate of HCV and HBV was 74 per cent and 81 per cent, respectively. Among PLWHAs, only 11 per cent were vaccinated against these viruses, of which 70 per cent had three repeated doses (173).

Attitudes about sharing syringes and behaviour in general among young IDUs was still of concern (174). The rate of sharing in the previous six months was high, ranging from 12-20 per cent. This rate stayed highest (25 per cent) in central and south regions. Many engaged in sharing injecting equipment (173, 174). The younger IDUs were more likely to have unsafe behaviours than older groups (151). Most younger users were helped by older injectors at their first injection (160). Reasons for sharing syringes were lack of money to buy new ones, limited access to clean needles, especially at night, stigma from the community, fear of discovery by family and lack of awareness of HIV prevention (175).

Nearly 90 per cent of IDUs were sexually active – 20 per cent had sex with friends in their drug-using group, 37 per cent with friends outside their drug-using group, and 24 per cent with casual partners (176). About half had had sex with FSWs in the previous a year (151, 168, 173, 174). About 20-50 per cent of IDUs had unsafe sex with regular partners (151).

Many IDUs worried about their HIV status, but many did not disclose their HIV status to their sexual partners, leaving their partners unaware of their HIV risk (177). Moreover, many IDUs did not initiate condom use with their partners because of fear of their partner's reaction (174, 175, 177). Many male IDUs are reluctant to discuss risky behaviours and possible HIV infection with wives or girlfriends, and disclose their HIV-positive status. Women are thus placed in a vulnerable position, where they engage in unprotected sex and become pregnant. Some women might have made decisions on termination of pregnancy if they had had information about their husband's HIV status (178).

IDUs had difficulties in accessing STI treatment. Some IDUs said that the services were inconvenient and a waste of time. Moreover, fear of stigma and unaffordability of services were barriers to access (134, 164). IDUs were disadvantaged in accessing VCT services because of limited awareness of the benefits of knowing their HIV status, and fear of stigma and discrimination from health providers (175).

5.3.4.2. Female sex workers (FSW)

This was the group with the second highest rate of HIV infection. Prevalence of HIV infection among FSWs increased slightly from 9 per cent in 2007 to 9.3 per cent in 2012 (169). In big cities, the prevalence rate was higher than the national average. There was a dramatic increase, from 2.3 per cent in 1998 to 24.3 per cent in 2002, in Ho Chi Minh City (171). The HIV prevalence of FSWs in Hai Phong was the highest, at 30 per cent. Some other provinces had lower rates, ranging from 9-12 per cent (168).

Many studies stressed that the HIV prevalence rate among FSWs could continue to rise as more and more FSWs became IDUs. For injecting FSWs, it is estimated that from 1997 to 2004, HIV prevalence increased from 2.5 per cent to roughly 40 per cent (171). Most of injecting FSWs (80 per cent) shared needles or syringes (171).

The condom use rate of FSW varied between studies. Between 70-90 per cent of FSWs frequently used condoms, and this rate tended to increase (179). However, classified by types of clients (irregular, regular clients and partners), consistency of condom use was different. Most FSWs (60-90 per cent) used a condom with irregular clients but only three quarters of them used a condom with regular clients. A few (5-15 per cent) used them when having sex with boyfriends or partners. Street-based FSWs reported using condoms more frequently than FSWs who worked from a hotel (152, 168, 180-183). Reasons for not using condoms were clients' objections (68 per cent), lack of availability (32 per cent), felt safe when having sex with regular clients or partners (86 per cent), and nothing to lose (179-181). There was no apparent relationship between HIV knowledge, time in sex work, and safe sex practices (134, 151, 180). However, research showed that FSWs who had

fewer clients and never had any symptoms of STIs were more likely to successfully negotiate condom use (184).

FSWs had a very high prevalence of vaginal and cervical inflammation (86 per cent and 58 per cent). The STI prevalence in this group was 67 per cent, of which gonorrhoea had the highest proportion (24 per cent), followed by Chlamydia (10 per cent), syphilis (2 per cent), HPV (7.5 per cent) and herpes (5 per cent). More than one third of FSWs had two or more infections. The longer the time spent as a FSW (more than one year), the lower the education level (primary or secondary) and the higher the number of clients, the more likely the chance of STI (179, 185, 186).

Knowledge among FSWs about STI was very poor. More than one fifth of FSWs did not know about STI, while more than half understood they risked acquiring one (185). Most FSWs understood the benefit of condom use (179) and knew where to go for STI services. Nearly three quarters of FSWs used the services (179).

5.3.4.3. Men who have sex with men (MSM)

MSM are the main group experiencing HIV infection and transmission (187, 188). More studies on this population were needed, as data were limited.

MSM were not covered by the surveillance sentinel system. Another issue was the frequent unsafe sex among MSM (171, 189). Some MSM used the internet to find new partners (189) and 44 per cent of MSM in Ha Noi, and 70 per cent in Ho Chi Minh City, had more than two partners in the previous month; 22 per cent of MSM in Ha Noi and 40 per cent in Ho Chi Minh City had bought or sold sex. The rate of unsafe sex varied from 30-50 per cent among studied areas (151). MSM had very poor awareness of STI prevention and they had many difficulties in accessing public services because of fear of stigma. MSM often came to private clinics or self-treated (134, 164).

MSM were often co-infected with many other STIs. Up to 22 per cent of MSM in Ha Noi and 16 per cent of MSM in Ho Chi Minh City were infected with an STI – nearly 12 per cent had gonorrhoea and 8 per cent had Chlamydia (151).

5.3.4.4. Clients of female sex workers

The clients of female sex workers were the main route via which HIV was transmitted to the community in Viet Nam, with 2 per cent prevalence in 2007. The rate in the northwest provinces and Can Tho continued to increase, while An Giang and Ha Noi observed decreasing rates (169). The current data for this group were not officially reported in the health system. But in the surveillance system, studies pointed out that 74-75 per cent of migrants used condoms when having sex with FSWs (171). Research in Ha Noi in 2002 revealed that one third of males aged 18-55 had had sex with a FSW, of which more than half had had sex more than five times. Research in Quang Ninh showed that only 36 per cent of men had consistently used a condom when having sex with FSWs (190).

5.3.4.5. *Other high-risk groups*

As stated above, the sexual partners of male IDUs were a high-risk group for HIV infection. About 14 per cent were HIV-positive (191). Only one quarter of women used a condom consistently when having sex with IDUs. Most of them (more than three quarters) feared violence if they requested condom use, especially if their partners were HIV-positive (191).

Research on workers who lived far from home suggested that most of them had a basic knowledge of HIV transmission and prevention. Almost all workers listed two ways that HIV could be transmitted as being through blood and sex. They had very limited knowledge about oral sex or anal sex, and had many stigmatizing and discriminatory misconceptions about PLWHA. Extra-marital or pre-marital sex was considered acceptable for men living away from home. Men who did seek STI care chose to get it as far away from their workplace as possible, because they feared others – especially their employers – finding out (192).

Anyone found to be HIV-positive was dismissed from their job, to ‘protect’ co-workers (192). They were required to sign a declaration agreeing they would be dismissed if found to be using drugs or to be HIV positive. Knowledge about STI among these workers was also limited. Many did not know about syphilis or gonorrhoea (192).

5.3.4.6. *HIV treatment*

Voluntary Counselling and Testing (VCT)

There was no representative data on the number of people using voluntary counselling and testing (VCT) in Viet Nam – some researchers reported figures of 8 per cent for women and 9 per cent for men. People of younger age, higher economic status and semi-urban residence were more likely to have been tested for HIV (193).

Many studies also stressed that VCT coverage should be expanded to young and pregnant women (187). Both health care workers and patients agree on the medical importance of offering the test as a routine procedure in health facilities, and that this approach allows them to avoid stigma (194). However, women informed by commune health workers through the community notification system that their test results were HIV-positive reported feeling stigmatized because their privacy was not respected. The quality of post-test counselling in hospitals and at district level is currently not good enough. It is recommended that integration of VCT into prenatal care services needed more regulation on confidentiality (194).

Treatment for PLWHA

Men had more opportunities than women to access HIV treatment. More than half were receiving antiretroviral therapy, and more than one fifth reported receiving treatment for opportunistic infections. However, the rate of accessibility of treatment for depression was low. Only 1 per cent of men reported receiving treatment for substance abuse or mental health problems (195). Research among women reported that about one quarter of them had never attended HIV care and treatment services (196).

The main reasons for not having HIV treatment were because the men felt it “not necessary” (60 per cent), fear of stigma (13 per cent), not enough time (13 per cent), and inability to afford the health care cost (10 per cent). About 13 per cent either didn’t know where they could find HIV care, or didn’t know about HIV care programmes at all (196).

Research in Can Tho showed that more than three quarters of ARV users had properly understood and adhered to their therapy. However, knowledge of side-effects was poor. ARV adherence in groups with a good understanding of the treatment was much higher than in groups where understanding was poor (OR = 11) (165).

An estimated 70,000 infected adults need access to ARV treatment annually, and higher coverage would rapidly reduce the number of AIDS-related deaths. For instance, without access to ARVs, the number of deaths would have been 11,300 instead of 7,860 in 2007 (169). Children under 15 years old made up a small number of PLWHA, but their number will increase substantially. Prevention of mother-to-child transmission of HIV (PMTCT) must also be expanded to prevent more children becoming infected. In 2007, less than 40 per cent of infected pregnant women received ARV prophylaxis or treatment (169).

Prevention of mother-to-child HIV transmission (PMTCT)

Among pregnant women who knew they were HIV-positive, 68 per cent opted to terminate their pregnancies. This rate dropped to 50 per cent when PMTCT programmes were implemented from 2004 (197). Women living with HIV/AIDS faced hard decisions and felt very responsible for having children. They often hesitated to disclose their status to their families, and were reluctant to seek help from relatives or friends (198).

Getting tested for HIV was more difficult for some women than others. Women in big cities had a greater chance of accessing HIV testing (199), while in many big provinces such as Thai Nguyen, Ha Noi and Ho Chi Minh City, antenatal care programmes routinely offered HIV tests (200). In contrast, most women living in rural and remote areas could not access HIV testing during pregnancy. About half of rural women infected with HIV were diagnosed during labour – not during antenatal care. In some areas, this rate was up to 75 per cent. Currently only half of women can access to PMTCT services (197). Moreover, after positive HIV testing, the rate of pregnant women who used ARV drugs during labour was low, varying from 12.5-50 per cent. However, studies also indicated that in some regions with availability of ARV drugs, nearly 100 per cent of the infants born by HIV-positive women in hospitals received prophylactic therapy for seven days (190, 201-203).

Health providers were often a barrier to pregnant and postnatal women accessing HIV prevention and treatment. Other influential factors include their own fear of HIV infection; lack of knowledge of HIV; high workloads and lack of staff; unavailability of HIV testing at commune level; shortage of antiretroviral drugs; and lack of operational guidelines. Additionally, the fragmentation of the health care system into specialized vertical pillars, including a vertical programme for HIV/AIDS, presents a major obstacle to providing a continuum of care (204).

Most women who were living with HIV/AIDS did not have enough information on postnatal care. Besides, stigma from the family and community were also barriers for accessing and using health services. (The referral system for postnatal care for the women and children was not completed (201).

5.3.4.7. Stigma and discrimination among people living with HIV

Currently, stigma and discrimination among PLWHA is very common. The rate of people who had a positive attitude to PLWHA was low, at 20 per cent (205, 206). PLWHA often felt they were being avoided and viewed as a social ill, leading to feelings of anger and rejection. Stigma could be divided into three main forms: (1) feeling shamed and scorned, and people around them behaving differently; (2) stigma due to association; and (3) fear of transmission. Family members of PLWHA suffered stigma from neighbours, being shunned, and overhearing discussions about PLWHA (207).

As a result, PLWHA often faced stress. Research revealed that men living with HIV/AIDS had a depression rate of 19 per cent over a one month period, which was substantially higher than that reported in the Vietnam's male population at large (0.9 per cent) (208). The difficulties that they had to overcome were securing the future of their family (80 per cent), having no income (72 per cent) and accessing quality health care (195).

Health providers reported high levels of fear of casual contact with HIV-positive people; 48 per cent of health providers feared sharing utensils with them, and 37 per cent feared touching the skin of a person who was infected with HIV. Health providers with high exposure to bodily fluids in their daily work reported the highest level of fear-based stigma (209). At least 40 per cent of all hospital workers reported that HIV was a punishment for bad behaviour, and nearly 40 per cent reported that HIV-positive individuals should be ashamed of themselves.

Hence, PLWHA and their families do not disclose their HIV infection because of fear of stigma and discrimination. Sometimes PLWHA tried to hide their status from family members because they were afraid of causing emotional trauma, and worried that their children could face discrimination. In cases where the HIV status was disclosed, women experienced both discrimination and stigma from their in-laws. Many women were not allowed to directly care for their babies (210).

5.4. Adolescent Reproductive Health (ARH)

5.4.1. Puberty/maturity

As in the review for the period 2000-2005, puberty was the focus of many studies. The average age of first menstrual cycle was 14.5 and first wet dream was 15.6. Women tended to have onset of puberty a year earlier than men (211-215) and puberty seemed to gradually start earlier (211, 216). Research revealed that 13.9 per cent of adolescents aged 8-11 had puberty signs. Puberty came earlier for adolescents living in urban areas who were from wealthier families and whose mothers experienced early puberty (212, 217).

Knowledge among adolescents about the signs of puberty was quite good. Up to 98.6 per cent of adolescents knew one sign of puberty, such as gaining weight and height, breast and pubic hair development, and acne (215). However, about 40-50 per cent of adolescents knew the most important signs of puberty (menarche for females and wet dreams for males) (214, 215, 218). Knowledge about other signs such as height and pubic hair were lower (30 per cent) according to research in Hai Duong (218). Pupils in secondary school had limited knowledge, as only 31.5 per cent had an accurate understanding of sex (219, 220).

Knowledge of fertility cycles was 3-4 times higher in women than in men (215, 221, 222). Most notable was that knowledge on pregnancy in adolescents showed no improvement between the two rounds of the Survey Assessment of Vietnamese Youth (SAVY) conducted in 2002 and 2010 (211, 216).

5.4.2. Adolescent reproductive health (ARH)

5.4.2.1. Knowledge about reproductive health

Of all reproductive health issues the one adolescents knew most about was family planning (70.9 per cent). Next was ARH (55.2 per cent), followed by STI (52 per cent), sexual education (42.2 per cent), reproductive health communication and education (41.2 per cent), safe abortion and avoiding abortion (33.3 per cent), RTI (27.8 per cent) and safe motherhood (26.8 per cent) (223). Infertility and early diagnosis of breast cancer and reproductive cancer were the least-known topics (<1/5) (223, 224). Adolescents in schools had also heard about STIs and HIV/AIDS. More than 90 per cent of pupils knew about STI, birth control and safe sex (222, 225, 226). However, only two thirds of pupils could correctly define an STI (221, 225).

Knowledge and attitudes on reproductive health issues differed between grade class, sex and family situation (215, 219). The number of female adolescents who knew 7-10 reproductive health issues was 3-3.5 times higher than that of male adolescents. Female adolescents had better knowledge than male adolescents on other issues such as STI, family planning and menstrual regulation. Adolescents who had many siblings had poorer knowledge than ones who had one sibling (215).

5.4.2.2. Sex and adolescent pregnancy

Trends for premarital sex

With the rise in the average age of first marriage for both men and women, the duration between age at puberty and first marriage has naturally increased, increasing the chance of premarital sex. Reports from many studies revealed that the rate of adolescents who had boyfriends/girlfriends was high. Even at age 14-17, about 11 per cent reported having had a girlfriend or boyfriend. The proportions of young people aged 18-21 reporting having experienced emotional relationships was 43 per cent for males and 45 per cent for females. The mean age of having a partner was 16 for males and 15.8 for females (215, 227). Males

had more love mates as they reported spending more time socializing with their friends than females did (228, 229).

In SAVY II, the rate of adolescents and youth (A/Y) aged 10-24 who had premarital sex was as high as 9.5 per cent compared to 7.6 per cent in SAVY 1. Compared to other studies, the rate of premarital sex varied from 5-5.5 per cent, and was higher among males (6-14 per cent vs. 1.5-4 per cent in females) (155, 166, 211, 216, 218, 221, 228, 230-232). The age for first sex fell from 19.6 (20 for males and 19.4 for females) to 18.1 (18.2 for males and 18 for females). Reports also revealed that premarital sex among 14-15 year-old adolescents was increasing (212-215, 226). However, premarital sexual activity in Viet Nam is infrequent compared to many other countries in the region and around the world (233), though in reality, premarital sex could be much more widespread than commonly assumed, as one quarter of adolescents said they had one friend who had been sexually active (213) and a report pointed out that one quarter of married men and one seventh of married women had had premarital sex (218).

More than 70 per cent said that their first sexual encounter was with their girlfriend/boyfriend. About 10 per cent had sex with friends, while the remaining approximately 9 per cent had sex with a FSW. In the group of sexually active adolescents, the average number of partners was 2.9 for males and 2 for females (231, 234).

Other pre-coital behaviours such as kissing and touching were reported. At ages 14-17, 5 per cent of males and 3 per cent of females reported having kissed, meanwhile these proportions increased to 56 per cent and 50 per cent respectively for adolescents aged 18-24. Touching was more popular (one fifth for males and one seventh for females) (227, 228, 230).

Perceptions of premarital sex

Nowadays, many young Vietnamese tend to have more open attitudes toward premarital sex. The proportion of A/Y who accepted premarital sex increased significantly during the period 2004-2009. More adolescents approved of premarital sex (221, 235-237) as it was perceived as a sign of love and trust among lovers and/or a way to demonstrate their commitment to future marriage (227, 238, 239). If both partners were consenting, mature, and understood the consequences of premarital sex, half of respondents said it was acceptable (225).

In a transitional society, many adolescents identified two types of love: one was committed or “genuine” love that could lead to marriage, while the other was “non-committed” or “pleasurable” love. Mutual physical and emotional satisfaction was considered an important attribute. “Non-committed” love was for mutual sexual interest or pleasure but this did not necessarily mean that the two really “love” each other (240).

However, many adolescents continue to hold traditional views on premarital sex (238, 241). Most A/Y (75-90 per cent) and parents emphasized the importance of women remaining virgins until their wedding night (215, 219, 221, 227, 238, 242, 243). Females held more

conservative views on premarital sex (219, 244). Most thought a boy would not respect a girl who agreed to have sex with him before marriage. About half of men said they would not accept a woman who had premarital sex (218, 245).

A healthy relationship was built on sexual abstinence before marriage, which reduced the risk of unwanted pregnancy, and increased status and honour of a woman and her family. Although both young men and women are expected to maintain control over their sexual desires, it is ultimately the young woman's responsibility to control the sexual aspects of a relationship (219, 230, 246, 247).

Factors associated with premarital sex

Some factors increased the chances of having premarital sex. Male adolescents, and males in older age groups living in urban areas were more likely to have premarital sex (248). Another risk factor for premarital sex was sex abuse. A close relationship with parents was a protective factor that reduced the risk of premarital sex by 50-70 per cent compared to adolescents with an average or poor relationship. More important, peer pressure increased the likelihood of premarital sex for unmarried A/Y by 2.6-3.8 times (231).

Other associated factors included a shortage of reproductive health information from official communication channels such as school, family, health providers and health centres and a lack of user-friendly services where clients could openly discuss sex and love. All of these made A/Y confused about which information channel and service providers to choose when needed (249).

A consequence of unsafe sex in adolescents was unwanted pregnancy. Studies suggested that about 20 per cent of abortions were among adolescents (250).

5.4.2.3. Contraceptive use

Knowledge

Many studies explored the knowledge and practice of contraceptive use in adolescents. The results showed that the best-known contraceptive methods were condoms, oral pills and IUDs. However, only some respondents could describe correctly the contraceptive use procedure of these methods. All female A/Y who had had abortions knew about contraceptive use (251). Knowledge about the benefits of contraceptive use was very limited, but young women had better knowledge than young men, and adolescents in urban areas knew more than adolescents in rural areas.

More than three quarters of adolescents knew where to access contraceptive methods, such as family planning counselling centres, population collaborators, hospitals, pharmacies and CHCs (214, 215). Reports revealed that most adolescents had easy access to reproductive health care and counselling services (248).

Attitude

The attitude of A/Y to contraception tended to be more open than previously. Many A/Y accepted that they had to use contraception when having premarital sex, but most did not want to use it, especially condoms (252). More than two thirds of adolescents said that both men and women should equally share the responsibility for contraceptive use (213). Results showed that very few adolescents discussed family planning issues with others.

Practice

The rate of condom use during first-time sex differed among studies, ranging from 25-40 per cent (213, 225, 231, 247). Condoms accounted for 60.3 per cent; withdrawal 19 per cent; oral pill 10.3 per cent; emergency contraceptive pill 6.9 per cent, and fertility awareness 3.4 per cent (225).

In general, the contraception rate for young men was higher than for young women (half for men vs. four tenths for women). Young men also had higher rate of consistent contraceptive use than women. Young men aged 21-24 had a higher rate of condom using when having sex than men aged 15-19 (231, 253, 254). Most young men (nearly 90 per cent) used a condom when having sex with a FSW. However, only one fifth used a condom consistently when having sex with wives or partners (234). Among married youth, only one fifth of men and one fourteenth of women used a condom in their last sexual encounter with their partner who was not their husband or wife (218).

5.4.2.4. Abortion

Adolescents' knowledge of abortion was poor. Only 10 per cent understood menstrual regulation and knew when abortions can be performed. About 5.8 per cent thought that menstrual regulation was a family planning method. Nearly one fifth did not know that abortion could be harmful to their health. The number of young women who had a good understanding of the consequences of abortion was much higher than young men (97.2 per cent vs. 60.4 per cent). And only half of them could list any of the complications of abortion, such as bleeding, uterus rupture, abdominal pain and infertility (214, 215).

Research in urban areas revealed that one third of abortions were performed on unmarried young women, in places where there were universities and colleges. The main reasons for abortion were the inability to care for children, school workload, economic and social conditions, negative consequences for the future, and fear of disrespect from community, friends and family (251). Most adolescents considered abortion morally wrong.

A study shows that midwives were more suitable for providing clients with counselling than a doctor, pharmacist or others. Abortion counselling for young, unmarried people should focus on warning of the physical and psychological dangers and risks (247).

5.4.2.5. *Protective and high-risk factors*

Family

In general, family was a protective factor against adolescent high-risk behaviour. Studies stressed that sex education was best if given by parents (255, 256).

About 80 per cent of parents were concerned about where their children were and what they were doing, about their school performance, and their children's friends and moods. More than three quarters of parents believed they knew if their child had a boyfriend or girlfriend. Most of them (more than three quarters) monitored the daily activities as well as outside activities of adolescents. Most parents and adolescents had dinner together. Parents were also very active in participating in adolescents' schoolwork and activities in school (232).

In families where this was the case, A/Y were less likely to have premarital sex, suicidal thoughts, or to smoke or drink alcohol, than those with less-attentive parents. Similarly, in families where parents were more open to discussion, adolescents and young people were less likely to have premarital sex, get stressed, feel sad, or indulge in other high-risk behaviours such as smoking and alcohol use (232).

Many parents and A/Y discussed reproductive health. About 40-60 per cent of parents listened and understood the reproductive health issues of adolescents, even the sensitive ones, believing that they were behaving like an "older friend" (223, 232). However, many studies pointed out that parents were shy about discussing sexuality, birth control, HIV and pregnancy with their children. Topics about relationships and standards of behaviour were more frequently broached by parents possibly because these issues provided an opportunity for parents to present "traditional" values [262].

The reasons for not discussing reproductive health issues were; "if I talk with my child about sex, he/she will be interested in sex" (86.8 per cent), "too busy" (65.4 per cent), "not enough information" (63.1 per cent), "difficult to talk" (16 per cent), and "no benefit" (8.9 per cent) (228). Many adolescents did not "dare" to discuss sexuality with their parents (230). There were also significant differences in the frequency of "talking to parents" and the level of "comfort" when talking about sensitive issues with parents depending on the parents' level of education (228).

Most studies pointed out that adolescents had an urgent need for more discussion on reproductive health topics, especially puberty, gender and sexual health. Most of them wanted to individually discuss with their parents, be advised or be given literature on the subject (223). Parents wanted to be taught how to improve their knowledge, which in turn could be used for discussions with their children. Although many reports showed that communication between parents and adolescents was quite open, shyness on both sides, the parents' traditional belief that talking about sex would encourage early sex among adolescents, and parents' lack of knowledge on the issue exist as barriers restricting the depth of conversation (257).

School

School played a main role in supporting adolescents. Currently, many schools have lessons about sexuality for pupils, such as education for citizenship and biology at 9th grade. Sex education programmes in school helped adolescents have later sexual relationships and perform safe sex. Sex education was an official information source, helping adolescents develop their attitudes, beliefs and understanding in relation to reproductive health. Through such education, adolescents were provided with essential life skills to orientate them for healthy and responsible behaviours. Parents, teachers, health providers, Youth Union members and mass media could integrate and collaborate to provide sex education (258).

However, shortage of standard education materials, steering and collaboration at a higher-level, lack of integration among schools, families and society, shortage of finance and skilful lecturers were barriers to implementing education programmes in schools (259).

Information about sex education and reproductive health in adolescents

Information sources for A/Y in order of most to least popular were television, magazines, newspapers, friends, teachers, parents and family members. More than 90 per cent of adolescents received information from television (223, 225, 260). Adolescents discussed reproductive health issues with other family members such as siblings (38.5 per cent). Next were friends and peer group members, who were more likely to sympathize when sharing a “secret”. Teachers and others in the community took a limited role (214, 215, 223, 260). Information from health providers had a very low prevalence (2-3.5 per cent) (220)3. Studies among married ethnic women reported that they mostly sourced information from their neighbours, and not health providers (261).

Studies pointed out many barriers to reproductive health/sexuality information and service provision are from community leaders and health providers. For instance, many teachers in schools were also too shy to provide such “sensitive” information (252).

Adolescents and youth raised their urgent need for reproductive health information and services in all studied areas. Currently, only one third of A/Y participated in reproductive health training classes or discussions (220)nk. The majority (more than two thirds) of pupils considered sexuality and reproductive health education as essential. About one third of pupils said that sex education should be done for 6th grade (214, 215, 219, 220, 252, 262). The reasons adolescents sought reproductive health information were; to gain knowledge (45.7 per cent), seek answers to reproductive health questions (37.5 per cent), felt it was necessary (37.2 per cent) and curious (31.5 per cent). A barrier to seeking reproductive health information was that it might be misunderstood as trying to find “unhealthy” information (219). The information needs differed by age and sex. Younger A/Y aged 10-14 wanted to receive information about puberty, friendship, and love. Older adolescents (aged 15-19, 20-24), wished to have information about sexuality, pregnancy, birth control,

STI and HIV/AIDS. Male adolescents wanted to receive information about the role and involvement of men in relationships. Meanwhile, females wanted to have information about hygiene, how to behave with boyfriends, and unwanted pregnancy (215, 220, 252, 260).

Education in school was essential, providing many popular information channels such as hotlines, adolescent counselling centres, friendly services, clubs and parents. Other sources which also were highly appreciated were friends, books, magazines and educational campaigns. Rural adolescents wanted to have information through Youth Union branches or peer education. Some ethnic adolescents wanted to receive it via cultural entertainment activities (214, 219, 252). The internet was also an important source and communication tool, helping A/Y discuss issues in confidence, without criticism (240).

5.4.2.6. *Health policy for adolescents and young people*

The Masterplan on A/Y in 2006 was considered an important step, showing investment by the Ministry of Health (MoH) in reproductive health care activities for Vietnamese A/Y. The plan was to protect and improve A/Y health status, enhance their access to reproductive health services and reduce unwanted pregnancy, HIV infection, and deal with other A/Y health issues.

The strengths of this policy process were: (1) strong evidence-based policy making from many surveys, research studies and reports; (2) involvement and multi-sectoral collaboration by a number of stakeholders; (3) the openness of the policy working group, reflected in the acceptance of relevant new ideas from other actors; (4) current issues for the health system, such as workforce and multi-sectoral collaboration of unions, were considered in the policy process and presented in the plan (97, 98, 263).

However, some shortcomings of the plan were revealed. Some of the proposed objectives, indicators and estimated budget for implementing the Masterplan were neither feasible nor sufficient, such as objectives for the rate of reproductive health centres providing IEC on reproductive health for adolescents, and the rate of adolescents who received this information. The Masterplan inadequately included the specific role of stakeholders (such as the Ministry of Education and Training, Youth Unions), and mechanisms for integration and collaboration in solving existing problems, such as service delivery and the availability of human resources (264).

Following the Masterplan, the MoH approved the *National Guidelines on Provision of Adolescent and Youth Friendly Health Services* in 2008. Moreover, only a small fund (a billion Vietnamese Dong) was allocated to improve reproductive health care for adolescents. The MoH also guided provinces to develop plans to implement the Masterplan in their own area. However, because of the limited fund, only 31 out of 63 provinces could develop their own action plan and implement activities such as training and piloting friendly health services for A/Y (265).

5.5 Reproductive Health of the Elderly

5.5.1. Health problems of the elderly

High blood pressure in menopausal women

The prevalence rate of menopausal women who had high blood pressure was 50 per cent higher than the rate for women aged 25-39 years (6.9 per cent) (266, 267).

Musculoskeletal disorders

The most common musculoskeletal disorder for elderly people was osteoporosis – the thinning of bone tissue and loss of bone density over time, leading to a higher risk of fracture even from a mild blow or fall. Studies showed that hereditary factors and lifestyle are associated with elderly osteoporosis. For female respondents, weight (<44 kg), old age, years since menopause, lifestyle (such as corticosteroid use), and a rich protein and plant lipid diet regime, were associated with osteoporosis (268-271). Lean mass and fat mass of the body also had some impact on bone mineral density. Among women with the similar body size, women who had higher fat mass had higher bone mineral density and were less likely to have osteoporosis (272).

In contrast, women who used hormone replacement therapy, had normal exercise, and who had their first menstrual cycle before they were 16 years old had a lower risk of osteoporosis (269). Diet had a big impact on osteoporosis. Although vegans had a lower dietary calcium and protein intake than omnivores, veganism did not have an adverse effect on bone mineral density and did not alter body composition (273).

Another disease related to musculoskeletal disorders was vertebral fracture. Some studies showed the prevalence rate of menopausal women who had vertebral fracture was 23 per cent. The prevalence increased with age and was highest (39 per cent) among those aged over 70 years, and lowest (17.1 per cent) among those aged 50-59. Most fractures (83 per cent) occurred at L1-L5; 88 per cent occurred at one vertebra. There was no significant association between vertebral fracture and back pain, fall history, and dietary calcium intake. Higher risk of vertebral fracture was associated with advancing age and lower lumbar spine bone mineral density (274, 275).

5.5.2. Menopausal disorder

Only two studies addressed treatment for menopausal disorder. One looked at a traditional medicine treatment method, while another used hormonal therapy. The traditional medicine contained two herbal medicines which were *Luc vi* (61 per cent) and *Quy tri* (39 per cent). After treatment, most menopausal disorders reduced, with statistical significance ($p < 0.05$) (276).

In the research on hormonal therapy, a study of 1,235 women in Tu Du general hospital and Hung Vuong general hospital showed that menopausal disorder (hot flashes (63.2

per cent), night sweats (45.8 per cent), flutters (38.7 per cent), and sleep disorder (47.1 per cent), appeared in 87.9 per cent of respondents, and that hormonal therapy had been recommended. Most used a combination of oestrogen-progestin (87.5 per cent), followed by oestrogen only (5.4 per cent) and herbal medicine (7.1 per cent). The result showed that vascular disorder was improved significantly after six months of treatment. The hormonal therapy group had the best results. Oral hormones were shown to be better in treating hot flashes and sleeping disorders than tablets inserted in the vagina.

5.5.3. Reproductive health care intervention for the elderly

As per MoH regulations, most reproductive health centres at district and provincial level are responsible for caring for the reproductive health of local people in general. However, we were not able to collect any research related to reproductive health care for elderly people. Interventions, if they existed, were mostly done on nutrition (e.g., on calcium supplements or osteoporosis treatment) (277).

5.6. Reproductive Cancer

In this review we report on the two most common types of reproductive cancer – breast cancer and cervical cancer.

5.6.1. Breast cancer

5.6.1.1. Incidence

Some studies in Viet Nam reported the rate of breast cancer as 17.4‰ (278). More than 90 per cent of women who had breast cancer were aged 30-60 years old, in which the highest was aged 40-50 years old. This rate stayed lowest in young women (under 30) and those over 60 (accounting for about 4 per cent for each group) (211, 216, 279). Most women sought health care at the late stage, when the tumour was 2-5 cms (72 per cent).

5.6.1.2. Associated factors

Most studies did not mention factors related to breast cancer, though one study reported hereditary factors among patients (e.g., women who got breast cancer and who had siblings with the same disease) (280).

5.6.1.3. Diagnosis and treatment

The most common symptom in 70 per cent of breast cancer cases was massive lesion. The other three, less-common signs (under 50 per cent) were calcification, metastatic carcinoma in axillary lymph, and invasive lesion (281, 282). The sensitivity of X-ray and ultrasound in breast cancer diagnosis was similar. The metastatic lesion could also be well examined by both X-ray and ultrasound (0.804). In breast cancer diagnosis, X-rays had sensitivity at 92.4 per cent, specificity at 74 per cent, positive predictive value at 85 per cent, negative

predictive value at 86 per cent and accuracy at 85 per cent (283, 284). Other studies also acknowledged the benefits of the combination of the two diagnosis methods of X-ray and ultrasound, which led to higher accuracy (285).

Another method that was more effective was immediate breast biopsy. This was a quick test, but with higher accuracy. It was very important, especially when cytological diagnosis was not effective, such as cytology with a low rate of metastatic cell. However, this method was often applied in big hospitals where there were professional staff and adequate equipment (286, 287).

Some clinical research explores the effects of treatment methods such as mastectomy (breast removal) combined with medical treatment. The result showed that mastectomy combined with ovarian removal and adjuvant tamoxifen therapy in the early stage of cancer had better results than mastectomy only (288).

5.6.2. Cervical cancer

5.6.2.1. Incidence

Small-scale studies on cervical cancer screening by pap smear indicated a rate of 1.5-2.5 per cent among studied samples (289, 290). Cervical cancer accounted for 20 per cent of all cancers in women diagnosed and treated in big hospitals, and was the most common of all cancers diagnosed in women in Ho Chi Minh City (27 per cent). The morbidity prevalence of cervical cancer among women in southern Viet Nam was 26/100,000 compared to 6.1/100,000 for women in northern Viet Nam (291). Annually, the number of women who contracted cervical cancer was 6,000, and 2,500 died from the disease (292-294).

Studies in two big cities (Ha Noi and Ho Chi Minh) reported four of the most common strains of HPV. These were: HPV-16 (1.73 per cent), HPV-18 (1.47 per cent), HPV-58 (1.2 per cent) and HPV-81 (0.8 per cent). The rate of single and multiple HPV infection was similar, at 30 per cent. While the incidence of HPV in Ho Chi Minh City was higher than that of Ha Noi, the rate of high-risk HPV in Ho Chi Minh City was lower than that of Ha Noi (75.8 per cent vs. 91.3 per cent) (292, 295-297).

5.6.2.2. Associated factors

Risk factors related to HPV infection included age of first sex, number of partners and the length of time taking the oral pill. Women under 39 years of age were at higher risk than women over 40 (290, 292, 298-300). HPV infection in women who had first sex before the age of 18 was four times higher than women who had first sex after the age of 18 ($p < 0.001$) (300).

Women who had more than one partner were more likely to be infected with HPV than women with only one (OR = 3.23 and $p < 0.001$). Similarly, women who had more than one partner were 3.83 times more likely to be infected with high-risk HPV types than those

that didn't (300). The prevalence of HPV among FSWs was higher for those who had many partners (PR = 1.75 and 95 per cent; CI = 1.34-2.28) and for FSW who were HIV-positive (PR = 1.42 and 95 per cent; CI = 1.08-1.88) (295).

5.6.2.3 *Women's knowledge of cervical cancer*

Generally, women's understanding of cervical cancer was poor. Better educated and urban women had greater knowledge (289, 291). The attitude of the women was quite subjective, as most said they had low-risk of cervical cancer (291).

The knowledge and practice of cervical cancer prevention on the part of parents with adolescent daughters were also limited. About 50 per cent of them knew no symptoms of cervical cancer, only 25 per cent had heard of HPV, and very few knew how the virus was transmitted. About 50 per cent of women had gynaecological examinations every six months, and the rate of women having a pap smear test was quite low (19 per cent in Tu Liem district and only 9 per cent in Cu Chi district). About 30 per cent had heard of the HPV vaccine and 74 per cent wanted their daughters to be inoculated if a vaccination programme was implemented (301).

Many women felt that they were at low-risk of getting cervical cancer. Thus, they did not actively have routine examinations and only sought advice when they had severe symptoms such as cervical bleeding and lower abdomen pain (291). Some women recognized the severity of the disease but they did not seek examination or treatment (302). The reasons for not having gynaecological exams were shyness (56.1 per cent), too far to travel (9.7 per cent), and inability to afford one (7.5 per cent) (291).

5.6.2.4 *Diagnosis and treatment*

Screening programmes for cervical cancer were not implemented at community level. CHCs only perform family planning services and gynaecological examinations. Health providers recognized the importance of early diagnosis of cervical cancer, but they were not trained to carry it out (291).

Researchers reported that two years of treatment by loop electrosurgical excision procedure for cervical intraepithelial neoplasm grade II and III had quite high success, at 95 per cent. This was also an effective diagnosis method, particularly when a biopsy could not explore abnormal cells and metastatic cytology (303, 304). Another treatment was uterine artery embolization. After six months of embolization, the size of tumour in the cervical muscle and membrane reduced significantly (305). The sooner cancer is diagnosed and treated, the better a woman's chance for full recovery, especially during the IB – IIB stage (306, 307).

According to one study, complications immediately following radiation therapy were quite common, especially diarrhoea and rectal bleeding (46.9 per cent and 32.7 per cent). Other complications such as strangury and rectal irritation accounted for a much lower rate, at 1.8 per cent-4.4 per cent. The recurrence rate of cervical cancer was low (6.2 per cent with

radium treatment and 4.4 per cent with caesium treatment). The metastasis rate for patients treated by radium 226 and caesium 137 was quite low (20.8 per cent) (308).

5.6.3. Cervical cancer prevention

Some types of vaccine could protect and prevent common types of HPV infection in Viet Nam (HPV-16, HPV-18, HPV-6 and HPV-11). Although there was no specific vaccine for HPV-58 (a type of HPV causing cervical cancer in Ha Noi and Ho Chi Minh City at a rate of 11 per cent and 19 per cent respectively) (300), the immunization programme should be expanded (309, 310). Most women (90 per cent) supported the idea of vaccination, with studies showing that more than 90 per cent of women would like their daughters immunized (though at the same time, 90 per cent of them believed their daughter would not have early sex) (243). Expanding the coverage would mean getting greater cooperation of stakeholders such as parents and schools – although cervical cancer is a women's disease, male involvement is important and they also need to be mobilized as part of the programme (311, 312).

5.6.4. Cancer of male reproductive organs

During our research report collection, no studies on cancer in male reproductive organs could be found. We found only one piece of clinical research on prostate cancer classification through the Gleason grading system (313).

5.7. Abortion

5.7.1. Abortion rate in Viet Nam

While the abortion rate in Viet Nam has dropped, it remains relatively high. A survey by the General Statistic Office in 2008 revealed an abortion rate (per 100 married women aged 15-49) of 0.9 per cent. However, this decline was not enough to meet the abortion reduction goal in the National Population Strategy for the period 2001-2010 (115).

Similarly, the abortion ratio per 100 live births fell 2 per cent per year on average during 2007-2010 (from 45 to 32), but this was still far from the target of the National Population Strategy 2001-2010 (at 22.5 per cent). In 2010 the abortion ratio was estimated at 25 per cent (116, 122, 219). Marital status, contraceptive use, age, location and number of previous abortions were related factors. Married women and women who used traditional contraception had a higher rate of abortion than other groups (314). The rate of married women aged 15-49 who used menstrual regulation was much higher than women who used other abortion methods. On average, for every four instances of menstrual regulation there was one abortion using another method (3). A study revealed that one third of abortions were among women who had no other children, of which one fifth were unmarried (315).

The abortion rate differed by region and area. Women in Northeast region had the highest rate (1.6 per cent), next to North Western (1.5 per cent), followed by Red River Delta (1.4 per cent). The abortion rate in Central region stayed the lowest (0.4 per cent) (3, 121, 316).

Some studies indicated that there was no difference in the abortion rate between urban and rural regions (3), while other studies reported that the abortion rate in urban regions is higher than that in rural ones (316).

The number of women who had only one abortion was higher than the number of women who had two or more (94 per cent vs. 6 per cent) (3). The rate of women who had two or more abortions was highest in Mekong River Delta and Red River Delta, and lowest in Central Coastal region (3).

Distribution of abortion by days of the week was quite interesting. Friday was the day with the highest number of abortions. This could be explained by women wanting to have two days off at the weekend, thereby avoiding a day off work. Pregnant women did not abort on the 15th day or first day of the lunar month. The number of abortions in the first quarter of the year was higher than in other quarters (315).

The abortion rate among married women seemed to remain stable, but among youth and unmarried women it increased significantly. This rate differed by region, area, occupation, age, marital status and economic situation (317). Although, as mentioned in many studies, current abortion data is not accurate and reliable, because the number of abortions in the private sector was not well collected (57).

5.7.2. Characteristics of women seeking abortions

Studies indicated that the highest abortion rate was among married women. About one fifth to one third were young and unmarried women. The younger women were more likely to have a late abortion. Women who were abused by their husband or boyfriend were also twice as likely to have an abortion (115, 318). Women living with HIV had a higher risk of abortion than other women (319).

Awareness of family planning methods was poor among women seeking abortions. About two thirds of married women who had an abortion had used contraception. The most popular were the IUD, oral pill and condom. Only a few unmarried women said that they had used contraception. The main reasons for not using birth control were fear of side effects such as bleeding, back pain and sensitivity reduction, as well as financial cost (320-322).

5.7.3. Types of abortion

The most popular type of abortion was menstrual regulation, of which manual vacuum aspiration (MVA) accounted for 70-80 per cent, and electric vacuum aspiration was 10 per cent. Only 2-7 per cent of women used medical abortion. The dilation and evacuation rate (D&E) was 4 per cent and dilation and curettage rate (D&C) was 2 per cent (315, 316).

5.7.3.1. Late abortion

Most abortions in Viet Nam were at an early stage. About 60 per cent of abortions in health centres were diagnosed early, within five weeks' gestation, and were aborted in the first

trimester of pregnancy. Only a few studies were conducted on late abortion by D&E and/or D&C therapy in Viet Nam.

The most common reason for not having an early abortion was lack of awareness of pregnancy status in the first trimester (323, 324). As many as 80 per cent of women failed to identify their pregnancy before 12 weeks' gestation because of varying length of menstrual cycle. Some who were lactating believed that conception was unlikely (323). Moreover, fear of revealing their pregnancy status, shyness and the unfriendly attitudes of abortion providers were barriers to accessing health care services by unmarried women, especially adolescents (324).

5.7.3.2. Medical abortion

In Viet Nam, most studies focused on using misoprostol for pregnancy termination within the first trimester (325). Medical abortion, combining mifepristone and misoprostol, was introduced in 2002 and could be used to abort a foetus of up to seven weeks' gestational age (49 days). Medical abortion (for both mifepristone and misoprostol) accounted for 7.4 per cent of abortions (315). The main advantages of choosing medical abortion were lower levels of pain and fewer side effects than vacuum aspiration (326). Only 60.2 per cent of clients had mild abdominal pain and 31.7 per cent had normal abdominal pain. Other side-effects such as fever (39.8 per cent), vomiting (29.9 per cent), shivering (22.4 per cent), were the most common. Side-effects such as diarrhoea, tiredness, dizziness, headache and rashes were uncommon (326).

Research included in this review found no severe side-effects threatening the health or survival of the client. The cost for medical abortion was considered low compared to other methods (327).

5.7.3.3. Vacuum aspiration

Vacuum aspiration method which uses a handheld syringe accounted for 71.1 per cent of all vacuum aspirations (328). Electric vacuum aspiration was recently introduced in the health system of Viet Nam. However, the actual application of this method is still limited (316, 329).

5.7.4. Awareness and perception on abortion in Viet Nam

Most pregnant women had received health information about abortion (115). Compared with the review of 2000-2005, there had not been much change in perceptions of abortion in Viet Nam. People tended to harbour considerable moral doubts about induced abortion, particularly if performed in the late stages of pregnancy (330). However, more than 10 per cent of women considered abortion as a family planning method, thus highlighting the need to expand access to a wide range of contraceptive choices and discourage abortion as a method for family planning (36). In migrant groups, knowledge about abortion was lower.

Only 70 per cent had good awareness of the consequences of abortion, and 15-20 per cent of women had none (128).

While some young people did not agree with premarital sex and abortion, they were sympathetic towards and willing to help young women who experienced unwanted pregnancy (220). Generally, women choosing abortion did not have support from their family and friends (316).

Women who had late abortions because of foetal abnormality also faced a lot of stress. Their loss of a wanted pregnancy led to feelings of guilt, pain, sadness and fear, and uncertainty about being able to have a healthy child in the future. They were afraid that the baby might resent them for not allowing it to live. Two years after the abortion, most of the women had come to terms with the loss, but four months after the termination, a considerable number of parents still had symptoms of stress and depression (331).

5.7.5. Reasons for abortion

Reasons for abortion varied, but the main reason was that the pregnancy was unwanted. This accounted for two thirds of abortions (332). Other reasons were that women wanted no more children, were unmarried, had no desire to marry, or had become aware of a foetal abnormality (333). Study also indicates that the rate of unwanted pregnancy among women in the mountainous northern areas and the Red River Delta was six times higher than that in other areas, such as the Mekong River Delta (332). The current number of living children also related to unwanted pregnancy. The rate of women with a son who then had an unwanted pregnancy was five times higher than that of women with a daughter (332). Other factors that had an impact on unwanted pregnancy were age, marriage age, marital status, ethnicity, income and education level (332).

5.7.6. Complications of abortion

It is estimated that about 5 per cent of maternal deaths related to abortion. Abortion complications were mainly incomplete abortion and infection (334). The main causes were bleeding and infection. Most deaths occurred in centres that had poor equipment or unskilled staff. Many common long-term complications were chronic pelvic inflammatory disease and infertility (115, 316, 331).

The rate of complications among married women aged 15-49 who had an abortion was quite high (8.4 per cent). This rate was especially high among rural women compared to urban women (9.6 per cent vs. 5.7 per cent). However, the complication rate fell by 0.9 per cent between 2001 and 2006, in which urban areas had sharper fall than that in rural areas (1 per cent vs. 0.7 per cent) (121). Other research suggested a higher complication rate as one third of women said they had abnormal symptoms after their abortion, but only 11 per cent sought health care (335, 336).

The more abortions a woman had, the more likely she was to experience complications ($p < 0.05$) (334). The complication rate increased with the number of abortions performed

by a health provider in any given day. In particular, for health providers performing more than ten abortions per day, the abortion complication rate was seven times higher. This rose to 13 times higher where health providers had more than 20 cases per day.

5.7.7. Access to abortion services

5.7.7.1. Abortion service fees

Abortion fees varied depending on the uterine evacuation method, gestational age and pain control method, and 90 per cent of respondents thought the fees were “affordable”. The median fee for an abortion ranged from VND 60,000 to VND 250,000. The greatest cost differences were between surgical and medical abortion. The cost of medical abortion was higher because of the required drug regime, as well as the more frequent use of imaging diagnostics (ultrasound). The cost of medical abortion ranges from VND 34,000 per woman at provincial hospitals to nearly VND 150,000 at reproductive health care centres (316, 337).

5.7.7.2. Abortion service quality

Some studies showed that the waiting time for abortion services was short, with a median wait of 30 minutes from arrival at the facility to registration, and a median wait of 60 minutes from registration until initiation of the abortion procedure (316).

Almost all women (98 per cent) said they had received some medicines (such as painkillers) to make the abortion procedure less painful. In addition, a positive finding was that 83 per cent of women stated that the provider had talked to them during the procedure in an apparent attempt to decrease their anxiety, discomfort or pain (316). For women who had a late abortion using the D&C method, ultrasound and pain control drugs were provided to them. Post-operation, 85.2 per cent received oxytocin and 2.7 per cent received ergotamine. Most had fewer than 100 ml of blood loss. The complication rate was low, at 0.7 per cent (338). Data demonstrate that buccal misoprostol followed by MVA and forceps can be used in Viet Nam to perform D&E up to 18 weeks of pregnancy. Implementation of this technology by trained providers has the potential to fill the gap in accessibility to late abortion services in Viet Nam (338).

Post-abortion, 80 per cent of women were offered a contraceptive method and 60 per cent received one, of which 70 per cent chose the method themselves. Among those receiving contraception, the most common choice was the male condom (47 per cent), followed by the IUD (27 per cent), oral contraception (18 per cent), injectable contraception (3 per cent), and the female condom (3 per cent). Almost all women reported receiving at least one form of educational material on both abortion and contraception (338, 339). However, the content of post-abortion counselling was not thorough. Only one half to three quarters of respondents said their provider had discussed with them their different pregnancy options, post-abortion follow-up care, and specific signs of possible complications (316).

5.7.7.3. *Barriers to accessing abortion services*

Adolescents had the most difficulty in accessing abortion services, health information and health care services (340). Within families, little time or attention was given to discussing reproductive health issues with adolescents (324, 340, 341), and there was prejudice around the issue of abortion, especially among adolescents (340). Schools did not give reproductive health education the attention required (340). Moreover, women experienced many barriers to accessing health services, including crowded clinics, unfriendly attitudes of providers, and incomplete provision of health information (340).

5.8. Domestic Violence

5.8.1. *Domestic violence*

Three forms of domestic violence (DV) emerged in most of studies on the subject: physical abuse, sexual abuse and emotional abuse.

In Viet Nam, studies presented physical violence as the most frequently reported type of gender-based violence (GBV), with 16-37 per cent of women reporting that they had experienced physical abuse. Five per cent said they had suffered physical abuse during pregnancy, while 6 per cent had experienced physical violence in the past 12 months. There was a close correlation with region and educational level. Women with less education were more likely to report physical violence compared to more educated women (342). The physical abuse included something being thrown at the woman (80 per cent), pushing or shoving by a partner (78 per cent), beating (66 per cent), twisting the woman's arm or hair (60 per cent), slapping (58 per cent), kicking (38 per cent) and slamming the woman against a wall (16 per cent) (343)

Physical abuse had the highest rate of reporting for all forms of domestic violence, although it is an under-reported event. Women often suffered many types of violence at the same time. Combining the three main types of partner violence resulted in the finding that 20-58 per cent of women reported having experienced violence, with 27 per cent having experienced it within the past 12 months (342).

A national GSO survey revealed a rate of 10 per cent of married women reporting in interviews that they had experienced sexual violence in their lifetime, and 4 per cent had done so in the past 12 months. What was striking is that current sexual violence does not vary much among age groups (up to 50 years old), or the educational level of women (342) that is much lower than data from other reports (344). On one hand, people generally perceived that a man should not coerce his wife to have sex, while on the other they believe that a wife should "please her husband's sexual demands".

Studies indicated that about 2 per cent of all women reported that they experienced sexual violence ever since they were 15 years old. Most women reported that the perpetrators were

strangers and boyfriends, and only rarely were family members (342, 345). In women aged <15 years, this rate was 3 per cent (342). But the fear of being criticized and judged, and the shame of being harassed, prevented most people from speaking out.

Studies showed the prevalence of emotional violence ranging between 19-55 per cent, of which 25 per cent was currently being perpetrated (342). This abuse included 20 per cent of women being insulted or made to feel bad about themselves, 11 per cent belittled or humiliated, 50 per cent intimidated or deliberately frightened, and 13 per cent threatened and told that they (or someone they cared about) would be hurt. Emotional abuse was difficult to identify because there were no outward signs of the harm. In addition, husbands felt it was acceptable and understandable to swear or shout at their wives. Women had to suffer from emotional abuse by in-laws, including parents-in-law, sisters-in-law and brothers-in-law (342, 344)

Studies showed that 9-11 per cent of women had suffered economic violence, which includes, for example, husbands not contributing to caring for the family, prohibiting their wives from participating in discussion and decision-making about financial expenses, or demanding that their wives ask for permission to spend money (342, 344).

5.8.2. Consequences of domestic violence

Some studies revealed the consequences of domestic violence for the health of women and children in the family. Twenty-six per cent of women who had been physically or sexually abused by husbands reported having been injured as a direct result of the violent act. Of these, 60 per cent reported that they had been injured more than once, and 17 per cent had been injured many times (342). Women who had experienced sexual violence were consistently more likely to report “poor” or “very poor” health. They also were more likely to have recent problems with walking and carrying out daily activities, pain, memory loss, emotional distress and suicidal thoughts (342).

Women who had children aged 6-11 years and who had experienced partner violence were consistently more likely to report that these children had behavioural problems (such as nightmares, bedwetting, aggressive behaviours and low performance at school) (342). Up to one in four women with children under 15 years reported that these children had been abused physically by their husbands. This was usually in the form of slapping. The survey showed that violence against children had a strong association with violence against women by the same perpetrator. Women who had a violent husband were twice as likely to report that their children were beaten. The children who experienced violence or were otherwise abused were more likely to be abused or to abuse others in the future (342).

Half of all women who had ever been physically or sexually abused by their husbands had not spoken to anyone about the violence before the interview. Besides the stigma and shame that cause women to remain silent, many women think that violence in relationships is “normal” and that women should tolerate and endure what is happening to them for the sake of family harmony. It was very difficult to seek support from a neighbour, or from local leaders. About one fifth of the abused women left home for at least one night but they had no real alternative option, meaning they usually returned home for the sake of the family.

About 60 per cent of abused women had heard about the law on domestic violence but they did not know the detail (342). Schools did not apply policies, regulations and practice related to gender discrimination, and played only a small role in promoting gender equality. In future we need more relevant interventions in schools (346).

5.8.3. Interventions on domestic violence

A few small programmes for victims of domestic violence were developed and integrated into regular health examinations. The family planning room of Tu Du General Hospital integrated gender-based violence screening into its abortion services, while Duc Giang hospital in Gia Lam district, Ha Noi improved its health care response to gender-based violence by providing GBV screening to all patients. These two projects provide a good example of the strengths and challenges in addressing GBV in the health sector. Within the health sector there is a lack of protocols for screening, treatment and referral. There is no systematic data collection or data management system. Though providers routinely encounter victims of violence, many do not know how to work with them in a sensitive manner, and do not know where to refer them.

There are a few interventions on GBV prevention which mainly focus on raising awareness in the community, gaining support of local leaders, and creating multi-sectoral boards or committees to address GBV. Key components for GBV prevention include behaviour change communications to improve awareness, knowledge and prevention of domestic violence (347).

5.9. Infertility

5.9.1. Infertility rate

Data showed an alarming infertility situation in Viet Nam. The rate of infertility in studies ranged from 7-8 per cent, of which primary infertility was 3.5-3.9 per cent and secondary infertility was 3.5-3.8 per cent. The infertility rate differed between provinces, and was highest in Khanh Hoa (13.9 per cent) (348-350), Hai Phong (8.5 per cent), and lowest in Quang Ninh (5.7 per cent) (349). The proportion of primary infertility was 33.6 per cent and secondary infertility was 66.4 per cent (350).

5.9.2. Cause of infertility

A survey in Thanh Hoa hospital showed that 23 per cent of infertility related to the husband, 39 per cent related to the wife, 24 per cent involved both partners, while the remaining 15 per cent was unexplained. The causes of female infertility were fallopian tube damage/blockage (37-60 per cent) (350-353), followed by polycystic ovary syndrome (21 per cent), and combined causes (350). The causes of male infertility were abnormal sperm production or function (85 per cent), azoospermia (14 per cent) (350, 354), and epididymis obstruction (355).

5.9.3. Risk factors for infertility

The most significant risk factors relating to female infertility were abortion history and reproductive infection (350-352). Women who had reproductive infection were 24 times more likely to have fallopian tube damage than women who had not (CI = 10.42 – 57.43). The most common type of bacteria were Chlamydia (4.7 per cent), gonorrhoea (0.5 per cent), fungus (9.7 per cent) and bacterial vaginitis (49.3 per cent), of which Chlamydia and gonorrhoea were more likely to cause inflammation to the tube (352).

Moreover, the age of women (under 25 or over 34 years), rural women, smoking, alcohol consumption, history of varying length of menstrual cycle, history of miscarriage, history of ectopic pregnancy, history of postpartum complication (348, 349) and history of IUD use were factors related to a higher risk of infertility (352).

For men, those with a history of mumps, testicular damage, and with hereditary factors (for example, one family member being infertile) were more likely to be infertile than other male groups (348, 349).

5.9.4. Knowledge and practice on infertility

Knowledge of infertility among married couples was poor. About three quarters of couples sought diagnoses for infertility. About 70 per cent had infertility treatment, and nearly 30 per cent had no treatment (350). However, the success rate was low, with up to 54.1 per cent of infertility treatment cases failing (350).

Assisted reproduction technologies and in-vitro fertilization (by a donated sperm) still encountered resistance and hesitancy on the part of many couples, because it went against the traditional culture and couples' wish to have a child with blood ties to both parents (356).

5.9.5. Diagnosis and treatment for infertility

There were different methods for infertility diagnosis and treatment in Viet Nam. Research in Thanh Hoa showed that the most popular were intrauterine insemination (31 per cent), in-vitro fertilization (23 per cent), laparoscopy surgery (13 per cent), hysterosalpingogram (15 per cent), medical treatment by drugs (19 per cent), and other reproductive assisted techniques (1 per cent) (351, 357). Some studies rated highly the use of laparoscopy surgery in female infertility treatment (353). Other modern techniques such as percutaneous epididimal sperm aspiration (358), in-vitro maturation (IVM) (359), in-vitro fertilization (IVF) (360), ovulatory stimulation by Clomiphene citrate and intrauterine insemination for adenomyosis patients (355) were being applied in many hospitals in Viet Nam, with a high success rate (for example, in-vitro fertilization cycle of oocyte donation had a success rate of 32 per cent) (361). Many studies piloted new techniques to improve current ones, such as assisted hatching using laser and acid tyrode in in-vitro fertilization, which could increase the clinical pregnancy rate to 45 per cent (vs. 30 per cent for not assisted) (362).

The successful pregnancy rate of these techniques was relatively high: drug treatment was 12 per cent, hysterosalpingogram was 17 per cent, and laparoscopy surgery was 9 per cent. Other methods such as intrauterine insemination and in-vitro fertilization often had a success rate as high as for 1/3 of cases (358, 363).

However, there were many factors relating to the success rate of these assisted reproductive techniques, such as age (patients over 35 years were 60 per cent less likely to become pregnant through in-vitro fertilization), serum level of estradiol (pregnancy rate was 2.7 times higher in patients with peak serum estradiol ≥ 4300 pg/ml treated by in-vitro fertilization) (360), and type of infertility (treated by oocyte donation, women who had primary infertility were more likely to become pregnant than women who had secondary infertility (42 per cent vs. 23 per cent) (361).

6. Concluding Observations

6.1. Research methods

6.1.1. Topics

About 483 research reports were reviewed on different reproductive health topics – double the amount included in the review for the period 2000-2005. As before, the most common topic was safe motherhood. However, in order of frequency covered, the other topics addressed by research included in the review were as follows: reproductive tract infection/STI, adolescent reproductive health, reproductive cancer, abortion, sexual health and gender equity, infertility, elderly (menopause), infertility and family planning.

The proportion of research on family planning decreased greatly, while rates of research on RTI, ARH and reproductive cancer increased significantly. Some topics had few studies, such as menopause, infertility and gender equality. We recommend an increase in studies on the (general and reproductive) health care of elderly people, as an increasing proportion of Viet Nam's population is ageing.

6.1.2. Subjects of studies

Most research included men and women. However, men tended to have very little focus (2 per cent vs. 45 per cent). Although research covered a wide range of participants, from adolescents to elderly, the main target groups were those of reproductive age, followed by adolescents and menopausal women/elderly people.

6.1.3. Design

Study designs differed according to reproductive health topics. Although study designs with strong evidence strength such as controlled trials, intervention, cohort or longitudinal studies increased compared to the last review (about one fifth of all reviewed studies), the cross-sectional design was most commonly used, accounting for nearly 79.8 per cent.

Most of the studies focused on factors associated with dependent variables. Fewer mentioned the prevalence/incidence of the health issues. As in the last review, few studies focused on mortality and morbidity.

6.1.4. Settings

The settings for the 483 reproductive health studies in the review included rural and urban areas. The research in rural areas accounted for about one third, reflecting a change in priority by researchers to favour rural areas.

6.2. Findings

6.2.1. Safe motherhood

The maternal mortality rate (MMR) fell significantly from 165/100,000 live births to 69/100,000 live births during the period 2002-2009. However, the MMR stayed high in mountainous and remote areas.

The main causes of maternal death were identified as haemorrhage, pre-eclampsia, and infection. Related factors were ethnicity, poor education, number of pregnancies, delay in reaching health facilities due to lack of appropriate transportation and difficult road conditions, delay in receiving services because of lack of professional skills, unpreparedness in health care facilities and poor quality health care services.

The knowledge and practice of pregnant women in relation to antenatal care visits, tetanus vaccinations and iron tablet supplements were relatively good. Many factors affected this knowledge, such as education level, number of living children, access to media, health insurance, and awareness about health care quality (professional skills, attitudes of health providers, and facilities).

Knowledge of the danger signs for pregnant women was limited in both men and women, and lack of knowledge correlated with education and occupation. Ultrasound for pregnant women was used widely. Most women understood the importance of diet and work practices during pregnancy.

Knowledge of the danger signs during labour and the postnatal period was very poor. The institutional delivery rate was high, at 80-90 per cent, while the home delivery rate ranged from 8-10 per cent –mostly among ethnic people in northern, mountainous areas. The Caesarean rate seemed to rise, depending on the region and personal choice. Knowledge of the danger signs for neonates and postpartum women remained poor.

Postnatal care for women and babies was limited, depending on a woman's education level, occupation, region, and local and family customs and norms.

Safe motherhood services were provided by public service delivery points from commune to national level according to approved functions and responsibilities of the Ministry

of Health. The percentage of district hospitals providing a Caesarean service was 87 per cent, and the percentage supplying blood transfusions was 43 per cent. Whether a service was chosen depended on the perception of quality of care, the availability of the service, distance to the health centre, ethnicity, and information source. Facilities were inadequate, especially at district and commune level. The safe motherhood skills of health providers were limited, especially in rural areas. Re-training and knowledge promotion for health providers was rare – to date there is no policy to attract and maintain skilled workforces in remote and poorly served areas.

6.2.2. Family planning

Family planning contributes to maternal and child survival and promotes life for all. The TFR in Viet Nam reached the replacement level in 2005. However, TFR in some provinces in Northern Highland, North Central Coast and Central Coastal regions remained high.

The contraceptive prevalence rate (CPR) increased from 73.9 per cent in 2001 to 78 per cent by 2010, of which modern CPR went up from 61.1 per cent to 67.5 per cent for the same period. However, the general CPR and modern CPR seemed to fall in the three years from 2008-2010.

Local people's knowledge of contraceptive methods was quite good. IUDs were the most popular method, followed by the condom and oral pill.

6.2.3. RTI, STI and HIV/AIDS

According to some clinic-based small studies, the prevalence of RTI among Vietnamese women stayed high, ranging from 40-80 per cent. Internal organisms caused the highest proportion of RTIs. STI prevalence varied greatly among provinces, of which Chlamydia and gonorrhoea formed the highest proportion. The rate in high-risk groups such as FSWs, IDUs and MSM was high. The rate of HPV in the community was as high as 5-11 per cent, with the most prevalent sub-types being 16 and 18. HIV prevalence seemed to be higher in young, male and high-risk groups.

Knowledge of STI (symptoms, causes, treatment and prevention) especially in young and unmarried women, and women in mountainous areas, was poor. The knowledge of men was also low. Diagnosis and treatment from the private sector was the most commonly sought solution, followed by self-treatment, and then advice from a private pharmacy.

6.2.4. Adolescent reproductive health

Adolescents' knowledge of the signs of puberty was quite good compared to the last review. Knowledge on reproductive health varied greatly according to grade, sex and family situation.

The rate of premarital sex increased in the last five years (5-6 per cent) and was much higher among males. The age for first sex was lower. The factors associated with premarital sex were sexual abuse, a distant relationship with parents and behaviour of friends.

Contraceptive methods known most among adolescents and youth were condoms, the oral pill and IUDs. The contraceptive prevalence rate ranged from 25-40 per cent, and men had a higher CPR than women.

Knowledge among adolescents about abortion was poor, and the abortion rate of unmarried adolescents rose, although there was no data from the private sector on this.

The implementation of adolescent reproductive health policies had a good effect on promoting ARH service provision in many areas. However, there was no mobilization mechanism for similar initiatives in the private sector. There were also many difficulties in creating a supportive environment for ARH health care, and expanding it to difficult areas.

6.2.5. Reproductive cancer

The breast cancer prevalence rate was 17.4 per cent, while the rate for cervical cancer was 16 per cent. These are the two most common types of cancer among women in Viet Nam. HPV infection was considered to be the main cause of cervical cancer in Viet Nam. Hereditary factors were seen as the greatest risk for breast cancer, and for cervical cancer the risks were identified as the age of first having sex, number of sex partners and duration of contraceptive method use. Knowledge of women about cervical cancer was low, depending on their education level and region. Knowledge about preventing cervical cancer was also limited – only 30 per cent of women had heard about vaccination for HPV prevention.

6.2.6. Abortion

The abortion rate tended to fall, but stayed high – it is notable that there is no data on this from the private sector. The risk factors for abortion were marital status, contraceptive use, age of women, region, number of previous abortions for a woman, and gestation (i.e., the week when the abortion was performed). Medical abortion (for instance using misoprostol) started to be used in hospitals and studies show high acceptance level of clients to this method. Quality of abortion services improved in many health centres, but there were some difficulties in providing services because of low levels of professional skill, shortage of money, or no (or too little) time for counselling.

6.2.7. Domestic violence

People's awareness of gender equity was poor. The rate of domestic violence was identified as 16-37 per cent, of which physical violence was the most common, followed by emotional, sexual and economic violence. Economic violence accounted for 9-11 per cent, but measurement tools were not uniform. Many women were abused, but never talked to anyone about it.

6.2.8. Infertility

The incidence of infertility was not uniform among studies, ranging from 7-8 per cent according to the setting. Primary infertility accounted for 3.5-3.9 per cent and secondary infertility accounted for 3.5-3.8 per cent.

Causes relating to husbands accounted for 23 per cent, and those relating to the wife accounted for 39 per cent; 15 per cent were not known. The risk factor for infertility was a history of abortion and infection. Risk factors for men were hereditary, or related to mumps or testicle injury.

6.3. Limitation of the review

Although the review adopted the systematic review protocol, several limitations should be noted. First, the review was carried out over a short period (two months). This did not allow reviewers to search for information in all provinces of the country, especially in Central Region. Second, because of a 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 reproductive health in Viet Nam. Thirdly, because of limitations in some reports, some information could not be accurately classified and was put under the heading “unknown” (design, setting, participants or sampling). Finally, the review did not report sample size of the studies, which could affect interpretation of data.

6.4 Direction for future studies

For future research in reproductive health, following research topics and methodological issues should be addressed:

Research topics

Maternal and new born health

- Investigate neonatal and maternal mortalities and related causes by geographical areas and ethnic groups.
- Conduct cost-effectiveness evaluation of interventions that can reduce maternal mortality and strengthen newborn care (based on the continuum care model). The studies should pay special attention to unique characteristics of the mountainous and difficult-to-reach areas to ensure the intervention responding to the local needs.
- Pilot community interventions aiming at reduction of stress and trauma among pregnant and post-natal women.

RTIs/STIs/HIV/AIDS

- Investigate prevalence and incidence of RTIs and STIs, community’s knowledge, attitude and behaviour on RTIs and STIs, and assess capacity of health care network in responding to the country’s needs on RTIs and STIs prevention and treatment.
- Evaluate effectiveness of communication models that enhance community awareness on RTIs/STIs in meeting local features (language, culture and customs).
- Evaluate cost effectiveness of PMTCT interventions

Adolescents and Youth

- Evaluate effectiveness of interventions providing adolescent sexual and reproductive health services.

Elderly people

- Explore disease patterns, and assess the current status of health service delivery at all levels
- Conduct situation analysis of reproductive cancer and capacity of health care network in responding to the country's needs on reproductive cancer.

Infertility

- Investigate infertility prevalence, causes as well as capacity of health care network on the provision of infertility services.

Gender based violence

- Evaluate the implementation of policies related to gender based violence.

Design

The number of studies with high-strength evidence designs, such as RCT and quasi-experimental/intervention or cohort studies, was limited; therefore more of this type of research carried out.

Study subjects

More attention needs to be given to men. Interventions should focus on mobilizing male involvement, or else they will not be sustainable. In addition, vulnerable groups such as ethnic minorities, migrants, those from poor economic situations and low education backgrounds etc. should be covered more in studies.

Study settings

As reproductive health was poor in rural and remote areas, studies should continue to focus on these areas, especially intervention research.

Quality of reports

Studies should continue to enhance the quality of their report writing. Reports should clearly present the definition of a studied topic, measurement (how extensive the problem), and the data collection time.

Rights, confidentiality and privacy of respondents should be assured by following research standards, especially with sensitive issues such as sexuality. Therefore, we highly recommend that ethical approval must be given before implementing research, and this should be assured in the report.

The sampling method should be calculated to ensure the best representativeness. Data analysis needs to be improved, including multivariate analysis. The explanation and discussion of research results should be done with care, especially in cases of small-sample research with low representativeness.

Communicating research findings to policy makers

Policy makers often lack information and do not necessarily take decisions based on evidence. This is partly because of the weak relationship between policy researchers and policy makers. Developing relevant communication skills for researchers could close this gap. A strategy to communicate research findings to policy makers could help them to use results, and adjust policy/guidelines to be more appropriate.

The assessment of how research findings are shared and used is essential. It helps researchers understand how reproductive health reports contribute to policy making in Viet Nam, and helps them establish the best communication strategy.

7. Annexes

7.1. Annex 1: Screening form

1. Study in reproductive health topics with following key words in title: Yes/No
 - Reproductive health: IEC, organizational, human resource for health, service delivery, research, training
 - Safe motherhood: antenatal and postnatal care/safe delivery/maternal mortality/pregnancy/skilled birth attendant
 - Family planning: contraceptives/condoms/IUDs/oral pills
 - Abortion
 - RTIs/STIs/HIV/AIDS (in which HIV and AIDS has a minor focus)
 - Infertility/reproductive cancers/menopause/elderly reproductive health
 - Adolescent: adolescent reproductive health
 - Sexuality: sex education/gender equity/gender-based violence
2. Study with full text available: Yes/No
3. Study will be available in English or Vietnamese: Yes/No
4. Study with data collection time reported between 2006-2010: Yes/No
5. Study reported the data: Yes/No

7.2. Annex 2: Recording/extraction form

1. Topic
 - a. RH General: IEC/organizational/human resource/service delivery/private sector/mixed (specify)
 - b. SM/FP/Abortion/RTI/Infertility/RH Cancer/Elderly/ARH/Sexuality
2. Design
 - a. Level I: RCT/Not RCT
 - b. Level II: Cohort/Longitudinal/Case-Control
 - c. Level III: Repeated/Cross-over/Migrant/Twin
3. Level IV: Case Series/Cross-sectional/Hybrid/Incomplete/Secondary data analysis/Qualitative/rapid assessment/End-line survey/Types of participants
 - a. Sex: Men/Women/MSM/Lesbian/Mixed (specify)/Unknown

- b. Age: Children (0-10 years old)/Adolescent and Youth (10-24)/Reproductive Age (15-49)/Elderly (>50)/Mixed (specify)/Other (specify)/Unknown
 - c. Occupation: Farmer/Government officer/Housewife/Teacher/Pharmacist/Health provider/Unemployed/Mixed (specify)/Other (specify)/Unknown
 - d. Setting: Urban/Rural/Mixed (specify)/Unknown
 - e. Characteristics of setting: National/Provincial-city/District/Commune/Mixed
 - f. Other settings: Health care unit/Hospital/Pharmacy/Commune health station/Schools/Commune/Other (specify)/mixed/unknown
4. Types of outcome
- a. Prevalence/incidence of reproductive health ill health (specific)
 - b. Mortality/Morbidity (ill health specific)
 - c. KAP
 - d. Factors identified other than above mentioned (specific)
5. Quality assessment of report
- a. Definition of ill health topic: Yes/No
 - b. Sampling method: random sampling, convenient sampling and other (specify)
 - c. Sample size: A (187) [100-200]; B (350) [200-500]; C (5000) [>500]
 - d. Data collection time: Yes (specific), Not reported
 - e. Data analysis: frequency, bivariate and multivariate analysis
 - f. Ethics: Yes/No
 - g. Reported sources of data: Yes/No
 - h. State of completion of follow up records: Yes/No
 - i. Reported definitions or/and diagnostic procedures regarding outcome measures: yes/No/No Relevance
 - j. Reliability and accuracy of data: Yes/No/No Relevance
 - k. Generalization of results according to the types of participants: Yes/No/No Relevance
 - l. Control for loss to follow up: Yes/No/No Relevance
 - m. Non-responders in the data analysis: Yes/No/No Relevance

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