# American University of Armenia Department of Public Health

# Exploratory Study on Condom Use among Sex Workers and their Clients in Yerevan

**Professional Publication** 

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### **Abstract**

**Introduction**: During the last decade the spread of sexually transmitted diseases (STDs) and the introduction of a new epidemic of Human Immune Deficiency Virus/ Acquired Immune Deficiency Syndrome (HIV/AIDS) has become a threat for the health of thousands of people in Armenia. The situation is complicated by increasing prostitution, lack of awareness on STDs among the population and the non-healthy behavior of sex workers (SWs) and their male clients. The research conducted here is intended to explore the influences on condom use among SWs and their clients in Yerevan.

**Methods**: Different qualitative research methods were applied in the study. Four focus group interviews were conducted with the general male population in 18-45 age groups, four indepth interviews with SWs and five key-informant interviews with experts in the Republican Medical-Scientific Center of Dermatology and STI during August-September 2001.

**Results**: The obtained data suggests that SWs are more prone to use condoms than their male clients. The awareness of general male population on STDs isn't very high, and they do not fully understand the risk of unsafe sex practices. There is a trend that older and/or married and/or men once infected with STD are more cautious compared to the younger ones. And there is another trend that older SWs and/or higher class and/or SW once infected with STD are more inclined to use condoms than just out SWs. The main reason that SWs aren't using condoms is client resistance. The reasons why males do not use condoms are reduction of pleasure, fear of suggesting condom-use, difficulty to climax, and alcohol abuse.

**Recommendations**: The study could be expanded to the marzes of Armenia. It is suggested to conduct a survey among general male population on their knowledge, attitude and practices on condom use on the basis of these qualitative research findings. School sex education is suggested to develop the proper understanding and sound thinking with regards to safe sex practices and STDs from early ages. The findings of this study should be presented to interested donor organizations to encourage implementation of appropriate educational campaign in the schools. Legalization of prostitution was not found to be acceptable at this time in Armenia.

# 1.1. Background

1. Introduction

An estimated 333 million episodes of curable STDs (e.g., syphilis, gonorrhea, chlamydial infections and trichomoniasis) appear annually throughout the world. They are significant causes of infertility, illness and death (1).

Infection with HIV is present in practically all countries of the world and epidemic in many of them. It is estimated that 13 million AIDS cases have occurred since the beginning of the epidemic and that 30 million men, women and children are currently infected with HIV (40% of these infections being in females)(1).

The rates of STDs have increased during the last decade in Armenia although the rates in the last few years are not as dramatic (see Appendix 1, table 1). The problem is these data are not reliable because of the decrease in the number of people seeking health care, the under-reporting of STDs, and the inaccurate population statistics. Currently, the true population of the country is not known because of a tremendous amount of migration from the country. Not knowing the base population, results in spurious data regarding disease prevalences (2).

Yet, there is indication that the true rate of STD infections is alarmingly high especially among risk and target groups (see Appendix 1, table 2). The analysis of clinical data shows that the course of syphilis has been changed during the last five years. The proportion of active and latent forms of syphilis was 2:1 in 1995, while in 1999 it was just the opposite1:2. This trend is an indicator of self-treatment, uncontrolled antibiotic use, treatment by non-specialists, and diagnostic mistakes(2).

The Armenian National Aids Prevention Center notes that an epidemic has been recognized in the country since 1999. The first case of an HIV-positive person was registered in 1988 in Armenia. According to the official data, from 1988 to October 1, 2001, 161 HIV carriers have been registered, the majority of which belong to the age groups of 20-39 years. The transmission through heterosexual contacts prevails over the other modes of transmission, which could mean that commercial sex may pose a higher risk of spreading HIV/AIDS into the general population. However, it's evident that these figures are a serious underestimate of the real prevalence of the HIV-infection (3).

The scientific evidence suggests that the best way to prevent the sexual transmission of HIV and other STDs is to abstain from sexual intercourse or have sex with a mutually monogamous uninfected partner. The second and more realistic recommendation is for the consistent and correct use of male latex condoms (4).

# **1.2.** Literature review

Generally, prostitutes are assumed to be at greater risk of contracting HIV and other STDs because of their multiple sexual partners (5,12). A number of researchers in the field, including Robertson (1987), refer to prostitutes as constituting a "reservoir" of infection (7). The epidemiologist, George Levon Melikian, found that SWs in Yerevan, Armenia are much more likely to be infected with HIV than their counterparts in other locations such as Taipei, Mexico City, London, Sydney, and Atlanta (5). The study results revealed that the majority of SWs in his sample of 200 SWs were engaged in unprotected sexual intercourse with their clients. Only ten percent of these women were consistently using condoms. Moreover, it was striking that only 5.5 percent of respondents reported frequent condom provision on the part of clients. Besides, the study showed that more than half the women interviewed did not perceive themselves to be at

particular risk for HIV transmission (5). Screening done among sex workers revealed the prevalence of HIV 7.5 percent (15 of 200). Besides, the 24.5 percent (49 of 200) of these women had a previous history of STD according to their own reports (6).

Placing the major burden for behavior change on prostitutes themselves may have only a limited effect unless their partners are also actively targeted in the development and implementation of STD/HIV prevention programs (7,12). Therefore, investigation of the healthrelated, socio-economic and legal aspects of commercial sex needs to recognize the other parties also involved in commercial sex: for example, the clients of prostitutes. There is evidence that suggests clients may outnumber prostitutes by at least 50 to 1. Prevention programs generally have placed less emphasis on increasing STD/HIV awareness among this potential target group and more on empowering prostitutes to control the sexual transaction with clients (7). However, women have traditionally lacked power over sexual decision-making (including whether a condom is used) as a result of perceived threats to physical, social, and/or economic survival (7,18). Different studies reported that client resistance was the major obstacle for SWs in maintaining safe sex practices (8,12,17). Thus, many intervention and research programs may have been flawed because of the focus on prostitutes in isolation and on the specifics of their risk-related behavior (7,12). Of course, the available scientific literature do not deny the association of prostitution and sexually transmitted diseases (STDs), or the view of female prostitutes as responsible for spread of infection (7). Therefore, the present study targets both groups: SWs and their clients.

According to the literature condoms were used by clients because of the fear of diseases, particularly HIV/AIDS or because the sex-worker insisted on their use (13). The majority of clients in United Kingdom had regular sexual partners with whom they did not use condom (13).

A significant minority of men reported other sexual partners with whom condom use was not very common (13). There were continuing reports of clients requesting sex without a condom, offering more money for this service, and even on occasions attempting to burst or remove condoms (12). The reasons for not using condom among clients were the "reduction of the pleasure or sensation of sexual intercourse, difficulty to climax, fear of negative consequences, being a regular client, different perceptions of risk from different SWs depending on the sexual establishment, and their appearance" (7, 11).

Different studies in several European countries have shown that prostitute women (except Injection Drug Users [IDUs]) do not have a high prevalence of HIV because the majority reports high levels of condom use with their clients (7). However, it would appear that condoms are used rarely with private, non-commercial partners. This is regrettable because the majority of prostitute women were in sexual relationships with IDUs (12). Different factors are mentioned by international sources as having an impact on sex practices like "demand by clients for unprotected sex, 'knowing' or perceiving as 'different' regular clients, romantic leap, urgent need for money, alcohol or drug abuse, homelessness, ignorance, lack of resources, and younger age" (10).

Prostitution in a particular country strongly depends on the laws on prostitution and their enforcement (9). Some laws on prostitution can become a barrier to the practice of safer sex. The Criminal Code of the Republic of Armenia doesn't identify a liability for prostitution (3). However, there is a criminal liability for pimping (3). Legalization of prostitution, brothels, and "pimping" could reduce some of the dangers to which women were exposed and increase women's capacity to insist on safe sex practices. It is also important that male clients accept responsibility for condom use when seeking the services of sex workers (8). Thus, in order to

increase the effectiveness of intervention programs in this area, barriers to health care and health promotion for prostitutes and other sex partners should be minimized (4).

Few studies have been conducted in Armenia on condom use among SWs and their clients.

Even less has been done on the investigation of factors that have influence on condom use or non-use among these populations. The present research will try to identify which reasons play crucial roles in determining the behavior of Armenian prostitutes and their clients.

# 1.3. Objectives

The research objective is to explore the influences on condom use among SWs and their male clients in Yerevan. The research question is to investigate why condoms are used or not used by SWs and their clients.

# 2. Methods

# 2.1. Sampling and recruitment procedures

Qualitative research methods were selected for an in-depth investigation of the main influences on the behavioral patterns of condom use among SWs and their clients. Only a few studies were located that focused on this topic. It is known that qualitative research allows a more in-depth understanding of phenomena and could serve as a tool to gather information about an unfamiliar topic where little research has been conducted (14,16). Moreover, FSW and their clients are very difficult to locate, which is another one of the reasons for selecting qualitative research as a research design.

According to the Department of Control and Illegal Trade in Drugs and Commercial Sex in the Ministry of International Affairs, the number of SWs is 900 in Yerevan. However, according to some studies this number is nearly 5 times larger or approximately 4,500 women (15). The target population is hidden and difficult to approach; therefore, representative sampling could not

be achieved (13). That's why the SWs were recruited through convenience sampling. All sex workers were contacted at one location: Republican Medical-Scientific Center of Dermatology and STI. Data from this sample of prostitutes can not be generalized to all population of SWs because generally self-employed street walking prostitutes (the bottom layer of SWs) are arrested and brought to the Center (15). However, these women are considered to be at a particularly high risk for HIV/STDs (6). The eligibility criteria for SWs were the following: referred to the Republican Medical-Scientific Center of Dermatology and STI for diagnostics and treatment, and willing to participate in the study.

Initially, it was determined that about 15-20 interviews will be conducted with SWs. However, due to the changes in the policy of the Ministry of Internal Affairs, the number of women brought into the clinic sharply decreased because of a large national Christian celebration. Therefore, only 4 interviews with FSWs were conducted during August-September.

The general male population of Yerevan was recruited through purposive sampling. Because male clients of prostitutes are difficult to access for the purposes of research and education, it was decided that their behavior would be indirectly reported by the general male population (12,13). They would describe the behavior of themselves, their relatives, friends and acquaintances. It was decided to conduct focus group-interviews because this method is efficient for providing multiple perspectives and can stimulate much broader and richer exploration of the topic than one to one interaction between the researcher and participant (14). The eligibility criteria for males were the following: 18-45 year old men, residency in Yerevan, and willingness to participate in the study. The focus group participants were contacted through multiple chains of friends, acquaintances, and referrals. The focus groups were conducted with men of different

age groups (18-30 and 30-45 years) and educational status (with school education and university education).

A decision was made to conduct key-informant interviews because large groups of SWs couldn't be located and the four interviewees didn't provide sufficient information. Besides, the information provided by SWs was contradicting and responses of some SWs proved to be biased and insincere. The key-informant interviews have several advantages in this case: they could report both the behavior of SWs and their clients. It is well known that key-informants have a greater knowledge on a topic than the average person, because of their position or experience (14). Besides, they could also facilitate entering in to the setting and introduce the researcher to the participants thus "legitimizing" the research (14). The experts that have more contact with STD patients and particularly with SWs were contacted at the Republican Medical-Scientific Center of Dermatology and STI. The eligibility criteria for experts were the following: dermatovenerologist or nurse with more than 10-year work experience and willingness to participate in the study.

# 2.2. Ethical issues

The study was granted approval by the departmental Institutional Review Board (IRB) committee within the College of Health Sciences. Oral informed consent was obtained from all interviewees and participants of focus groups prior to the interviews/focus groups (see Appendix 2, 3). Participants were informed about the purpose of the research project and procedures.

Anonymous and voluntary character of participation was guaranteed to all participants.

Unique identification numbers were assigned to each interviewee. No personal data were collected during interviews to assure the anonymity of participants.

# 2.3. Data collection instrument and procedures

Three semi-structured interview field guides were developed for interviews with SWs, experts and focus groups. The interview guides included the following domains: warm-up questions to develop rapport with participants, practice questions regarding condom use, attitudes toward decision making and condom, awareness about STDs and safe sex practices, barriers to condom use, appliance to venerologists, and attitudes toward legalization of prostitution (see Appendix 4, 5, 6).

The interview guides were pre-tested during pilot interviews. After the pretest several changes were made in the interview guides: the wording was changed to more understandable and simple language particularly for the SWs and the focus groups, sequencing of key questions, and changing some of the probe questions.

The interviews and focus groups were conducted in Armenian. The one-to-one interviews with SWs were conducted in a separate room in the clinic. The interviewer was a female physician and a graduate student of AUA. On average the interviews lasted 40 minutes. The focus groups were conducted by a male moderator (a sociologist later replaced by a trained facilitator) in the presence of a male moderator assistant, who took notes. The duration of focus groups was from 60 to 90 minutes. Incentives were provided to both SWs and male participants of the focus groups. Field notes were taken during the interviews with SWs, and focus groups. One of the key-informant interviews was audio taped. Field notes were expanded during the same day the interviews took place.

# 2.4. Data analysis

On the basis of expanded field notes the summary of each focus group, and the keyinformant interviews was prepared. Then the composite analysis report was prepared for all interviews and focus groups.

# 3. Results

The results are presented separately for the focus group sessions, key-informant interviews and interviews with SWs.

# 3.1. Focus group interviews

# **Awareness of STDs**

The participants generally agree that Armenian males are not very concerned about avoiding STDs. The younger groups brought up the reason that the general perception is that STDs are not widely spread in Armenia.

"Armenian males think that you should be careful when you move farther than Georgia (particularly Russia), but there is no problem at all in Armenia".

"Armenians are the most "clean" nation, aren't they"? 18-30 years old, school education

"The average Armenian male thinks that the chance that a stone will fall on your head and you

will die is higher than the chance of being infected". 30-45 years old, high education

The older participants mentioned that married people are much more concerned about avoiding STDs and they necessarily use condoms with SWs, while the youngsters are not very concerned, they don't realize what they do and easily get out of control. Besides, the participants

from the 30-45 years old focus group, with high education indicated that it would help to know

the prevalence of STDs in the population.

General practice regarding condom use with constant partner vs. prostitutes

During the focus group discussions, most of the participants agreed that condoms should be

used with strange (including sex workers) partners. Several participants noted that besides the

reason for avoiding unwanted pregnancies, males rarely use condoms with a constant partner or a

person whom they know, because using a condom is unpleasant, and it is not customary to use it.

"Condoms should be used with sex workers".

"The perception of society is that condoms are not used within the home".

18-30 years old, higher education

However, the perceptions of a "known" person were different for different participants. Some of them said that condoms are not necessary with people whom you are acquainted and whom you trust (younger focus groups), or with lover (30-45 years old, school education). Others think that there is no necessity to use condoms only with a constant partner.

The participants of the focus group (18-30 years old, school education) agreed that it is better to have sex with a constant partner rather than prostitutes who are dangerous because they have numerous contacts.

"You have to know who she is, where she is from. When you have a girl friend you can trust her".

18-30 years old, school education

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# Perceptions of condom use among SWs (male perception)

Several participants stated that SWs are more interested in using condoms than their clients. The reason for that "interest" was their fear of being infected, becoming pregnant, and as a consequence financial losses. Several men noted that generally prostitutes are insisting on condom use. One of the participants mentioned that in case of legalized prostitution the condom would be included with the service. All participants agreed that SWs keep condoms in their purses.

"They [SWs] are afraid of STDs that's why they are using condoms".

30-45 years old, school education

"They [SWs] have 3-4 contacts per day their chance to be infected [and even die] is very high".

30-45 years old, higher education

However, some participants agreed that infected SWs do not use condoms intentionally to infect their clients. Several participants noted that some infected people feel revengeful and want to infect as much people as possible, but it is not a behavior of normal person.

"If they [SWs] are infected, in 80-90% of cases they want to infect others".

30-45 years old, school education

# Attitudes toward decision making for safe sex practices

Almost all men in the groups agreed that SWs should suggest using condoms.

"They [SWs] are more interested in using condoms because if something happens it will affect both their health and finances".

18-30 years old, school education

"Women should suggest it because the consequences are worse for her (STD, pregnancy)".

18-30 years old, high education

Several men in different groups noted that when somebody gets into contact with SWs, she suspects the client and the client suspects her, which bring to mutual accusation and argument. It was mentioned by several participants that they feel uncomfortable suggesting to women [not necessarily SWs] the use of condoms, and they feel better when women themselves suggest using condoms.

"I gave my cousin a condom when he went to a resort. Afterwards I asked whether he used or not. He said that he felt ashamed to use it".

18-30 years old, high education

The idea frequently mentioned by participants was the following: when one of the partners suggests condom use that means that either he/she is infected or suspects that her/his counterpart is infected, which could also bring to argument.

"When women suggested using condoms you could think in two directions. Either she is ill or suspected that you are ill".

18-30 years old, high education

The higher age groups were more inclined to think that the decision is based on the agreement of both sides. The opinions were divided among the participants of focus group (30-45 years old, school education). Some of them think that the decision is based on the wish of both partners, the others thought that the decision-makers were men.

The participants of focus group (30-45 years old, high education) agreed that the decision should be done by negotiation of the two partners. However, condoms are necessary with SWs, and they were sure that SWs keep condoms.

# Barriers to condom use

The barrier mostly mentioned during focus-group discussions was that men do not get pleasure while using condoms. One of the participants mentioned that the greatest barrier to condom use was the Armenian mentality that sex practices are limited within the home (with wife) and are free outside (with SW).

"Me personally... I don't get pleasure using condoms. It's better not to have relationships or get infected than to use condoms. I am doing the things that are enjoyable and I am not doing the things that are unpleasant".

focus group (18-30 years old, school education)

"As I couldn't do everything with my wife, that's why I'll go to sex worker and do everything I want to do to enjoy the time entirely. If I want to get pleasure, condoms are irrelevant".

focus group (18-30 years old, high education)

The other barrier also mentioned by younger age groups was some discomfort in suggesting condom use. The reason for that discomfort was probably the fear of being suspected that they may have a disease.

# **Appliance to venerologists**

There was an argument about this question in the focus group (18-30 years old, school education). Some of the participants mentioned that men who frequently use SWs in case of becoming ill they even do not need physician help, because they are experienced and could treat

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themselves. One of the participants strongly disagreed and told that there are diseases that you never could treat yourselves.

"If he went several times [to SWs] and got life experience, he will not refer to a doctor".

"If he become infected and visited a doctor [venerologist] once, he would see what is the process, what is being done [and will know what is necessary to treat illnesses]. I know a number of people that are treating themselves now".

focus group (18-30 years old, school education)

One of the influences on the appliance to venerologists mentioned during almost all focus groups was a financial issue. Almost everybody mentioned that treatment is costly. One of the males disagreed that it is only a financial issue.

"The check-up is a matter of habit, while treatment depends on finances".

30-45 years old, high education

"Everybody who is ill will like to be treated but it is question of finances".

"Even if you have no money, you should sell your [marriage] ring and get treatment because of consequences when illness becomes chronic".

30-45 years old, school education

Several other factors were mentioned during focus group discussions (30-45 years old, high education) that could influence on the appliance to venerologists. There was an opinion that applying to a physician in general is very personal: some go immediately after the first signs, while the others may wait. One of the participants stated that it is easier to go to a physician when it is a known path (not the first time), while the first time it is difficult because the

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individual may be unaware where to find such doctor and may feel confused to apply with such symptoms.

Attitudes toward condom (effectiveness, satisfaction, quality, price, accessibility)

# Effectiveness

Several participants mentioned that today a condom is the only mean for prevention of STDs. However, some of the participants stated that it is not a 100 percent reliable mean and that it could tear. One of the participants mentioned that besides condoms there are other means too for prevention of pregnancy and STDs. The other brought up the issue he heard from his friends.

"There is an English company that produces tablets that prevent both pregnancy and STDs".

18-30 years old, high education

"They say that if you cleanse the penis before intercourse with manganese solution it will protect from STDs".

18-30 years old, school education

One of the participants from older group with school education explained the advantages of condoms. He told that condoms unlike tablets are easy to use, single use, and prevent STDs.

# Feelings

Several participants agree that condoms affect feelings and are unpleasant to use. However, it was mentioned that different condoms affect feelings differently, particularly that expensive condoms are better.

"90 percent of men do not get pleasure using condoms while women are getting it".

18-30 years old, school education

"I didn't know before that there are expensive condoms that you may not feel".

18-30 years old, school education

# Quality

Several participants mentioned that several things depend on the quality of the product. It is better to buy more expensive condoms that will not tear. The other advantage of expensive condoms was the better sensitivity spoken of by several males. The participants of focus group (30-45 years old, high education) told that the quality of product is generally good today, but there were many complaints about the quality of condoms 10 years before from the Soviet Union.

# **Price**

Almost all participants agreed that the price of condoms is not high, and they are available. Particularly, older participants mentioned that if a man goes to a SW the price of condom will account for the smallest part of the sum he spends. So, he could afford to buy condoms.

Accessibility

Several participants mentioned that some pharmacies worked 24 hours mainly for the selling of condoms. However, one of the males told that it would be better to have condom-dispensing machines providing condoms at any time.

# Characteristics of males referring to SWs

Generally men noted that everybody used SWs. However the participants (30-45 years old, school education) agreed that unmarried men apply less frequently than married ones. A reason mentioned was the psychological difficulty for married man to take money from family/children, and greater sexual desire among unmarried men.

# **Characteristics of SWs**

The males generally divide SWs into "cheaper" and "expensive" ones. According to their remarks, the "expensive" ones have their own doctors, and the risk of being infected from "cheaper" ones is much higher.

# Attitude toward legalization of prostitution and brothels

Almost everyone agreed that the general population particularly the older people would be against the legalization and opening of brothels. They are not ready for it. Some of the participants mentioned that it will improve the quality of sex service because of increasing competence. The older groups brought up the issue of taxes, and mentioned that it will not be profitable for SWs to pay taxes to the government, too. Besides, they stated that illegal prostitution will continue to exist. Some of the participants mentioned that males particularly married men will not go to brothels to keep it secret. The others stated that it will be more secure to apply to brothels.

### 3.2. Key-informant interviews

# **Trends in prostitution**

All key informants generally told that during Soviet times the prostitution was imported. The prostitutes came from abroad and they accumulated money and went away. Several key-informants told that there were a very small number of local prostitutes but there was no street prostitution at all.

"We saw 3-5% of local prostitutes during a year, while 95% were strangers".

Key-informant 1

"In my opinion the O prostitution of Soviet times developed in to an advanced sex industry".

All participants agreed that nowadays the majority of prostitutes are Armenians. Moreover, one of them told that now there is a trend for Armenian prostitutes, so called "traffic women", to go to other countries to earn money.

The attitude of two of the key-informants toward contemporary prostitution was very negative. One of them mentioned that the average age of sex workers is 28 years, and they enter into the sex business when they have two or three children. Other key-informants also stressed that nowadays SWs are working for daily "piece of bread" for them and their children.

### **Awareness on STDs**

Generally, key informants agreed that the awareness of the population is low. However, some of them think that the knowledge is satisfactory.

"The population could be divided in to 2 groups: the first group has heard about the diseases but do not realize the signs of diseases, the ways of transmission; the second group has the understanding of diseases, the signs, and the ways of transmission. There are many people from the first group and too little from the second group".

Key-informant 2

One of the key-informants told that different surveys were done with different populations and that they had about 10,000 completed questionnaires that revealed that the awareness of population is generally low. He added that the awareness of different STDs is also different. For example, people know more about HIV/AIDS because of different campaigns. The population is aware about gonorrhea and syphilis while almost nobody knows about chlamydiosis, genital warts, and herpes.

# Condom use among SWs

One of the key-informants said that FSWs are concerned about avoiding STDs and according to a survey done among streetwalking prostitutes, condom use with clients is reaching 80-85 percent. However, they often do not use condoms with their constant partners, which decreases the effectiveness of use. The other mentioned that a very small number of prostitutes use condoms consistently and in this case "occasional use" and "not use" are the same thing. Several key informants told that sex workers once infected are more concerned compared to newly starting SWs. One of key-informants mentioned that he never saw a SW who was also an injection drug user. All key-informant agreed that concerns of avoiding STDs are different among different types of sex workers. There is higher awareness among high-class prostitutes.

# Reasons of not using condoms

The reason frequently mentioned by key informants were resistance of client. The other reasons also mentioned by different key –informants were greater profit from client for not using condoms, alcohol abuse, lack of understanding of risk by SW, and confidence in client's health if the latter is more or less known.

# **Condom use among male clients**

Several key-informants agreed that the condom use among men is low. One of the key-informants said that according to the data from a pharmacy study on condom use, the sales of condoms has increased in Yerevan, but he added that it is only in Yerevan, while in other districts it is low.

"When we showed condoms in Vanadzor, people asked us whether it was sweets".

Key-informant 2

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"Compared to 5 years ago the condom use has increased but more because of sex workers rather than males".

Key-informant 1

The reasons for not using condoms mentioned by key-informants were interference with feelings, misbelieve in condom effectiveness, alcohol abuse, difficulty to climax, and fear for being suspected. One of the key informants explained the mechanism why alcohol affects safe sex practices. He told that many men use prostitutes when they are drunk and alcohol slows down the ejaculation. Condoms further decreased the effect, and that's why men often lose their patience and take the condoms off. Several participants mentioned that generally clients are objecting to condom use.

"In case if men offer condom use it is used 100%. In general the arguments of client are the following [in case if SW suggest using condoms]:

- 1. If you are suggesting it means you are ill
- 2. It is unpleasant
- 3. It does not work anyway."

*Key-informant 2* 

# **Appliance to venerologists**

# Appliance to venerologists by SWs

Generally all key informants agreed that beside the women brought by police, other SWs rarely visit venerogistst instead they refer to gynecologists.

"Women go to women [physicians]. Besides STDs they could have several other problems like pregnancy, bleeding, etc. The proportion is about 9 to 1 [venerologist/gynecologist]".

Key-informant 1

"They [SWs] go to gynecologists were they could stand in a queue with normal women".

Key-informant 5

# Appliance to venerologists by male clients

Generally key-informants agreed that the appliance is lower then in previous years. Some of the participants said that men more often refer for check-ups and after that they decide whether to be treated or not and where to be treated.

# Attitudes toward condom (effectiveness, quality, price, accessibility)

Almost all key-informant without criticizing any particular product stated that they would suggest European brands like "innotex". One of key-informants mentioned that he does not rely much on the products of Eastern Europe and Asia. In his opinion they could break and besides, the man who have used them once wouldn't use them second time. One of the key-informants said that in his opinion the protection by condoms from viruses like HIV/AIDS is questionable. He mentioned that the size of virus is very small and it could penetrate through micro holes in condom. Almost all participants agreed that the price of condoms is affordable. However, one of the key-informants mentioned that if a loader get 1000 dram for one day work and if he'll find a SW for that price than getting the additional 100 dram (price of condom) will be a problem and would constitute a 10 percent of his salary.

# Characteristics of males referring to SWs

Several key-informants told that everybody are referring to SWs.

"Everybody use the services like in cafe, if it is accessible as café".

Key-informant 5

According to one of the respondents (*key-informant 2*) due to polarization of society, two layers of society have developed. One of them are affluent males who could buy sex services. The other group consists of poor males that couldn't afford creating their own families and that's why they need the services of prostitutes. The other key informant told that in general males use SWs of the same social class.

# **Characteristics of SWs**

According to a key-informant, they divide SWs into 3 conditional classes: street prostitutes; average prostitutes working in bars, saunas, restaurants; and elite or call girls.

The prices vary from \$1 for the street prostitutes up to hundreds of dollars for the highest class.

He said that they could estimate only the prevalence of STDs in first class, which is about 35-50 percent infected with different STDs, some of them with several STDs.

# Attitude toward legalization of prostitution and brothels

All key-informants were against legalizing prostitution and gave several argumentations for their reasoning. The most frequent reason mentioned by key-informants was that legalization of prostitution would not help because the illegal prostitution will still exist. One of the participants mentioned that the manager of brothel would recruit 18-20 years old SWs while the older ones will be forced to go to streets. Besides, the key-informant was suspicious that managers will after some years fire the older SWs and not provide pension for them. This would result in their reverting to the streets. One of the participants stated that it would increase the bribes. Two of key-informants stated that legalization of prostitution by government is immoral because it will mean legalization of vice.

# **Suggestions**

One of key-informants suggested that sex education should be initiated early in 7-8<sup>th</sup> form classes in school to develop the proper understanding and sound thinking with regards to safe sex practices and STDs from early ages. The other key-informant suggested that three measures should be held among SWs: informing, educating and distributing condoms. The majority of key-informants noted that preventive measures done by the Republican Medical-Scientific Center of Dermatology and STI (screening, treatment of SWs and distribution of condoms) was effective.

# 3.3. Interviews with sex workers

# General practice regarding condom use

Two SWs mentioned that they were concerned about STDs. One of them said that she tried to have safe sex, but there were several cases when she had sex without condoms because of the client's resistance. The other notified that she had to use condoms because she had syphilis and was afraid of transmitting the infection to a partner. The third sex worker said the best way of avoiding STDs was abstinence.

# **Reasons for using condoms**

The reason mentioned by one of the participants was protection from STDs and unwanted pregnancy. The other SW mentioned that her reason for using was preventing her partners from her infection.

# Awareness on STDs and safe sex practices

Several participants mentioned that sex without condoms is dangerous. One of SWs mentioned that it is possible to be infected through the same bed, passing food, and kissing. She

Exploratory study on condom use among SWs and their clients in Yerevan

mentioned that although this was not frequent but they were possible ways of transmission of bacteria from one person to another. The younger participant said she didn't know anything about STDs and their prevention.

"I have heard about condoms but I didn't know what are they for".

SW4

# Attitude toward decision making for safe sex practices

According to two of the participants both partners should make the decision. One of the participants said that women should make the decision in order to avoid unwanted pregnancy and STDs.

# Objections to condom use

One of participants mentioned that it was men who are objecting to condom use. The other participant mentioned that both men and women could object condom use. The other sex worker said that generally women are against condom use.

"Men moan that they couldn't put it on, that they didn't get pleasure..."

SW 3

"The women is guilty if she will not do mistake everything will be O.K.".

SW 1

One of the SWs told that generally married men are more prone to use condoms while boys aren't concerned. Only in case when they get infected do they regret their behavior.

### **Appliance to venerologists**

According to SWs three of them were visiting the clinic for the first time. The other said it was her second time. In general they know the signs of STDs and when it is important to visit venerologists; however, they didn't voluntarily visit the clinic this time.

# Attitudes toward condom (effectiveness, satisfaction, quality, price, accessibility)

Two of the participants said that condoms are accessible.

"There are ones for 30 dram in a pack, but it is not our function to buy condoms". SW 3

"It is 100 dram and they are very cheap. The medicine is expensive, that's why I am forced to

buy".

SW 2

One of them thinks that the quality of condoms depends on the brand. The other told that she generally trusts the quality; however, sometimes there are thin ones that could tear. One of the SWs told that the difference in feelings with or without condoms was very small.

# Perception of vulnerability toward STDs

Except, for one of participants, the others understand their vulnerability. One said she wasn't aware of STDs and safe sex behavior.

# **Characteristics of clients**

Almost all participants agreed that all kinds of males visit SWs. The oldest SW said that mostly middle age and older men refer to SWs.

# Attitude toward legalization of prostitution and brothels

The SWs like the positive aspects of brothels and told that it would be good to implement them in Armenia. However, one of the participants after thinking for several minutes told that probably it will not work in Armenia because of fraudulent activities.

# 4. Discussion

# **4.1.** Interpretation of results

The data obtained from this study suggests that SWs themselves were more prone to use condoms than their male clients. This data is in agreement with data from similar European studies that have shown that SWs are often viewed as potentials for transmitting STDs while their risk behaviors are mainly imposed by their clients (7,17).

The data shows that males, particularly younger ones, do not understand the risk of acquiring STDs even from sex workers because they think that STDs are spread everywhere but not in Armenia. Besides, there were several misconceptions and misunderstandings about transmission of STDs and safe sex practices among males and SWs.

The majority of men were inclined to use condoms with sex workers. The perception of men was that condoms shouldn't be used in home (with wife, or girl friend). Besides, the condoms were not popular with partners whom the males know. Knowing the person (where she is from and who she is) and a clean and neat appearance exclude the possibility of acquiring STDs from them. The same trend was mentioned in a study of sexual networking in Thailand where the researchers mentioned that men think they could screen SW for the presence of STDs (11).

The clients' reasons for not using condoms were the following: reduction of sensitivity and pleasure, low awareness about STDs, and fear for suggesting condom use. Two reasons mentioned only by the experts on behalf of clients were alcohol abuse and difficulty to climax, which are interconnected. The similar reasons were mentioned in studies found in the literature (7). However, the fear of suggesting condom use (when both sides are afraid to propose condom use because the counterpart could suspect that they are infected) mentioned by all participants wasn't found in the studies reviewed from the literature.

According to male, SW and expert responses it is the SWs that generally insisted on condoms use. However, they don't use condoms often because of client's resistance and their fear to lose a client. Because SWs work in the sex business to meet their basic human need, it is difficult for them to refuse partner. The other factors for non-use of condoms among SWs were alcohol abuse, lack of awareness on STDs, and confidence in client's health if the latter is more or less known. It was also mentioned that SWs do not use condoms with their regular partners. This finding is also in agreement with literature sources (12,13). One of the reasons frequently mentioned in the literature was that injecting SWs do not use condoms (7). However, it could be inferred from the responses that injecting drugs is not widespread among SWs in Yerevan.

The interesting trend that is evident both in SWs and men was that they become more mature in their sex behavior over the years. If they acquire STDs at younger ages, it also contributes to better understanding of risks from unsafe sex. Also, married men are more cautious than unmarried ones. However, the counter argument was that according to some men, the sex practices are limited with their wives. They go to a SW and to get maximum pleasure and don't want to use condoms.

The interesting trend was that the men don't like taking the responsibility for decision making on condom use and think that SW or other women should do it. On the other hand the SW think that it's not her responsibility.

One of the findings was that the population is not ready for legalizing prostitution.

Legalizing instead of increasing safe sex practices could bring negative consequences like taking bribes, avoiding taxes, and making illegal prostitution more of a problem then now.

# **4.2.** Limitations

As non-probability sampling was used to choose the participants of the study, the findings have low external validity and can not be generalized for the whole population. However, it is believed that triangulation (using different techniques) used in the present study enhances the quality of the data (14). Particularly, key-informants filled gaps in the information provided both by SWs and their clients due to their work experience with these populations.

One of the limitations of the study was that SWs contacted at the Republican Medical-Scientific Center of Dermatology and STI were not good representative of the SW population because generally only self-employed street walking sex workers were brought to the Center (15). However, these women are considered to be at a particularly high risk for contracting HIV/STDs (6). It would be better if the SWs were contacted outside the clinic where their responses could be less biased. The other point is that the division of men in focus groups could have been done differently (not only by educational and age status but by marital status, too). Another limitation is that some topics included in the guide of the key informant interview were not included in the guide for the focus group session and during the in depth interviews with SWs, which may have impeded further comparison of responses.

# **4.3. Recommendations**

Based on the analysis of data obtained from the males, SWs, and experts, the following preliminary recommendation were proposed:

- The sex education should be initiated earlier in school to develop the proper understanding and sound thinking with regards to safe sex practices and STDs from early ages that couldn't be done during a short period of time.
- There is not proper time for legalization of prostitution in Armenia and it could have more negative consequences.

- The present study could be expanded to other marzes of Armenia, which could help to detect differences between Yerevan and marzes regarding condom use among SWs and their clients.
- 4. A survey is suggested to conduct among the general male population on knowledge, attitude and practices regarding condom use to confirm the results of these qualitative research findings.
- Donor organizations should be approached by the investigation to present the findings of this study. Such organizations should be encouraged to launch appropriate educational campaign in schools.

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# Appendix 1

**Table 1. The Incidence Rates of Some STDs in 1975-1999** 

|      | Incidence rates |         |           |           |           |           |  |  |  |  |  |
|------|-----------------|---------|-----------|-----------|-----------|-----------|--|--|--|--|--|
|      | Syl             | ohilis  | Acute     | gonorrhea | Chronic   | gonorrhea |  |  |  |  |  |
| year | absolute #      | 100,000 | absolute# | 100,000   | absolute# | 100,000   |  |  |  |  |  |
| 1975 | 409             | 14.5    | 613       | 21.8      | 101       | 3.6       |  |  |  |  |  |
| 1980 | 505             | 16.3    | 1726      | 55.7      | 343       | 11.1      |  |  |  |  |  |
| 1985 | 342             | 10.2    | 1176      | 35.1      | 331       | 9.9       |  |  |  |  |  |
| 1990 | 125             | 3.5     | 876       | 24.6      | 177       | 5.0       |  |  |  |  |  |
| 1995 | 448             | 11.9    | 1168      | 31.1      | 156       | 4.1       |  |  |  |  |  |
| 1999 | 438             | 12.5    | 721       | 18.9      | 191       | 5.0       |  |  |  |  |  |

Source: Official data of the Medical-Scientific Center of Dermatology and STI

Table 2. Diagnosis of STDs among Commercial Sex Workers

| Year           | 1993  |      | 1994  |      | 1995  |      | 1996  |      | 1997  |      | 1998  |      | 1999  |      |
|----------------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-------|------|
| # examined     | 71    |      | 101   |      | 270   |      | 448   |      | 510   |      | 668   |      | 681   |      |
| Diagnosed      | total | %    |
| Syphilis       | 7     | 9.8  | 21    | 20.7 | 56    | 20.7 | 87    | 19.4 | 76    | 14.9 | 91    | 13.6 | 32    | 4.7  |
| Gonorrhea      | 9     | 12.6 | 7     | 6.9  | 17    | 6.3  | 27    | 6    | 26    | 5.1  | 48    | 7.2  | 23    | 3.4  |
| Trichomoniasis | 24    | 33.8 | 12    | 11.8 | 46    | 17   | 97    | 21.7 | 102   | 20   | 143   | 21.4 | 106   | 15.6 |
| Other STDs     | 0     | 0    | 0     | 0    | 31    | 11.5 | 52    | 11.6 | 70    | 13.7 | 98    | 14.6 | 94    | 13.8 |
| Total          | 40    | 56.2 | 40    | 39.7 | 150   | 55.5 | 263   | 58.7 | 274   | 53.7 | 380   | 56.8 | 255   | 37.5 |

Source: Official data of the Medical-Scientific Center of Dermatology and STI in Report on

Some Aspect of Commercial Sex Work.

# **Consent Form for Interviews with SWs and Experts**

# **Explanation of research project:**

My name is Zara Bakalyan. I am a graduate student of Public Health department of AUA. I am conducting a research on sexual health of men and women in Yerevan as a part of course requirement. The interviews will take place only once and will last 40-80 minutes. Your responses are highly valuable to us and we appreciate your participation in this study.

#### **Risks/ Benefits:**

There is no known (minimal) risk for the participants of the study. The research possesses risk, discomfort and inconvenience the same as encountered in your daily life.

You will not directly benefit from the participation in this survey. However, the information provided by you may help for better understanding of the problems regarding sexual health of males and females which can be used for future programs aimed to improve health status of population.

# **Confidentiality:**

The interview will be conducted anonymously. Your name or other identifying data (are not needed) will not be used in any part of the research process. Your responses will be accessible only to the Public Health Department of the American University of Armenia.

#### **Voluntariness:**

It is your decision whether participates in the study or not. You have the right to stop providing information at any time you wish or skip any question you consider inappropriate. Your refusal to participate in the study or your decision to withdraw from that at any time will not affect your job or study.

#### Whom to contact:

You should ask the person in charge any questions you may have about this research. You should ask him questions in the future if you do not understand something that is being done. The researchers will tell you anything new they learn that they think will affect you.

If you want to talk to anyone about this research you should call the person in charge of the study, [Michael Thompson] at [phone number: (374 1) 51 25 60 /e-mail: mthompso@aua.am]. The person in charge of the study will answer your questions. If you want to talk to anyone about the research study because you feel you have not been treated fairly or think you have been hurt by joining the study you should contact the American University of Armenia at (374 1) 51 25 12.

# **Consent Form for Focus Group Interviews**

#### **Explanation of research project:**

My name is Haik Gjuzalyan/Avetik Keropyan. I will lead the discussion, Vartan Bakalyan/Avetik Keropyan will take notes on the discussion without writing your names or any other personal data. We are conducting a research on sexual health of men and women in Yerevan as a part of course requirement of Public Health department of AUA. The interviews will take place only once and will last 40-80 minutes.

Your responses are highly valuable to us and we appreciate your participation in this study.

#### **Risks/ Benefits:**

There is no known (minimal) risk for the participants of the study. The research possesses risk, discomfort and inconvenience the same as encountered in your daily life.

You will not directly benefit from the participation in this survey. However, the information provided by you may help for better understanding of the problems regarding sexual health of males and females which can be used for future programs aimed to improve health status of population.

# **Confidentiality:**

The interview will be conducted anonymously. Your name or other identifying data (are not needed) will not be used in any part of the research process. Your responses will be accessible only to the Public Health Department of the American University of Armenia.

#### **Voluntariness:**

It is your decision whether participates in the study or not. You have the right to stop providing information at any time you wish or skip any question you consider inappropriate. Your refusal to participate in the study or your decision to withdraw from that at any time will not affect your job or study.

#### Whom to contact:

You should ask the person in charge any questions you may have about this research. You should ask him questions in the future if you do not understand something that is being done. The researchers will tell you anything new they learn that they think will affect you.

If you want to talk to anyone about this research you should call the person in charge of the study, [Michael Thompson] at [phone number: (374 1) 51 25 60 /e-mail: mthompso@aua.am]. The person in charge of the study will answer your questions. If you want to talk to anyone about the research study because you feel you have not been treated fairly or think you have been hurt by joining the study you should contact the American University of Armenia at (3741) 512512.

# Appendix 4 Guide for in-depth interview with FSWs

#### Introduction

Note to interviewer: Do not read items written in italic out loud.

- □ *Introduce yourself.*
- □ *Introduce consent form.*
- □ Thank the informant for agreeing to participate in the interview.

# Warming up questions

1. For how long have you stayed in the clinic? What are the reasons for your stay?

**Probe:** Are you receiving treatment or staying only for diagnostics?

2. Is it your first visit to dispensary? If not, can you please describe your past visits?

**Probe**: How many times have you visited the clinic and what for?

3. Please describe how you feel about this clinic?

**Probe:** Importance, people use it, who use it, is it valuable?

#### **Transition questions**

4. In general people go to the doctor for different reasons e.g. for treatment or for preventive check-up. On what occasions do you visit doctors?

**Probe:** What are the main reasons that make you see a doctor (urgent vs. preventive)?

#### **Practice questions**

- 5. Have you visited dermato-venerologists and if yes, how often and for what reasons?
- 6. In recent years with the changes in society the extent to which the STDs are spread draw public attention toward them. Are you concerned about STDs? What practices would put you at risk for STDs personally?
  - What do you do in particular to avoid STDs?
- 7. Do you use condoms during every sexual intercourse? What are the reasons of using and not using condoms?
- 8. In case of appearance of problems that indicate STDs will you refer to doctor (venerologist)?

# **Knowledge que stions**

- 9. Can you please tell me ways of avoiding STDs?
- 10. In your opinion how effective are condoms against STDs?

**Probe:** What do you think about the price of condoms (accessibility)? Are they affordable, are they worth it?

**Probe:** Do you trust the quality of product? Does it depend on the place you buy, the brand of condom, etc?

11. Do you feel yourself vulnerable for being infected with STDs?

**Probe:** Does unprotected sex make you think that you could become infected?

12. What do you think: are male and female equally vulnerable for STDs or no, and if no who is more vulnerable and why do you think that?

13. When do you think it is necessary to visit a doctor (venerologists)?

**Probe:** Appearance of what symptoms can make you think that there is a need to see a doctor?

# **Attitude questions**

- 14. Some people think that condoms protect from STDs and pregnancy, others think that they interfere the feelings and/or sexual pleasure. What is your opinion and feelings about the use of condoms and possible limits?
- 15. In your opinion who should make the decision- in using condoms during sexual intercourse and why?

**Probe:** Who is the decision-maker in reality?

**Probe:** Generally what objections can rise against using condoms and who can raises them?

#### Other questions

- 16. What are some of the reasons FSW get involved in this profession? Are there risks to this profession?
- 17. In general, what are the characteristics of people who pay for sex? What types of males (social status, age, education, appearance, and profession) more frequently refer to prostitutes?
- 18. Nowadays in Armenia many people hardly meet ends. By how much do your earnings, on average, satisfy your expenditures?
- 19. Are you the only manager of your earnings? If no, how much of your earnings are managed by other people? Who are these people?
- 20. How can you describe the ideal working conditions (financial, safety issues, etc) for you? **Probe:** Can you please list the factors that are necessary to establish ideal working conditions for you?

# **Summary**

21. Some countries of Europe have legalized prostitution, where many FSWs work at brothels, which protect them from abuse, provide medical care, and FSWs can demand the client to use condoms. What do you think can the same practices be implemented in Armenia? Why? Explain.

Is there anything else that we did not discuss, but you want to share your opinion on?

# Closing

Thank the informant for her contribution and ask if she has any questions.

# Focus Group Discussion Guide (general male population)

#### Introduction

**Note to interviewer:** Do not read items written in italic out loud.

- □ Welcome the participants.
- □ Introduce the consent form.
- □ Introduce the moderator (name and his role in the discussion), the recorders and the observers.
- □ Ask the participants to introduce themselves.
- □ Request active participation in the focus group.
- □ Explain that there are no right and wrong answers and that all answers are important and interesting to us.

# Warming up questions

Recently there have been changes in society since the fall of the Soviet Union. For example, some people say that teens have changed in behavior (smoking more, having sex younger, etc), other people believe that these things have always existed in Armenia but are more open now...

- 1. What is your opinion on this, has our society changed a lot with regards to sexual practices and behaviors?
- 2. Prostitution is a well-known phenomenon from ancient times it is present everywhere. What are the trends regarding the use of prostitutes in Armenia in recent years (and compared to Soviet times)?
- 3. What is the attitude of Armenian society towards the prostitution?
- 4. How often, do you think, Armenian men refer to FSWs and for what occasions?

# **Transition questions**

- 5. Generally who are the clients of prostitutes? What types of males (social status, age, education, appearance, and profession) more frequently refer to prostitutes?
- 6. What do you think are the main reasons men seek sex with FSWs?

# **Practice questions**

- 7. In recent years the extent to which the STDs are spread draw public attention toward them. What do you thinks are males (e.g. your friends, acquaintances, you personally) concerned about avoiding STDs?
- 8. What is the general behavior of Armenian men (your friends, acquaintances, you personally): do they use condoms during every sexual intercourse? What are the reasons of using and not using condoms? Are there differences in using condoms in relationships (wife, girlfriend) in comparison to with FSWs?
- 9. What do you think how prone are the FSWs to use condoms?

- 10. Is it supposed that FSWs will provide condoms or it is supposed on the behalf of clients?
- 11. In your opinion who should make decision on using condoms during sexual intercourse and why?

**Probe:** Who is the decision-maker in reality?

**Probe:** Generally what objections can rise against using condoms and who can rise them?

- 12. In case of appearance of problems that indicate STDs will you refer to doctor (venerologist)?
- 13. How often do men (your friends, acquaintances, you personally) visit venerologists and for what reasons (treatment, preventive check-up)?

# **Knowledge questions**

- 14. In your opinion, what is the best method for avoiding STDs and what are the advantages of this method compared to others?
- 15. In your opinion how effective are condoms against STDs?

**Probe:** What do you think about the price of condoms (accessibility)? Are condoms affordable, are they worth it?

**Probe:** Do you trust the quality of product? Does it depend on the place you buy, the brand of condom, etc?

16. Do you feel vulnerable for being infected with STDs?

**Probe:** Does unprotected sex make you think that you could become infected?

- 17. What do you think: are male and female equally vulnerable for STDs or no, and if no who is more vulnerable?
- 18. When do you think it is necessary to visit a doctor (venerologist)?

**Probe:** Appearance of what symptoms can make you think that there is a need to see a doctor?

# **Attitude questions**

- 19. Some people think that condoms protect from STDs and pregnancy while the others think that they affect the feelings. What is your opinion and feelings toward this method?
- 20. What do you think are some reasons why women chose to become FSWs? In general, what are the characteristics of these women?

**Probe:** Are there different types of FSWs (for example, street walkers, call girls) differences in costs and in the way you perceive the risk of getting an STD from these different types of FSWs?

# Summary

21. Some countries of Europe have legalized prostitution, where many FSWs work at brothels, which protect them from abuse, provide medical care, and FSWs can demand the client to use condoms. What do you think can the same practices be implemented in Armenia? Why? Explain.

**Probe:** What do you think will men more willingly visit FSWs in brothels than elsewhere? Is there anything else that we did not discuss, but you want to share your opinion on?

# **Closing**

Thank the participants for their contribution and ask if they have any questions.

# Guide for in-depth interview with key-informant

#### Introduction

Note to interviewer: Do not read items written in italic out loud.

- □ *Introduce yourself.*
- □ *Introduce consent form.*
- □ Thank the informant for agreeing to participate in the interview.

# Warming up questions

- 1. How long you have been working as a physician/nurse in this clinic?
- 2. Nowadays how often do people visit venerologists and for what reasons (treatment vs. preventive check-up)? What are the trends in recent years (and compared to Soviet times)?

#### **Transition questions**

Recently there have been changes in society since the fall of the Soviet Union.

- 3. What is your opinion has our society changed with regards to sexual practices and behaviors as well?
- 4. What are the trends regarding the use of prostitutes in Armenia in recent years (and compared to Soviet times)?

#### **Key questions**

- 5. In recent years the extent to which the STDs are spread draw public attention toward them. How would you describe the awareness of general population on STDs? What do you think are sex workers concerned about avoiding STDs?
- 6. What is the general behavior of Armenian sex workers (do they use condoms)?

**Probe:** Are there any differences regarding condom use between different kinds of sex workers.

- 7. Please describe reasons in your opinion why sex workers do not always use condoms?
- 8. Based on your experience what can you tell about the awareness of male client population and their behavior with regards to condom use?

**Probe:** What are the reasons of using and not using condoms?

**Probe:** Are there differences in using condoms in relationships (wife, girlfriend) in comparison to with sex workers?

9. In your opinion who is the decision-maker in the interaction of male client and sex worker with regards to safe sex practices?

**Probe:** Generally what objections can rise against using condoms and who can rise them?

- 10. In general, what are the characteristics of people who pay for sex? What types of males (social status, age, education, appearance, and profession) more frequently refer to prostitutes?
- 11. In general, what are the characteristics of sex workers in Yerevan?

**Probe:** Are there different types of sex workers (for example, street walkers, call girls) differences in costs and prevalence rates of STDs among these different types of women?

- 12. How often do prostitutes refer to venerologists and for what reasons (treatment vs. preventive check-up)? What about male-clients?
- 13. What do you think about the quality of condoms in Yerevan? In your opinion what factors make difference in the quality of product in Yerevan if any (pharmacy, the brand of condom, expiry dates, etc)? What do you think about the price of condoms? Are they affordable?

#### **Summary**

14. Some countries of Europe have legalized prostitution, where many sex workers work at brothels, which protect them from abuse, provide medical care, and sex workers can demand the client to use condoms. What do you think can the same practices be implemented in Armenia? Why? Explain.

**Probe:** What do you think will men more willingly visit sex workers in brothels than elsewhere?

15. What would you suggest to improve the sexual health of population?

**Probe:** Particularly what would you suggest to improve the sexual health of populations practicing unsafe sex behavior (sex workers, male clients)?

**Probe:** Do you believe it would help if condoms were provided for free? Please, explain.

Is there anything else you want me to know that we have not discussed?

# **Closing**

Thank the participant for his/her contribution and ask if he/she has any questions.

# Đ³í»Éí³Í1

# Đ3 ឿ3 ëï 3 ÝÇ 2 ὺ»ῆÇÏ ឿ3 Ý Đ3 ὺ3 [ë3 ῆ3 Ý Đ3 ë3 ῆ3 Ϊ3 Ϊ3 Ý 2 éá Õc å3 ឿá ὄ Ã Ĵ3 Ý μ3 ÅC Ý

# ÐзÙзÓзĺýз.Çñ

#### Đ»ï ¾áï áõÃÛ³Ý Ýå³ï ¾ÏÁ

´³ñ¨ Ò»½, »ë ¼³é³Ý »Ù Đ³ឿ³ëï ³ÝÇ 2Ù»ñÇÏឿ³Ý Đ³Ù³Éë³ñ³ÝÇ Đ³ë³ñ³Ï³Ï³Ý ²éáÕçå³ÑáñÃឿ³Ý  $\mu$ ³ÅÝÇ ³í³ñï ³Ï³Ý áñë³ÝáÕ: »ë Ý»ñϳÍánÙë °ñ¨³ÝánÙ ³Ýó »Ù ϳÓÝánÙ Ñ»ï ³½áï áñÃllánÝ Ï³Ý³Ýó ¨ï Õ³Ù³ñ¹Ï³Ýó ë»é³Ï³Ý ³éáÕçánÃឿ³Ý í »ñ³ $\mu$ Ȗឿ³É, áñå»ë Ù»ñ ¹³ëÁÝóÓÝ»ñÇ Ñ³ÝÓݳñ³ñáñÃllánÝ: Đ»ï ³½áï áñÃឿ³Ý Ýå³ï ³ÏÝ ¿ áñëánÙݳëÇñ»É  $\mu$ ݳÏāánÃឿ³Ý í ³ñù³ ÇÍÁ ¨Ï³ñÍÇùÝ»ñÁ ï í ឿ³É ѳñóÇ ßáñnç: Đ³ñó³½ñánllóÁ ï »ÕÇ Ïánݻݳ ÙdzÍÝ Ù»Ï³Ý ³Ý ³Ù ¨Ïï ¨Ç 40-80 ñáå»:

Ò»ñ Ù³ ëݳ ÏóáõÃláōÝÁ ϳ Ù³ í áñ ¿: ¸áōù ϳ ñáÕ »ù āå³ ï ³ ë˳ Ý»É ó³ Ýϳ ó³ Í Ñ³ ñóÇ ¨ / ϳ Ù ó³ Ýϳ ó³ Í å³ ÑÇÝ Ññ³ ų ñí »É Ñ³ ñóÙ³ ÝÁ Ù³ ëݳ Ïó»Éáōó:

Ò»ñå³ï³ë˳ÝÝ»ñÁß³ïϳñ¨áñ»ÝÙ»½Ñ³Ù³ñ:

# èÇëÏ/û∙ áõï

Đ³ nó³ ½náoloçý Ù³ ëݳ ló» káo ÁÝó óùáoÙ jáoù ā»ù áoÝ» ݳ ³í» kç ³Ýѳ nÙ³ náoÃlaoÝ ù³Ý jáoù ѳ ݹ Çå áoÙ »ù Ò» n³ éûnl³ ll³ ÝùáoÙ:

س ëݳ Ïó»Éáí ѳ ñó³ ½ñáōllóÇÝ ¸áōù ā»ù ëï ³Ý³ Éáō ³ÝÙÇç³ Ï³Ý û·áōï : ê³ Ï³ ŰÝ Ò»ñ Ù³ ëݳ ÏóáōĀlláōÝÁ Ïû·ÝÇ μ³ ó³ ѳ Ür »É ËݹÇñÝ»ñÁ ¨ Ñ»ï ³·³ lláō٠ϳ ñáÕ ¿ û·ï ³·áñÍí»É μݳ ÏāáōĀll³ ݳ éáŌçáōĀll³ Ý μ³ ñ»É³ í Ù³ Ý Ñ³ Ù³ ñ:

# ¶³Õï ÝÇáõÃÛáõÝÁ

Ò»ň ³ ÝáōÝÁ, ³½· ³ ÝáōÝÁ ϳÙ áň¨¿ ³Œ ï í l³É āÇ ÝBí Ç Ñ»ï ³½áï áōÃl³ Ý ÁÝó óùáōÙ: Ò»ň å³ï ³ ë˳ ÝÝ»ñÁ ѳ ë³ Ý»ÉÇ TÉÇÝ»Ý Ùdz lÝ Đ³ l³ ëï ³ ÝÇ 2 Ù»ñÇÏ l³ Ý Đ³ Ù³ Éë³ ñ³ ÝÇ Đ³ ë³ ñ³ ϳ ϳ Ý 2 éáŌcå³ ÑáōÃl³ Ý u³ ÅÝCÝ:

# àõÙ ¹ÇÙ»É

°Ã» Ò»½ Ùáï ͳ·»Ý ѳñó»ñ ѻﳽáï áōÃܳÝ í»ñ³µ»ñܳÉ ¸áōù ϳñáÕ »ù ¹ÇÙ»É Ñ»ï³½áï áōÃܳÝŐ»Ï³í³ñCÝ.

 $\emptyset^3$  lì  $\hat{A}$  â  $\hat{V}$  ÷ ë á  $\hat{V}$ ,  $\hat{N}$  » é  $\hat{S}$  Ë á ë  $\hat{V}$   $\hat{N}$  8  $\hat{S}$  1 25 92,  $\hat{C}$  £. ÷ á ë  $\hat{S}$  mthompso@aua.am

°Ã» ၞáõù ϳñĺáõÙ »ù, áñ Ò»½ Ñ»ï í³ñí »É »Ý ³Ýѳñ. ³ÉÇó ϳÙ ³Ý³ñ¹³ñ³óÇ Ï³ñáÕ ½³Ý. ³Ñ³ñ»É Ñ»ï "Û³É Ñ»é³ Ëáë³Ñ³Ù³ñáí 51 25 12: Đ³Û³ëï ³ÝÇ ²Ù»ñÇÏÛ³Ý Đ³Ù³Éë³ñ³Ý

#### $\theta^3$ í» $\epsilon$ í $^3$ í $^2$

# 

# ÐзÙзÓзĺýз.Çñ

#### Đ»ï ¾áï áõÃÛ³Ý Ýå³ï ¾ÏÁ

Ò»ñå³ï³ë˳ÝÝ»ñÁß³ïϳñ¨áñ»ÝÙ»½Ñ³Ù³ñ:

# èÇëÏ/û· áõï

Đ³ nó³ ½náolbçý Ù³ ëݳ ló» káo ÁÝó óùáoÙ jáoù ā»ù áoݻݳ ³í» kç ³Ýѳ nÙ³ náoÃlaoÝ ù³Ý jáoù ѳ ݹça áoÙ »ù Ò»n³ éùnl³ ll³ ÝùáoÙ:

 $\mathring{\mathcal{O}}^3$   $\stackrel{\circ}{=}$   $\mathring{Y}^3$   $\stackrel{\circ}{=}$   $\mathring{Y}^3$   $\stackrel{\circ}{=}$   $\mathring{Y}^3$   $\stackrel{\circ}{=}$   $\mathring{Y}^3$   $\stackrel{\circ}{=}$   $\mathring{Y}^3$   $\mathring{$ 

# ¶³Õï ÝÇáõÃÛáõÝÁ

Ò»ñ ³ ÝáōÝÁ, ³ ½ ³ ÝáōÝÁ Ï ³ Ù áñ "¿ ³ Æ ï í l³ É āÇ ÝBí Ç Ñ»ï ³ ½áï áōÃl³ Ý ÁÝó óùáōÙ: Ò»ñ å³ ï ³ ë˳ ÝÝ»ñÁ ѳ ë³ Ý»ÉÇ Ï ÉÇÝ»Ý Ùdz ÍÝ Đ³ ͳ ëï ³ ÝÇ ² Ù»ñÇÏ Í³ Ý Đ³ Ù³ Éë³ ñ³ ÝÇ Đ³ ë³ ñ³ Ï ³ Ï ³ Ý ² éáÕçå³ ÑáōÃl³ Ý  $\mu$ ³ ÅÝÇÝ:

#### àõÙ ¹ÇÙ»É

°Ã» Ò»½ Ùáï ͳ·»Ý ѳñó»ñ ѻﳽáïáōÃÛ³Ý í»ñ³µ»ñÛ³É ¸áōù ϳñáÕ »ù ¹ÇÙ»É ѻﳽáïáōÃÛ³Ýջϳí³ñÇÝ.

س lùť ÂáÙ÷ëáÝ, Ñ»é³ ËáëÇ Ñ³ Ù³ ñ **51 25 92**, ¿ť. ÷áëï mthompso@aua.am °Ã» ¸áôù ϳ ñÍ áôÙ »ù, áñ Ò»½ Ñ»ï í³ ñí »ť »Ý ³ Ýѳ ñ ³ ťÇó ϳ Ù³ ݳ ñ¹³ ñ³ óÇ Ï³ ñáÕ ½³ Ý ³ ѳ ñ»ť Ñ»ï "l³ ť Ñ»é³ Ëáë³ Ñ³ Ù³ ñáí **51 25 12**: Đ³ l³ ëï ³ ÝÇ ² Ù»ñÇÏ l³ Ý Đ³ Ù³ ťë³ ñ³ Ý

#### $\theta^3$ ( ȃí 3 ( 3

# γݳÝóÑ»ï ѳñó³½ñáõÛóÇáõÕ»óáõÛó

#### Ü»ñ³ Í áõÃláõÝ

**Đ³ ñó ÝáÕÇ Ñ³ Ù³ ñ**. ÙÇ Ï³ ñ¹³ ó»ù μ³ ñÓñ³ Ó³ ĺÝ β»Õ· ñ³ Í Ý»ñÁ

- □ Ü»ñϳĴ³ó»ù
- □ Ì ³ Ýáó óñ»ù Ï ÝáçÁ ѳ Ù³ Ó³ Ûݳ · ñÇ Ñ»ï
- □ ÞÝáñѳ ϳ ÉáõÃĺláōÝ Ñ³ Ûï Ý»ù Ù³ ëÝ3 ÏóCÝ Ñ³ Ù³ Ó3 ĺÝáõÃĺJ³ Ý Ñ³ Ù³ ñ

# ÜßËÝßÏßÝÑßñó»ñ

- ÆÝāù³ ±Ý ų Ù³ ݳ Ï »ù ¹áōù ÑÇí ³ ݹ³ ÝáóáōÙ: àñá±Ýù »Ý Ó»ñ ÑÇí ³ ݹ³ ÝáóáōÙ Ùݳ Éáō å³ ï ׳ éÝ»ñÁ:
- ¸áõù ëï ³ Ýáō±Ù »ù µáōÅáōÙ, û ³ Ëï áñáßÙ³ ±ÝÝ »ù ëå ³ ëáōÙ:
- 2. ê<sup>3</sup> Ó»ñ ³é³çDZÝ ³lbÝ ¿ ÑÇí ³Ý¹³Ýáó:°Ã» áā, ³å³ ϳñáÕ »ù Ýϳñ³·ñ»É ݳ Ëáñ¹³lb°»ñÁ:
- Ø<sup>3</sup> ÝC± <sup>3</sup> Ý. <sup>3</sup> Ù »ù <sup>3</sup> ĺó»É»É ÑÇí <sup>3</sup> ݹ<sup>3</sup> ÝáóÁ ¨ C±Ýã å <sup>3</sup> ï × <sup>3</sup> éáí :
- 3. ÆÝãåÇëDZݿӻñí»ñ³µ»ñÙáōÝùÁ¹»ådzĴë ÑÇí³Ý¹³ÝáóÁ:
- ĐÇÍ ³ ݹ³ ÝáóÇ Ï³ ñ¨áñáōÃláōÝÁ, ³ ló»ÉáōÝ»ñÁ, áí ù»ñ »Ý ³ ló»ÉáōÙ, ³ ñÅ»ù³ í áñ ¿:

# ØÇç³ÝϳĴ³Éѳñó»ñ

- 4. ĐÇÙݳ ϳ ÝáōÙ Ù³ ñ¹Çϳ Ø»ÉáōÙ »Ý μÅÇβÏÝ»ñÇÝ ï³ ñμ»ñ å³ ï׳ éÝ»ñáí (ûñÇݳ Ï, μáōÅáō٠ϳ ٠ϳ Ý˳ ñ· »ÉáōÙ): ƱÝā å³ ï׳ éáí »ù ¹áōù ¹ÇÙáôÙ μÅβÏÇ:
- àñá±Ýù »Ý ³ ĺÝ å ³ ï ׳ éÝ »ñÁ, áñáÝù ëï ÇåáõÙ »Ý Ó»½ ¹ÇÙ»É μÅßÏ Ç:

# ì³ñù³·ĺÇÝí»ñ³µ»ñíáÕѳñó»ñ

- 5. ¸áōù ¹ÇÙ»±É »ù µÅßÏ Ç(í »Ý»ñ³ µ³ ÝÇ): °Ã» ³ lá, ³å³ áñù³ ±Ý ѳ  $\times$ ³ Ë ¨ DZÝā Ýå³ ï ³ Ïáí (µáōÅáōÙ, ϳ Ý˳ ñ· »ÉáōÙ):
- 6. ì »ñçÇÝ ï ³ñÇÝ»ñÇÝ ë»é³í³ñ³ÏÝ»ñÇ ï ³ñ³ÍÙ³Ý ³ëï Ç׳ÝÁ ·ñ³í»É ¿ ѳë³ñ³ÏáōÃܳÝ áōß³¹ñáōÃÜáōÝÁ: ¸áōù Ùï ³Ñá·í³±Í »ù ë»é³í³ñ³ÏÝ»ñáí: à±ñ í³ñù³·ÇÍÁ ϳñáÕ ¿ íï ³Ý·»É Ó»½: ƱÝã »ù ¹ōù ³ÝáōÙ áñå»ë½Ç Ëáōë³÷»ù ë»é³í³ñ³ÏÝ»ñÇó:
- 7.  $\acute{u}$   $\ddot{i}$   $\ddot{i}$
- 8.  $\circ$  û ë»é³ í ³ ñ³ Ï Ç Ï ³ ëÏ ³ Í ³ é³ ç³ Ý³ Ó»½ Ùáï , Ï ¹ÇÙ»±ù ³ ñ¹láù µÅßÏ Ç (í »Ý»ñ³ µ³ ÝÇ):

#### Đ³ nó » n· Çï » ÉÇù Ý » nÇ í » n³ µ » nÛ³ É

- 9. Ò»ñ ϳñÍ Çùáí, á±ñÝ; ë»é³í³ñ³ÏÝ»ñÇó Ëáōë³÷»Éáō ɳí³·áōŨÝ Ù»Ãá¹Á¨áñá±Ýù »Ý³Ů¹Ù»Ãá¹Ç³é³í»ÉáōÃláōÝÝ»ñÁ³ŒÙ»Ãá¹Ý»ñÇÝϳïٳٵ:
- 10. Ò»ñ | 3 ní Cùáí, ánù 3 Ýá±í »Ý å 3 Ñå 3 Ý3 | Ý»nÁ 3 n 1 llánÝ3 í »ï ë »é 3 í 3 n 3 | Ý»nC 1»Ù:
- ƱÝã ϳ ñÍ ÇùÇ »ù å³ Ñ³ å³ Ý³ ÏÝ»ñÇ · ÝÇ Ù³ ëÇÝ: س ïã»ÉDZ »Ý ³ ñ¹láù ¹ñ³ Ýù, ³ ñÅ»±Ý ³ lÝ ¹ñ³ ÙÁ, áñ ï³ ÉÇë »ù ¹ñ³ Ýó ѳ Ù³ ñ:

- ì ër ³ Ñáō±Ù »ù å³ Ñå³ Ý³ ÏÝ»ñÇ áñ³ ÏÇÝ: ¸³ ϳ Ëí ³±ĺ ¿· Ý»Éáō ï »ÕÇó, ³ åñ³ Ýù³ ÝÇßÇó, ³ Œ · áñĺ áÝÝ»ñÇó:
- 11. jáðu Ó»½ Ëáó»ÉÇ Ñ³ Ù³ ñáð±Ù »ù ë»é³ í ³ ñ³ ÏÝ»ñÇ Ñ³ ݹ»å:
- âå³ßï å³Ýí³ĺ ë»é³Ï³Ýѳñ³µ»ñáõÃláōÝÁÓ»½ ëï Çåáō±Ù¿Ï³ëϳĺ»É, áñ ¹áōù ϳñáÕ ½í³ñ³Ïí³ĺ ÉÇÝ»ù:
- 12. ƱÝā »ù ϳ ñÍ áôÙ, ï Õ³ Ù³ ñ¹ÇÏ ¨ ϳ ݳ lù ѳ í ³ ë³ ñ³ å »±ë »Ý Ëáó»ÉÇ ë»é³ í ³ ñ³ ÏÝ»ñÇ Ñ³ ݹ »å, û± áã, ¨ »Ã» áã, ³ å³ á±í ¿ ³ í »ÉÇ Ëáó»ÉÇ:
- 13. Ò»ñ ϳ ñÍ Cùáí, »±ñµ; ³ ÝÑñ³ Å»ßï ¹CÙ»É μÅßÏ C(í »Ý»ñ³ μ³ ÝC):
- ƱÝã ³ Ëï ³ Ýß³ ÝÝ»nÇ ¹»å ùáōÙ ¹áōù ÏÙï ³ ĺ»ù, án ϳ nÇù ϳ ¹ÇÙ»Éáō µÅßÏÇ:

# ì »ñ³µ»ñÙáõÝùÇÝ í »ñ³µ»ñí áÕ Ñ³ ñó»ñ

- 14. àñáß Ù³ñ¹ÇÏ Ï³ñÍáōÙ »Ý, áñ å³Ñå³Ý³Ï û·ï³·áñÍ»£Á å³ßïå³ÝáōÙ ¿ ë»é³í³ñ³ÏÝ»ñÇó ¨ÑŐÇáōÃlláōÝÇó, ÙlláōëÝ»ñÁ ϳñÍáōÙ »Ý, áñ ¹³ Ãáō£³óÝáōÙ ¿Ñ³×áōllùÁ: ÆÝāåÇëDZÝ ¿Ó»ñ ϳñÍ ÇùÁ ¨í»ñ³µ»ñÙáōÝùÁ ³llë Ù»Ãá¹Ç Ýϳï ٳٵ:
- 15. ƱÝā å³ï ׳éÝ»ñ ϳñáÕ »Ý ¹ñ¹»É ϳݳÝó ¹³éݳÉ Ù³ñÙݳí³×³é: ƱÝāíï ³Ý·Ý»ñ ¿ å³ñáōݳÏáōÙ ³Û¹ Ù³ëݳ·Çï áōÃláōÝÁ, »Ã» ³Û¹åÇëÇù ϳÝ:

# 2ÚÉ Ñ³ ñó»ñ

- 16. Ò»ñ ϳñÍÇùáí, á±í å»ï ù ¿ áñáßáō٠ϳឿ³óÝÇ å³Ñå³Ý³ÏÇ û·ï ³·áñÍÙ³Ý Ù³ëÇÝ ¨ ÇÝāáō±:
- àtí ¿Çñ³ ϳ ÝáōÙ áñáßáō٠ϳ Ĵ³ óÝáÕÁ:
- ĐÇÙݳ Ϊ³ ÝáδÙ á±í Ϊ³ ñáÕ ¿ ¹»Ù ÉÇÝ»É å³ Ñå³ Ý³ ΪÇ û· ï³· áñÍ Ù³ ÝÁ ¨ DZÝã ÷³ ëï³ ñĨ Ý»ñ ϳ ñáÕ »Ý μ»ñí »É:
- 17. ĐÇÙݳ ϳ ÝáōÙ áí ù»±ñ »Ý û· ï í áōÙ Ù³ ñÙݳ í³ x³ éÝ»ñÇ Í³ é³ láōÃláōÝÝ»ñÇó: ƱÝā ϳ ñ· Ç ï Õ³ Ù³ ñ¹ÇÏ »Ý ³ í »ÉÇ Ñ³ x³ Ë ¹ÇÙáōÙ Ù³ ñÙݳ í³ x³ é ϳ ݳ Ýó (ѳ ë³ ñ³ ϳ ϳ ݹÇñùÁ, ï ³ ñÇùÁ, ÏñÃáōÃláōÝÁ, ³ ñï ³ ùÇÝÁ, Ù³ ëݳ· Çï áōÃláōÝÁ):
- 18. 2 leán Đ³ l³ eï ³ Ýáoù ß³ ï Ù³ ñ¹ ÇÏ Ñ³ ½Çí »Ý Í³ lnÁ ͳ lnÇÝ Ñ³ eó Ýáoù: Æ Ýāù³ Ýá±í ¿Ó» n »Ï³ Ùáoï Á μ³ í³ n³ náoù Ó» n ͳ Ëe» nÁ Ñá. ³ Éáo ѳ Ù³ n:
- 19. ¸áōù ٻݳ±Ï »ù ï ÝûñÇÝáōÙ Ó»ñ »Ï³ Ùáōï Á:°Ã» áā, ³å³ Ó»ñ »Ï³ Ùï Ç á±ñ Ù³ ëÝ »Ý ï ÝûñÇÝáōÙ ³ Œ Ù³ ñ¹ÇÏ: à±í ù»ñ »Ý Ýñ³ Ýù:
- 20. ÆÝāå»±ë »ù å³ï Ï»ñ³ óÝáō٠ǹ»³ ɳϳ ݳ ß˳ï ³ Ýù³ ĴÇÝ å³ ĴÙ³ ÝÝ»ñÁ (ýÇݳ Ýë³Ï³ Ý, ³ å³ Ñáí áōÃĺáōÝÁ, ³ ĴÉ):
- ƱÝã·áníáÝÝ»n »Ý ³ ÝÑn³ Å»ßï ÝÙ³ Ý ³ ß˳ï ³ Ýù³ ĴÇÝ å³ ĴÙ³ ÝÝ»n ÑÇÙÝ»£áō ѳ Ù³ ñ:

#### ²Ù÷á÷áõÙ

21. ° í ñáå³ Ï³Ý áñáß »ñÏ ñÝ»ñ ûñÇݳ ϳݳóñ»É »Ý Ù³ ñÙݳ í³ ×³ éáōÃláōÝÁ, ³ lÝï »Õ Ù³ ñÙݳ í³ ×³ é ϳݳ lù ³ ß˳ ï áōÙ »Ý ѳ ë³ ñ³ ϳ ó ï Ý»ñáōÙ, ÇÝāÁ Ýñ³ Ýó å³ ßï å³ ÝáōÙ ¿ µéÝáōÃláōÝÇó, ³ å³ Ñáí áōÙ ¿ µáōÅáōÙÁ, ¨ ϳ ݳ lù ϳ ñáÕ »Ý å³ Ñ³ Ýç»É, áñå »ë½Ç ѳ ׳ Ëáñ¹Á å³ Ñå³ Ý³ Ï û· ï ³· áñÍ Ç: ÆÝã »ù ϳ ñÍ áōÙ, ϳ ñá±Õ ¿ ÝÙ³ Ý µ³ Ý ³ ñí »É Đ³ l³ ëï ³ ÝáōÙ: ÆÝāáō±: ´³ ó³ ï ñ»ù:

 $\hat{I}^3 \pm \hat{I}^3 \hat{I}^1 \hat{I}$  lá  $\hat{I}^3 \hat{I}^3 \hat{$ 

#### 2í³ñï

ÞÝáñѳϳÉáōÃláōÝ Ñ³ lì Ý»ù ѳ ñóí áÕÇÝ Çñ»Ý Ù³ ëݳÏóáōÃl³ Ý Ñ³ Ù³ ñ ¨ï »Õ»Ï³ó»ù, û áōÝC³ lĚ Ñ³ ñó»ñ:

# Đ³í»Éí³Í4

# î Õ³ Ù³ ñ¹Ï³ Ýó Ñ»ï ýáÏáõë ËÙµÇ áõÕ»óáõÛó

#### Ü»ñ³ Í áõÃláõÝ

**Đ³ ñó ÝáÕÇ Ñ³ Ù³ ñ**. ÙÇ Ï³ ñ¹³ ó»ù μ³ ñÓñ³ Ó³ ÛÝ ß»Õ· ñ³ Í Ý»ñÁ

- □ CÙ³ í áñ»ù Ù³ ëݳ Ï CóÝ»ñCÝ
- □ Ì ³ Ýáó óñ»ù Ýñ³ Ýó ѳ Ù³ Ó³ Ŋ⁄³. ñC Ñ»ï
- □ Ü»ñϳÛ³óñ»ù √áÏáõë ËáõÙuÁ í ³ ñáÕCÝ. ÝßáõÙÝ»ñ ³ ÝáÕÝ»ñCÝ
- □ Êݹñ»ù Ù³ ëݳ ÏÇóÝ»ñÇÝ, áñ Ý»ñϳÛ³ ݳ Ý
- □ Êݹñ»ù ³ Ïï Çí Ù³ ëݳ ÏóáõÃĴáōÝ Ëáë³ ÏóáõÃĴ³ ÝÁ
- ロ ´³ó³ï ñ»ù, áñ Ù»½ ѳÙ³ñ ×Çĺï ¨ë˳Éå³ï ³ë˳ÝÝ»ñ āï³Ý, ¨µáÉáñÇï³ñÍÇùÁ ѳí³ë³ñ³å»ë ³ñÅ»ù³íáñ¿

#### ܳËݳϳÝѳñó»ñ

$$\begin{split} \hat{\mathsf{E}} &\tilde{\mathsf{a}} \tilde{\mathsf{N}} \tilde{\mathsf{n}}^{13} \hat{\mathsf{U}} \hat{\mathsf{Y}} \not \otimes \hat{\mathsf{Q}} \hat{\mathsf{A}} \tilde{\mathsf{N}}^3 \, \hat{\mathsf{Y}} \, \div \hat{\mathsf{E}} &\tilde{\mathsf{a}} \tilde{\mathsf{N}} \hat{\mathsf{U}}^3 \, \hat{\mathsf{Y}} \, \tilde{\mathsf{N}} \tilde{\mathsf{N}}^3 \, \hat{\mathsf{Y}} \, \tilde{\mathsf{U}}^3 \, \hat{\mathsf{Y}} \, \hat{\mathsf{U}}^3 \, \hat{\mathsf{U}}^3 \, \hat{\mathsf{Y}} \, \hat{\mathsf{U}}^3 \, \hat{\mathsf{U}}^3$$

- 1. ƱÝã »ù ϳ ñÍ áōÙ, Ù»ñ ѳ ë³ ñ³ Ï áōÃlláōÝÁ ÷áËí »É¿³ ñ¹lláù ë»é³ ϳ Ýí³ ñù³·ÍÇ ÇÙ³ ëï áí:
- 2. سñÙݳí³×³éáōÃláōÝÁ ѳlì Ýǿ߳ï ÑÇÝ Å³Ù³Ý³ÏÝ»ñÇó,³lÝϳ³Ù»Ýáōñ: ÆÝāåÇëDZÝ»ÝĐ³l³ëï³ÝáōÙ¹ñ³½³ñ¸³óÙ³ÝÙÇïáōÙÝ»ñÁí»ñçÇÝï³ñÇÝ»ñÇÝ(¨ ËáñÑñ¹³lÇÝï³ñÇÝ»ñÇ Ñ»ï ѳٻٳï³Í):
- 3. ÆÝãå ÇëDZÝ ¿ ѳ  $\|$  ѳ  $\|$  ѳ  $\|$  ä³ Ä³ Ï áõÃ $\|$ ³ Ý í »ñ³  $\mu$ ȖÙáōÝùÁ  $\|$ 3 ñÙݳ í ³ ׳ éáõÃ $\|$ 3 Ý Ñ³ ݹ»å:
- 4. ƱÝã ѳ ׳ ˳ ϳ ÝáõÃĺ³ Ù $\mu$  »Ý ѳ Ĭ ï Õ³ Ù³ ñ¹ÇÏ ¹ÇÙáŏÙ Ù³ ñÙݳ í ³ ׳ éÝ»ñÇ Í³ é³ láõÃláōÝÝ»ñÇÝ ¨áñ å³ ñ³・³ Ý»ñáŏÙ:

# ØÇç³ÝÏÛ³Éѳñó»ñ

- 6. ƱÝã »ù Ï ³ ñÍ áōÙ, áñáÝù »Ý ÑÇÙݳ Ï ³ Ý å ³ ï  $\times$ ³ éÝ»ñÁ, áñ ¹ñ¹áoÙ »Ý ï Õ³ Ù³ ñ¹Ï ³ Ýo ѳ ñ³ µ»ñáoÃláōÝÝ»ñÇ Ù»ç Ùï Ý»É Ù³ ñÙݳ í ³  $\times$ ³ éÝ»ñÇ Ñ»ï :

# ì³ñù³·ĺÇÝí»ñ³µ»ñíáÕѳñó»ñ

- 7. ì »ñçÇÝ ï ³ñÇÝ»ñÇÝ ë»é³ í ³ñ³ ÏÝ»ñÇ ï ³ñ³ [Ù³ Ý ³ëï Ç׳ ÝÁ · ñ³ í »É ¿ ѳ ë³ ñ³ ÏáōÃܳ Ý áōß³ ¹ñáōÃÜáōÝÁ: ƱÝā »ù ϳ ñÍáōÙ, ï Õ³ Ù³ ñ¹ÇÏ (ûñÇݳ Ï, Ó»ñ ÁÝÏ »ñÝ»ñÁ, ͳ ÝáÃÝ»ñÁ, ¹áōù ÇÝùÝ»ñ¹) Ñá· áō±Ù »Ý ë»é³ í³ ñ³ ÏÝ»ñÇó Ëáōë³ ÷ »Éáō Ù³ ëCÝ:
- 8. ĐÇÙݳ ϳ ÝáōÙ ÇÝā&ÇëDZÝ ¿ ѳ Û ï Õ³ Ù³ ñ¹ ϳ Ýó (ûñÇݳ Ï, Ó»ñ ÁÝÏ»ñÝ»ñÇ, ͳ ÝáÃÝ»ÑÇ, Ó»ñ) í³ ñù³· ÇÍÁ. û· ï í áōÙ »Ý ³ ñ¹láù å³ Ñå³ Ý³ ÏÇó láōñ³ ù³ Ýāláōñ ѳ ñ³ µ»ñáōÂl³ Ý

- ÁÝó óùáōÙ: àñá±Ýù »Ý å³Ñå³Ý³ÏÇó û·ïí»Éáō ¨ āû·ïí»Éáō å³ï׳éÝ»ñÁ: î³ñµ»ñíáō±Ù ¿³ñ¹láù å³Ñ³å³Ý³ÏÇ û·ï³·áñÍáōÙÁ Ùßï³Ï³Ý ½áō ÁÝÏ»ñáç (ÏÇÝ, ÁÝÏ»ñáōÑÇ)Ñ»ï Ù³ñÙݳí³×³éÝ»ňÇÑ»ï ѳٻٳï³Í:
- 9. Ò»ñ ϳñĺÇùáí, áñù³Ýá±í »Ý Ù³ñÙݳí³×³é ϳݳlù ѳÏí³ĺ å³Ñå³Ý³ÏÇó û·ïí»Éáō:
- 10. °Ýó¹ñí áỗ±Ù ¿ ³ ñ¹làù, áñ Ù³ ñÙݳ í ³  $\times$ ³ é ÏÇÝÁ ÇÝùÁ å»ï ù ¿ ³ å³ Ñáí Ç å³ Ñå³ Ý³ ÏÁ, û± ¹ñ³ Ù³ ëÇÝ å»ï ù ¿ Ñá. ³ ï Õ³ Ù³ ñ¹Á:
- 11. Ò»ñ T³ ñÍÇùáí, á±í å»ï ù ¿ áñáßáōÙ T³ ឿ³ óÝÇ å³ Ñå³ Ý³ ÏÇ û·ï ³· áñÍ Ù³ Ý Ù³ ëÇÝ ¨ CÝāáō±:
- àtí ; Çñ³ ϳ ÝáõÙ áñáßáõ٠ϳ ឿ³ óÝáÕÁ:
- ĐÇÙݳ ϳ ÝáōÙ á±í ϳ ñáÕ ¿ ¹»Ù ÉÇÝ»É å³ Ñå³ Ý³ ÏÇ û· ï³· áñÍ Ù³ ÝÁ ¨ DZÝā  $\div$ ³ ëï³ ñ Ï Ý»ñ ϳ ñáÕ »Ý  $\mu$ Ȗí »É:
- 12. °Ã» ë»é³ í ³ ñ³ Ϊ Ç Ϊ ³ ëÏ 3 Í 3 é³ ç³ Ý3 Ó»½ Ùáï , Ϊ ¹ÇÙ»±ù 3 ñ¹θáù μÅβΪ Ç (í »Ý»ñ³ μ³ ÝÇ):
- 13. àñù³ ±Ý ѳ ׳ Ë »Ý ï Õ³ Ù³ ñ¹ÇÏ (ûñÇݳ Ï, Ó»ñ ÁÝÏ »ñÝ»ñÁ, ͳ ÝáÃÝ»ñÁ, ¹áōù ÇÝùÝ»ñ¹) ¹ÇÙáōÙ í »Ý»ñ³ μ³ ÝÇ ¨ DZÝā Ýå³ ï ³ Ïáí (μáōÅáōÙ, ϳ Ý˳ ñ· »ÉáōÙ):

# Đ³ nó » n· Çï » ÉÇù Ý » nÇ í » n³ µ » nÛ³ É

- 14. Ò»ñ ϳñÍ Çùáí, á±ñÝ; ë»é³í³ñ³ÏÝ»ñÇó Ëáōë³÷»Éáō ɳí³·áōŨÝ Ù»Ãá¹Á¨áñá±Ýù »Ý³Ů¹Ù»Ãá¹Ç³é³í»ÉáōÃláōÝÝ»ñÁ³ŒÜ»Ãá¹Ý»ñÇ Ýϳï ٳٵ:
- 15. Ò»ñ ϳ ñÍ Çùáí, áñù³ Ýá±í »Ý å³ Ñå³ Ý³ ÏÝ»ñÁ ³ ñ¹láōݳ í »ï ë»é³ í ³ ñ³ ÏÝ»ñÇ ¹»Ù:
- ƱÝã Ï ³ ñÍ ÇùÇ »ù å ³ Ñ ³ å ³ Ý ³ Ï Ý » ñÇ · ÝÇ Ù ³ ëÇÝ: Ø ³ Ï ã » ÉDZ »Ý ³ ñ ¹ láù ¹ ñ ³ Ýù, ³ ñ Å » ±Ý ³ lÝ ¹ ñ ³ ÙÁ, áñ ï ³ ÉÇë »ù ¹ ñ ³ Ý ó Ñ ³ Ù ³ ñ:
- ì ër ³ Ñáō±Ù »ù å³ Ñå³ Ý³ ÏÝ»ñÇ áñ³ ÏÇÝ: ¸³ ϳ Ëí ³±ĺ ¿·Ý»Éáō ï »ÕÇó, ³ åñ³ Ýù³ ÝÇßÇó, ³ Œ · áñĺ áÝÝ»ñÇó:
- 16. áỗù Ó»½ Ëáó»ÉC ѳ Ù³ ñáỗ±Ù »ù ë»é³ í ³ ñ³ Ï Ý»ÃC ѳ ݹ»å:
- âå³ßï å³Ýí³Í ë»é³Ï³Ýѳñ³µ»ñáñÃláñÝÁÓ»½ëï Çåáñ±Ù¿Ï³ëϳÍ»É, áñ¹áñùϳñáÕ ¿í³ñ³Ïí³Í ÉÇÝ»ù:
- 17. DZÝā »ù ϳ ñÍ áoÙ, ï Õ³ Ù³ ñ¹ÇÏ ¨ ϳ ݳ lù ѳ í ³ ë³ ñ³ å »±ë »Ý Ëáó»ÉÇ ë»é³ í ³ ñ³ ÏÝ»ñÇ Ñ³ ݹ»å, û± áã, ¨ »Ã» áã, ³ å³ á±í ¿ ³ í »ÉÇ Ëáó»ÉÇ:
- 18. Ò»ñ Ϊ³ ñÍ Çùáí, »±ñμ; ³ ÝÑñ³ Å»βï ¹ÇÙ»É μÅβÏ Ç(í »Ý»ñ³ μ³ ÝÇ):
- ƱÝã ³ Ëï ³ Ýß³ ÝÝ»nÇ ¹»å ùáōÙ ¹áōù ÏÙï ³ ĺ»ù, án ϳ nÇù ϳ ¹ÇÙ»Éáō µÅßÏÇ:

# ì »ñ³µ»ñÙáõÝùÇÝ í »ñ³µ»ñí áÕ Ñ³ñó»ñ

- 19. àñáß Ù³ñ¹ÇÏ Ï³ñĺáōÙ »Ý, áñ å³Ñå³Ý³Ï û·ï³·áñĺ»ÉÁ å³ßïå³ÝáōÙ ¿ ë»é³í³ñ³ÏÝ»ñÇó ¨ÑŐÇáōÃlláōÝÇó, ÙlláōëÝ»ñÁ ϳñĺáōÙ »Ý, áñ ¹³ ÃáōɳóÝáōÙ ¿Ñ³×áōllùÁ: ÆÝāåÇëDZÝ ¿Ó»ñ ϳñĺÇùÁ ¨í»ñ³µ»ñÙáōÝùÁ ³lë Ù»Ãá¹Ç Ýϳï ٳٵ:
- 20. ƱÝā »ù Ï ³ ñÍ áōÙ, DZÝā å ³ ï ׳ éÝ»ñÇó ¹ñ¹í ³ ĺ »Ý Ï ³ Ý ³ lù áñáßáōÙ ½µ³ Õí »É Ù ³ ñÙÝ ³ í ³ × ³ éáōÂl³ Ùµ: ƱÝāÝ ¿ µÝáñáß ³ l¹ Ï ³ Ý ³ Ý ó:
- γ±Ý³ñ¹láù Ù³ñÙݳí³×³éϳݳÝóï³ñµ»ñïÇå»ñ(ûñÇݳÏ, ÷áŌáó³lÇÝ, ϳÝāáí),
   ï³ñµ»ñáñĀlláñÝÝ»ñ·Ý»ñÇ Ù»ç, ¨ï³ñµ»±ñ »ù·Ý³Ñ³ïáñÙï³ñµ»ñïÇåÇ
   Ù³ñÙݳí³×³éϳݳÝóÇóí³ñ³Ïí»Éáñ éÇëÏÁ:

²Ù÷á÷áõÙ

• ƱÝā »ù ϳñÍáōÙ, Ï Õ³Ù³ñ¹ÇÏ Ï· »ñ³¹³ë»Ý¹ÇÙ»É Ù³ñÙݳͳ׳éÝ»ñÇÝ Ñ³ë³ñ³Ï³ó Ï Ý»ñáōÙ, û³Œï »Õ»ñáōÙ:

Î ³ ± ³ ñ¹láù áñ¨¿ µ³ Ý, áñ Ù»Ýù ā»Ýù ùÝݳ ñÏ »É, µ³ lớ ¹áōù Ï áō½»Ý³ lÇù ³ ñï ³ ѳ lì »É Ó»ñ ï ³ ñí ÇùÁ ¹ñ³ Ù³ ëÇÝ:

#### 2í³ñï

ÞÝáñѳϳÉáōÃláōÝ Ñ³li Ý»ù Ù³ëݳÏÇóÝ»ñÇÝ Çñ»Ýó Ù³ëݳÏóáōñl³Ý ѳÙ³ñ ¨ï »Õ»Ï³ó»ù, û áōݻݳlÉ Ñ³ñó»ñ:

<sup>21. °</sup> í ñáå³ Ï³Ý áñáß »ñÏ ñÝ»ñ ûñÇݳ ϳݳóñ»É »Ý Ù³ ñÙݳ í³×³ éáōÃláōÝÁ, ³ lÝï »Õ Ù³ ñÙݳ í³×³ é ϳݳ lù ³ ß˳ ï áōÙ »Ý ѳ ë³ ñ³ ϳó ï Ý»ñáōÙ, ÇÝāÁ Ýñ³ Ýó å³ ßï å³ ÝáōÙ ¿ µéÝáōÃláōÝÇó, ³ å³ Ñáí áōÙ ¿ µáōÅáōÙÁ, ¨ ϳ ݳ lù ϳ ñáŌ »Ý å³ Ñ³ Ýç»É, áñå »ë½Ç ѳ ׳ Ëáñ¹Á å³ Ñå³ Ý³ Ï û· ï ³· áñÍ Ç: ƱÝā »ù ϳ ñÍ áōÙ, ϳ ñá±Õ ¿ ÝÙ³ Ý µ³ ݳ ñí »É Đ³ Ĵ³ ëï ³ ÝáōÙ: ÆÝāáō±: ´³ ó³ ï ñ»ù:

#### $\theta^3$ í» $\xi$ í $^3$ Í $^5$

# سëݳ·»ï ÇÑ»ï ѳñó³½ñáõlbÇáõÕ»óáõlb

#### Ü»ñ³ Í áõÃláõÝ

**Đ³ ñó ÝáÕÇ Ñ³ Ù³ ñ**. ÙÇ Ï³ ñ¹³ ó»ù μ³ ñÓñ³ Ó³ ÛÝ ß»Õ· ñ³ Í Ý»ñÁ

- □ Ü»ñϳÛ³ó»ù
- □ Ì ³ Ýáó óñ»ù ѳ ñóí áÕÇÝ Ñ³ Ù³ Ó³ ĺݳ · ñÇ Ñ»ï
- □ ÞÝáñѳϳ ÉáõÃĴáōÝ Ñ³ Ûï Ý»ù Ù³ ëÝ3ÏóCÝ Ñ³ Ù³ Ó3 ĴÝáōÃĴ³ Ý Ñ³ Ù³ ñ

#### ܳËݳϳÝѳñó»ñ

- 15. ÆÝāù³ ±Ý ų Ù³ ݳ Ï »ù ¹áōù ³ ß˳ ï áōÙ ³ Ûë ÑCí ³ ݹ³ ÝáóáōÙ:
- 16. Ü»ñϳláðÜë Ù³ñ¹ÇÏ áñù³±Ý ѳ׳Ë »Ý¹ÇÙáðÙí»Ý»ñ³μ³ÝǨDZÝã Ýå³ï³Ïáí (µáðÅáðÙ, ϳÝ˳ñ·»ÉáðÜ): ƱÝã ÙÇï áðÙÝ»ñ »Ý Ýϳï »ÉÇí»ñçÇÝï ³ñÇÝ»ñÇÝ (¨ËáñÑñ¹³lÇÝï³ñÇÝ»ñÇÑ»ï ѳٻٳï³Í):

# ØÇç³ÝÏÛ³Éѳñó»ñ

ÊáñÑn¹³ÚÇÝ ØÇáōÃÛ³Ý ÷Éáō½Ù³ÝÑ»ï ¨³Ýùáí ѳë³ñ³ÏáōÃÛ³ÝÙ»çí»ñç»ñë և÷áËáōÃláōÝÝ»ñ »Õ³Ý:

- 17. ƱÝã »ù ϳ ñÍ áōÙ, Ù»ñ ѳ ë³ ñ³ ÏáōÃláōÝÁ  $\div$ áËí »É  $\vcentcolon$  ³ ñ¹láù ë»é³ ϳ Ý í ³ ñù³ · Í Ç ÇÙ³ ëï áí :
- 18. ÆÝāå ÇëDZÝ ¿ Đ³ Ϳ϶ ër ϶ ÝáōÙ Ù϶ πÙÝ϶ í ϶ ×϶ éáōÃͿ϶ Ý ½϶ ñ ϶ ϭÙ϶ Ý ÙÇr áōÙÝ»πÁ í »πç ÇÝ r ϶ πÇÝ»πÇÝ (¨ ËáπÑπ¹϶ ͿÇÝ r ϶ πÇÝ»πÇ Ñ» i Ñ϶ Ù»ừ϶ r ϶ ĺ):

# ¶É˳íáñ ѳñó»ñ

- 19. ì »ñçÇÝ ï ³ñÇÝ»ñÇÝ ë»é³í³ñ³ÏÝ»ñÇ ï ³ñ³ÍÙ³Ý ³ëï Ç׳ÝÁ ·ñ³í»É ¿ ѳë³ñ³ÏáoÃl³Ý áōß³¹ñáoÃláōÝÁ: ƱÝã »ù ϳñÍáoÙ, ÇÝãù³Ýáí ¿ ÅáŌáíáōñ¹Á ï »Õl³Ï³Ü¹ ÑÇí³Ý¹áoÃláōÝÝ»ñÇó: Đá·áō±Ù »Ý ³ñ¹láù Ù³ñÙݳí³×³é ϳݳlù ë»é³í³ñ³ÏÝ»ñÇó Ëáōë³÷»Éáō Ù³ëÇÝ:
- 20. ĐÇÙݳ ϳ ÝáōÙ áñù³ Ýá $\pm$ í »Ý Ù³ ñÙݳ í³  $\times$ ³ é ϳ ݳ lù ѳ Ï í ³ Í å³ Ñå³ Ý³ ÏÇó û• Ï í »Éáō:
- î³ñμ»ñí áũ±Ù ¿³ñ¹làù å³Ñå³Ý³ÏÇ û·ï³·áñÍ áӣÙÁ ï³ñμ»ñ ïÇåÇ Ù³ñÙݳí³×³é ï³Ý³Ýô Ùáï:
- 21. Î ³ ñáÕ »ù ÝÏ ³ ñ³· ñ»É ³ ŊŶ ÑÇÙݳ Ï ³ Ý å³ ï ׳ éÝ»ñÁ, áñ Ù³ ñÙݳ í ³ ׳ é Ï ³ ݳ Ŋù ÙÇßï ā»Ý û· ï ³ · áñÍ áōÙ å ³ Ñå ³ ݳ Ï :
- 22. Ò»ñ ÷ánốçó »fý»fáí, Nçùý³ l³ Ýáōù ÇÝãåÇëDZÝ  $\dot{\zeta}$  N³ l ï Õ³ ù³ ñ¹ l³ Ýó (í³ ñù³ · ÇÍ Á. û ï í áōù »Ý ³ ñ¹ làù å³ Nå³ Ý³ lÇó láōñ³ ù³ Ýāláōñ N³ ñ³ µ»ñáōÃl³ Ý ÁÝó óùáoù:
- àñá±Ýù »Ý å³ Ñå³ Ý³ ÏÇó û· ï í »Éáõ ¨ ãû· ï í »Éáõ å³ ï ׳ éÝ»ñÁ:
- î³ñµ»ñíáō±Ù ¿³ñ¹láù å³Ñ³å³Ý³ÏÇ û·ï³·áñÍáōÙÁ Ùßï³Ï³Ý ½áō ÁÝÏ»ñáç (ÏÇÝ, ÁÝÏ»ñáōÑC)Ñ»ï Ù³ñÙݳí³×³éÝ»ñC Ñ»ï ѳٻٳï³Í:
- 23. Ò»ñ ϳ ñÍ Çùáí ,Çñ³ ϳ ÝáōÙ á±í ¿ áñáßáōÙ ϳ ឿ³ óÝáōÙ å³ Ñå³ Ý³ ÏÇ û· ï ³· áñÍ Ù³ Ý Ù³ ëÇÝ Ù³ ñÙݳ í ³ ׳ é Ï ÇÝ- ï Õ³ Ù³ ñ¹ ѳ ñ³  $\mu$ ȖáōÃláōÝÝ»ñáōÙ :

- ĐÇÙݳ ϳ ÝáōÙ á±í ϳ ñáÕ ¿ ¹»Ù ÉÇÝ»É å³ Ñå³ Ý³ ÏÇ û· ï³· áñÍ Ù³ ÝÁ ¨ DZÝā ÷³ ëï³ ñÏ Ý»ñ ϳ ñáÕ »Ý μ»ñí »É:
- 24. ĐÇÙݳ ϳ ÝáōÙ áí ù»±ñ »Ý û· ï í áōÙ Ù³ ñÙݳ í³ ×³ éÝ»ñÇ Í³ é³ láōÃláōÝÝ»ñÇó: ƱÝā ϳ ñ· Ç ï Õ³ Ù³ ñ¹ÇÏ »Ý ³ í »ÉÇ Ñ³ ׳ Ë ¹ÇÙáōÙ Ù³ ñÙݳ í³ ×³ é ϳ ݳ Ýó (ѳ ë³ ñ³ ϳ ϳ ݹÇñùÁ, ï ³ ñÇùÁ, ÏñÃáōÃláōÝÁ, ³ ñï ³ ùÇÝÁ, Ù³ ëݳ· Çï áōÃláōÝÁ):
- 25. ƱÝāÝ ¿ µÝáñáß Ù³ ñÙݳ í ³ ׳ é ϳ ݳ Ýơ: Î ³ ±Ý ³ ñ¹láù ³ l¹ ϳ ݳ Ýơ ï ³ ñµ»ñ ï Çå »ñ(ûñÇݳ Ï, ÷áỗáơ³ lÇÝ, ϳ Ýāáí), ï ³ ñµ»ñáōÃláōÝÝ»ñ · Ý»ñÇ Ù»ç, ë»é³ í ³ ñ³ ÏÝ»ñÇ ï ³ ñ³ [Ù³ Ý Ù»c :
- 26. àñù³  $\pm$ Ý Ñ³  $\times$ ³ Ë »Ý Ù³ ñÙݳ í ³  $\times$ ³ É Ï³ ݳ Îù ¹ÇÙáōÙ í »Ý»ñ³  $\mu$ ³ ÝÇ ¨ Ç $\pm$ Ýã Ýå³ Ï³ Ïáí ( $\mu$ áōÅáōÙ, ϳ Ý˳ ñ· »ÉáōÙ): Æ $\pm$ Ýãå ÇëÇÝ  $\pm$  Ï Õ³ Ù³ ñ¹-ÏÉÇ»ÝÏ Ç í ³ ñù³· ÇÍ Á ³ Îë ¹ »å ùáōÙ:
- 27. ì ër ³ Ñáō±Ù »ù å³ Ñå³ Ý³ ÏÝ»ñÇ áñ³ ÏÇÝ: ÆÝā· áñÍ áÝÝ»ñÇó ¿ ¹³ ϳ Ëí ³ ±Í Đ³ ܳ ër ³ ÝáōÙ (· Ý»Éáō ï »ÕÇó, ³ åñ³ Ýù³ ÝÇßÇó, ų ÙÏ Ï »ï Çó, ³ Œ): ƱÝā ϳ ñÍ ÇùÇ »ù å³ Ñ³ å³ Ý³ ÏÝ»ñÇ · ÝÇ Ù³ ëÇÝ: س ï ā»ÉDZ »Ý ³ ñ¹ Ûáù ¹ñ³ Ýù:

#### ²Ù÷á÷áõÙ

- 28. ° í ñáå³ Ï³Ý áñáß »ñÏ ñÝ»ñ ûñÇݳ ϳݳ óñ»É »Ý Ù³ ñÙݳ í³ ×³ éáōÃláōÝÁ, ³ lÝï »Õ Ù³ ñÙݳ í³ ×³ é ϳݳ lù ³ ß˳ ï áōÙ »Ý ѳ ë³ ñ³ ϳ ó ï Ý»ñáōÙ, ÇÝāÁ Ýñ³ Ýó å³ ßï å³ ÝáōÙ ¿ µéÝáōÃláōÝÇó, ³ å³ Ñáí áōÙ ¿ µáōÅáōÙÁ, ¨ ϳ ݳ lù ϳ ñáÕ »Ý å³ Ñ³ Ýç»É, áñå »ë½Ç ѳ ׳ Ëáñ¹Á å³ Ñå³ Ý³ Ï û· ï ³· áñÍ Ç: ƱÝā »ù ϳ ñÍ áōÙ, ϳ ñá±Õ ¿ ÝÙ³ Ý µ³ ݳ ñí »É Đ³ l³ ëï ³ ÝáōÙ: ÆÝāáō±: ´³ ó³ ï ñ»ù:
- ƱÝã »ù ϳ ñÍ áðÙ, ï Õ³ Ù³ ñ¹ÇÏ Ï· »ñ³ ¹³ ë»Ý ¹ÇÙ»É Ù³ ñÙݳ í ³ x³ éÝ»ñÇÝ Ñ³ ë³ ñ³ ϳ ó
  ï Ý»ñáðÙ, û ³ Œï »Õ»ñáðÙ:
- 29. ƱÝã ϳé³ç³ñÏ»ù ¹áõù ¾¼³µÝ³ÏãáõÃĴ³Ý ë»é³Ï³Ý ³éáÕçáõÃĴ³Ý µ³ñ»É³íÙ³Ý Ñ³Ù³ñ:
- ƱÝã ϳé³ç³ñÏ»ù Ù³ëݳíáñ³å»ë éÇëÏÇ ËÙµ»ñÇ Ñ³Ù³ñ, ûñÇݳÏ Ù³ñÙݳí³×³éÝ»ñǨï Õ³Ù³ñ¹-ÏÉÇ»Ýï Ý»ñÇ Ñ³Ù³ñ:
- ƱÝā »ù ϳñÍáōÙ å³Ñå³Ý³ÏÝ»ñÇ ³Ýí׳ñ  $\mu$ ³Å³ÝáōÙÁ Ïû·ÝÇ ³éáÕçáōÃឿ³Ý  $\mu$ ³ñ»É³í ٳݷáñÍáōÙ:

Î ³ ± ³ ñ 1 láù áñ "¿ μ³ Ý, áñ Ù»Ýù ã»Ýù ùÝݳ ñ Ï »É, μ³ lớ ¹áōù Táō½»Ý³ lÇù ³ ñ ï ³ ѳ lì »É Ó»ñ ï ³ ñ Í ÇùÁ ¹ ñ³ Ù³ ëÇÝ:

#### 2í³ñï

ÞÝáñѳϳÉáōÃláōÝ Ñ³li Ý»ù Ù³ëݳÏóÇÝ Çñ Ù³ëݳÏóáōñl³Ý ѳÙ³ñ ¨ï »Õ»Ï³ó»ù, û áōÝdzÍÉ Ñ³ ñó»ñ: