

Nutrition during pregnancy
A qualitative study
performed in Pailin Province, rural Cambodia

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September 2016

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Acknowledgements

What we saw and experienced during our stay in Cambodia while doing our fieldwork is hard to write down in words. It is even harder to describe what these experiences did to us, how we changed and how we grew. What we can say is that Cambodia is a country filled with many treasures for travelers and we highly recommend a visit. The women we met through the field study are people we would never have gotten in contact with had it not been for our contacts in Cambodia. We feel extremely privileged to have been welcomed into the homes of these women and how they shared some of their life experiences with us. We also got in contact with a Norwegian man living in Battambang, speaking the language, Khmer, and working for Tromsø Mine Victim Resource Center (TMC). He helped us with all the practical things on our trip. One week before we went out to do the field study we were able to experience the life at one of Battambang's hospitals. Dr Sophy was the doctor and surgeon showing us around that week and this was truly an experience of a lifetime. While doing the field study we had a personal driver who drove us safely from one village to the next. We thank Margit Steinholt, the interpreter Chandi Houy, our driver and the helper Sondre Røvik Kippenes. We also send our appreciations to our supervisor Heidi Fjeld. Without them we could not have been able to accomplish this.

Abstract

Background and aim

In Cambodia maternal health is one of the health issues following their complicated and tumultuous past. With our fieldwork we got the chance, through Tromsø Mine Victim Resource Centre (TMC) and Dr Margit Steinholt, to interview midwives and pregnant women in a rural area of Cambodia. Our study evolved to investigate nutrition during pregnancy, with the aim of surveying the participants' knowledge of nutrition during pregnancy and what their sources were for this knowledge. We also wanted to inquire if there was a difference between the pregnant women's knowledge and action, and if so, what factors could explain this discrepancy.

Material and methods

We conducted a qualitative study interviewing eleven participants; four midwives and seven pregnant women. We used an interpreter, translating between English and Khmer, the mother language in Cambodia. During the interviews we used both structured and semi-structured interview techniques. The interviews were recorded and later transcribed.

Results and conclusion

Our findings showed that the knowledge of nutrition during pregnancy amongst the midwives evolved around essential groups of food and the importance of eating from all these groups. For the pregnant women there was a greater variation in their knowledge, ranging from eating the same as before getting pregnant to having a focus on a varied nutrition and taking precautions. There was a wide range of sources for the pregnant women's knowledge other than the midwives. We discovered that there was a discrepancy between the pregnant women's knowledge and their application of it. The discrepancy we found showed to be dependent upon multiple factors, such as economy, availability, family hierarchy, time and cultural traditions, which seemed to play a role in adherence of nutritional advice.

Introduction

Nutrition is an important part of a healthy pregnancy, contributing to the overall well-being of the mother who undergoes many physiological alterations, and to ensure an adequate growth of the fetus (1). According to UpToDate the nutritional status of a woman should be evaluated prior to pregnancy and she should receive advice concerning recommended nutrition and supplements, what foods or other substances to restrain from, and food hygiene. How are these recommendations conveyed in resource-poor settings? This thesis explores nutritional pregnancy knowledge in a rural area of Cambodia. Cambodian women are known to give birth to babies with low birth weight (5, 31), and some studies (28, 29, 35) have reported that these women gain very little weight during pregnancy. Our aim has been to investigate some of the factors affecting these low weight patterns, and we have chosen to focus on nutrition. Through a qualitative study based on interviews with midwives and pregnant women¹ in the remote area of Pailin in the north west of Cambodia, we ask: What is the knowledge of nutrition during pregnancy amongst midwives and pregnant women? What are the sources of this knowledge? Is there a discrepancy between nutritional knowledge and practice? If so, which factors influence this discrepancy?

Motivation and inspiration

We are two medical students studying at the University of Oslo, Norway. At the time of the field study we had completed 3,5 years of medical school and at the time of writing this assignment we are about to start the 6th and final year of medical school. This assignment is part of our education, is mandatory and must be completed during the first part of the 6th year of study.

In the early days of this project, all we knew was that we both wanted to travel, see the world and experience another health system. We are both intrigued by the global south, other cultures and different mindsets. Our aim was to travel to Asia and we hoped to be able to work within the field of gynecology and obstetrics. Initially, we were in touch with a volunteer organization called Norwegian Association for Private

¹ Our participants were midwives and pregnant women, though about half of what we call “pregnant women” had recently given birth and were no longer pregnant, but to keep it more straightforwardly we chose the term “pregnant women” for both those recently given birth and the pregnant women.

Initiative in Cambodia (NAPIC), having their base situated about 20 kilometers south of Phnom Penh (16). Their main goals are to reduce maternal mortality rates and strengthen the possibilities for the poorest in the society, which was corresponding well to what we were looking for. Although they were positive to our contact, this cooperation did not work out in the end. Through our supervisor we got in touch with a new organization in Cambodia that she had recently worked with. The name of this organization was Tromsø Mine Victim Resource Centre (TMC) and our contact person was Margit Steinholt.

TMC is a research centre in traumatology cooperating with the institute of clinical medicine at the University of Tromsø (14). The objective of TMC is to develop and try out treatment methods and models for trauma system in poor countries. They are involved in international research in areas such as paramedic care of trauma patients, primary trauma surgery, post-traumatic rehabilitation, post-traumatic malaria and maternal death. They operate in Afghanistan, Cambodia, North Iraq, Vietnam and Iran. TMC started their involvement in Cambodia in 1996, then with Trauma Care Foundation (TCF) as their sister organization. Since TMC was closed in 2015, TCF now operates the assets created with TMC (17). Dr Steinholt is working as a gynaecologist at the hospital of Sandnessjøen in Norway. She became the leader of TMC around 2010 and has been working through TCF with the education of midwives in Cambodia several times.

This project through TMC, we soon found out, would take us further into the remote rural areas and away from the big cities, which was appealing to us. Now we had both a great project and an inspiring and motivating supervisor. We got in contact with Dr Steinholt and she agreed to help us conduct this study in one of their project areas in Cambodia.

On January the 10th 2015 we met up at a guesthouse in Battambang, a town northwest in Cambodia, a few hours bus ride from the Thai border. TMC has its headquarter in Battambang and it was therefore a natural place for us to have our base throughout our stay in Cambodia. All together we stayed in this area for about two weeks. While conducting the interviews we stayed at a hotel in Pailin city. The interviews with the midwives took place the first few days at the hospital in Pailin city. Later we were

driven around by our private driver, an employee of TCF, from village to village to meet the rest of the participants. All this time we were accompanied by a Norwegian man, Sondre Røvik Kippenes, working for TMC and speaking Khmer.

Before looking at the findings from the interviews we will give an introduction into Cambodia, its health system and the status of the maternal health in the country, as this is vital to understand the findings and discussions.

Cambodia

Cambodia is a constitutional monarchy (13). The country is situated in the Southeastern part of Asia, neighboring the countries Thailand, Vietnam and Laos. The population of Cambodia was in 2014 15,2 million people (19). The capital, Phnom Penh, is located in the southern part of the country. Cambodia is the home of the famous city Siem Reap. This city is known for its old, beautiful and mysterious-looking temples, the temples of Angkor Wat. These temples are what is left of the kingdom of Angkor, a kingdom that was at its greatest in the time period from the 9th century until the 13th century. Other important parts of the country are the river Mekong, twining its way through many of the Southeastern countries in Asia, and the lake Tonle Sap. Both the river Mekong and the lake Tonle Sap are important places for the population of Cambodia, being great sources of food, water and livelihood for the people.

96,4 percent of the population are Buddhists, 2,1 percent are Muslims and 1,3 percent are Christians. Cambodia is a poor agricultural nation with farming employing about 70 percent of the population. They grow mainly rice but also corn, sugar cane and bananas. Tourism is the next biggest source of income for the country. They also export timber and gum trees.

This country is poor. Some numbers will be presented in this paragraph so as to get a sense of how poor this nation is and especially was. These numbers and information are taken from the report on Cambodia made by UNDP (United Nations Development Programme) (19). GDP, gross domestic product, is a measurement of the market value of all final goods and services produced in a period (20). Per July 2013 the GDP per capita for Cambodia was 1036 US dollars. In 1992 the GDP per capita was 200

US dollars. The average growth of the GDP was 8,2% in the period of 2000-2010 and 7,4% from 2011-2013. In 2015 Cambodia had a HDI ranking of 143/188, making it country number 143 out of 188. HDI, human development index, takes into account, according to the report by UNDP, measurements like life expectancy at birth, educational achievements and providing decent living standards measured in Gross National Income (GNI) per capita.

Cambodia has a long and complicated history. Much of this complicated history dates back to as recent as the 1970's and 1990's. These next few paragraphs are meant only to briefly explain some parts of the country's history, especially the more recent history, because as it seems obvious to both of us after travelling to Cambodia, the country is still greatly scared by these events. Because of limited space these next paragraphs might have made a complex history too simplified and we apologize for this. This summary of Cambodia's history is based mostly on information from the encyclopedia Store norske leksikon(13).

As Cambodia is bordering Vietnam Cambodia was not surprisingly affected by the Vietnam War. This war took place from the middle of the 1950's to 1975 (15). When Khmer Rouge took over in 1975 Cambodia had been bombed by American planes and been invaded by South Vietnamese troops a few years in advance because of the active communist guerrilla that ravaged the country (13). This communist guerrilla consisted mainly of Cambodian communists, especially members of the Khmer Rouge. In the beginning this guerrilla got much support from the Vietnamese communist forces. Before 1975 the government in power had supported the USA and received support back. Then in 1975 this government was forced to resign and the Khmer Rouge with its communist ideology ceased the power.

In the most violent part of these unpeaceful times, in a time frame of about four years, from 1975 to 1979, 1/5 of the population died. During the Khmer Rouge's reign as much as about 600 000 people might have been executed, being defined as enemies or a threat to the Khmer Rouge. Most of the people who died in this period died of sickness, undernourishment and starvation. Many of those who died belonged to religious or ethnic minority groups. Another group that was greatly affected by the Khmer Rouge attacks was those defined as literary and educated. When Khmer Rouge

came to power in 1975 they demanded that all the people living in the cities were to move out into the rural areas and live as farmers. These farm camps turned out to be a complete disaster as the working pressure was extreme and many died of starvation as a result of this.

Khmer Rouge, with Pol Pot as its main leader, followed a communistic political line. This line was greatly influenced by Maoist ideology and was a reason for the Khmer Rouge party being anti-Vietnamese. After the fall of the Khmer Rouge regime with Pol Pot in the lead in 1979 the Khmer Rouge was still active being the main force behind an anti-Vietnamese resistance movement from 1982-1991. In 1989 Vietnam withdrew its troops from Cambodia and in 1991, with the help of the UN, Cambodia signed a peace treaty involving all together four parties, the Khmer Rouge being one of these. After a selection that was held in 1993 with the help from the UN, democratic governance came into place. It has since then been bumps in the road, on and off with different leaders, but maybe as peaceful a time as ever compared to the times before. In 2005 a division of the Khmer Rouge still had a powerful position in the Pailin region.

Pailin province²¹

Pailin is a province in the western part of Cambodia, surrounded by the province of Battambang. In 2008 the province had a population of 70 482. As the region was rich in valuable resources this area was quickly a real interests to the Khmer Rouge. Pailin was therefore one of the first cities to be invaded by the Khmer Rouge and the region's resources were used to fund great parts of the expenses the group had before and at the time of governing the country. After the fall of the Khmer Rouge regime many members of the group retreated to Pailin. Several former leaders were still living there till around the spring of 2006 when criminal charges were brought upon them by the Cambodian court. Pailin used to be a flourishing well-situated region because of its valuable resources such as gemstones and despite the land in the area not being suitable for farming. Pailin was known to be one of the most heavily mined areas in the world and has had great help from the UN trying to remove these. After the Khmer Rouge had been there and emptied the area for most of its resources the region has been more dependent on farming. When crops have failed the population

has been forced to go out into the woods to fetch food and this has resulted in many mine related accidents.



Map of Cambodia (12).

The health care system in Cambodia

Professional system³⁰

According to the health service delivery profile: 'The 1980's saw a period of reconstruction and rehabilitation of the health system following the Khmer Rouge regime, with a special effort on training a new generation of health professionals' (30: p.1). As late as in 1993 the government in power began to set up a proper health service infrastructure and with this created a Ministry of Health.

The Health Coverage Plan 1996, made by the Ministry of Health and World Health Organization, sets out the basis for the structure of the health system. The fundament of the health system of Cambodia, the public health service, is from this document

stated to consist of health centers and referral hospitals. There is also existence of private practitioners and tertiary services consisting of six national hospitals being located in the Phnom Penh area and being semi autonomous, meaning partly private. The service delivery profile states that ‘the private services must be licensed and registered with the Ministry of Health to operate, and in 2004 there were 2572 private practice facilities’ (18: p.4).

Private providers and international non-governmental organizations contribute to the running of the health service. In 2009 the health services were paid by the government (21,27%) and by private contributors (73,1%), the governmental money mainly coming from taxes and from external development partners. The funds from the private contributors went mostly to private medical services.

The use of traditional medicine practice is common in Cambodia and estimated by the Ministry of Health to be used by around 40-50% of the population. This medicine practice holds a strong position throughout the country but is markedly stronger in the rural areas. While the Khmer Rouge reigned during the 1970’s the western medicine was forbidden and can account for why the traditional medicine practice is still holding such a strong position.

In 2011 Cambodia had 18045 registered health workers, either being doctors, nurses or midwives. 91 of these 18045 were specialist doctors and 2300 were general doctors.

Popular and folk model

The process of giving birth is by the elderly in Cambodia called “Crossing the river” (*chlong tonlee*), as a metaphor; comparing it to the difficulty and danger it sometimes can be to cross the river, Tonle Sap (7).

The traditional medical beliefs in Cambodia build on a “cold and hot” classification of the body and foods, and the influence of external forces such as wind and air. This is an example of a humoral system, which is derived from the Ayurvedic traditions of medicine. Humoral medicine assumes that a person’s health and temperament is related to the shortfall or abundance of the so-called “humors”(8). The Cambodian

medical traditions believe that imbalance of hot and cold can result in illness (7). During pregnancy a woman is thought to be in a hot state, and therefore foods that are considered “hot”, like chilies, should be avoided, as it can contribute to her heat-imbalance, which can be harmful for the fetus (36). After birth, partly caused by the stressful process and loss of blood, the woman is seen to be in a cold state (7). The methods for the woman to regain her balance after giving birth is by consuming “hot foods” and hot beverages. A part of the woman’s way to regain humoral balance after birth is to “roast”, i.e. what is called *ang pleung* (and is often translated as to “roast on fire”). For *ang pleung*, a fire is lit underneath a woman’s bamboo bed, heating the bed (6). The woman should lie on the heated bed for three days or more (34). The roasting is thought to prevent coldness and the clotting of blood inside the uterus, as well as to contribute to a good general health. *Ang pleung* is still practiced, however less in urban areas according to “*Heat, Balance and Ghosts: postpartum in Cambodia*”(34).

Maternal and child health in Cambodia

Maternal and newborn health in Cambodia has been poor for a many years, putting it among the UNICEF’s “Countdown countries” – the countries that have the largest, about 95%, consumption of maternal- and newborn mortality of the world (5). Two of the leading causes of maternal death in Cambodia are haemorrhage and hypertension (table a). According to UNICEF’s report *Maternal, newborn and child survival –the 2015 report*, the maternal mortality ratio was 170 per 100 000 live births in 2013, with an average annual rate of reduction of 8,1% between 1990-2013(5). The high maternal mortality in Cambodia has since 2005 though been reduced (10), and it is no longer appraised as a “Countdown country”(5). The fall in mortality is due to Cambodia’s development the last couple of years (10). According to Liljestrand and Sambath (10) there has since the 1980’s been efforts for providing education and reducing illiteracy leading to increased knowledge amongst the population and health workers. Different medias for communication is now more accessible for the over all population, including those living in rural areas². There have also been investments for a better health system in Cambodia, like providing free health care for the poorest and training for midwives. In 2007 the Cambodian government initiated a venture, called “live-birth incentive”, which would reward the hospitals and health care centers

² The different communication medias might be more accessible in Cambodia as a hole, but not for everybody, as we will come back to in our results.

with respectively 10 US\$ and 15 US\$ whenever a living child was born. The “live-birth incentive” lead to an increase in the health workers motivation, as they want to ensure good maternal and birth health care (10).

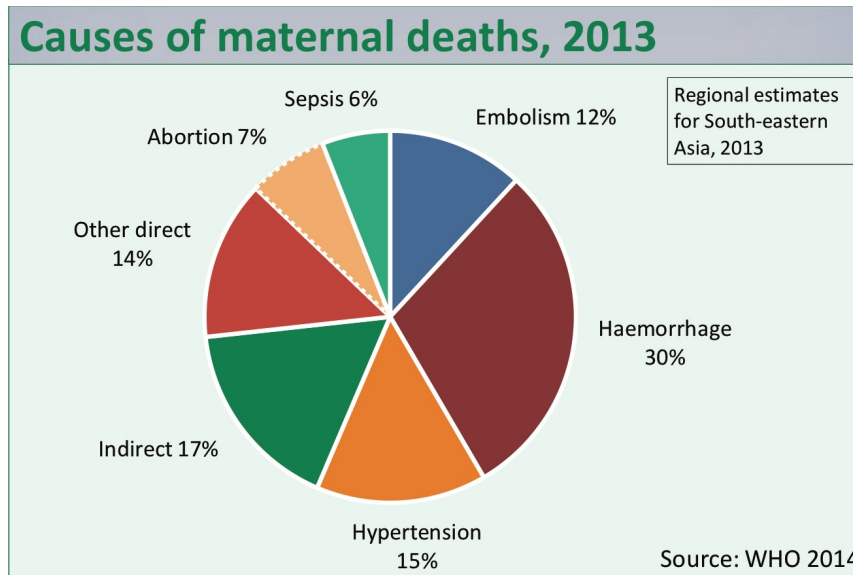


Table A: Causes of maternal deaths in Cambodia (5: p. 69).

Although the situation concerning maternal mortality has decreased, there are still improvements to be made, as there is a need for more skilled midwives and other health care workers working outside the facilities of the government, and there are issues concerning the effectiveness and financing of the Cambodian health system.

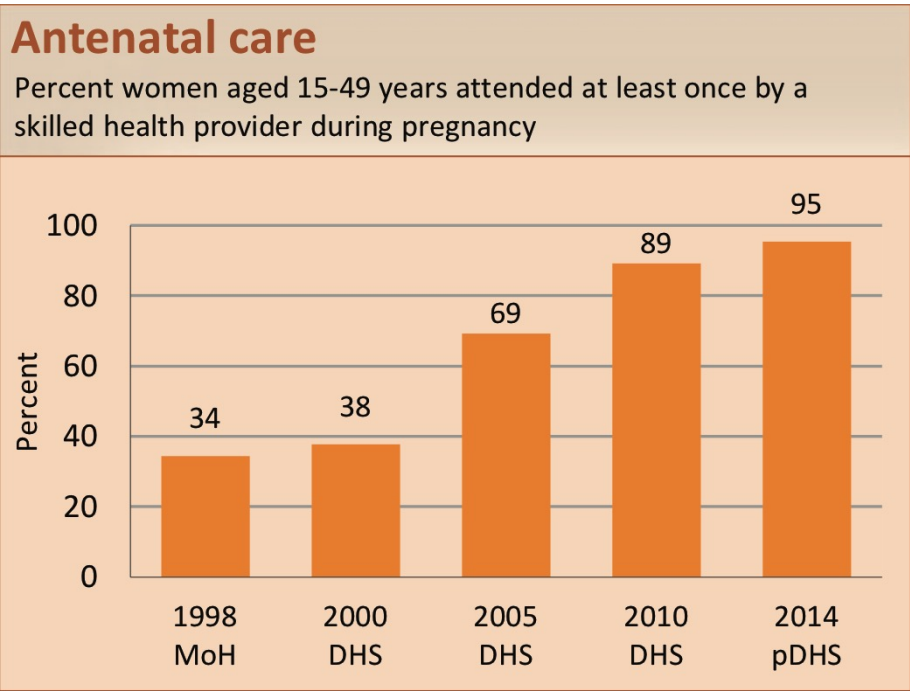


Table B: Attendance at antenatal care in Cambodia (5: p. 69).

MPA Module 10¹⁸

The minimum package of activities (MPA) Module 10, published in 2009, is the 10th edition of the MPA module that was first developed in 1998. It is a package of a facilitator manual, slides and notes, job aids, participant manual and a self-assessment tool, which is to work as a training curriculum for health centre workers in Cambodia. The curriculum is available both in English and Khmer, and is developed by the Cambodian governmental institution National Maternal and Child Health Center’s (NMCHC) program National Nutrition Program (NNP). ‘Module 10 is specific for nutrition and focuses on the 5 main nutrition interventions: infant and young child feeding, growth promotion and assessment, vitamin A, iron and iodine’ (18: p.10). The model is thought to reduce the mortality of mothers and children under five in Cambodia by increasing the knowledge about nutrition amongst health care workers, as this might leading to better mother and child health. MPA module 10 is a part of the ‘National Nutrition Strategy 2008-2015’ of Cambodia, which is developed to contribute in accomplishing some of Cambodia’s Millennium goals: ‘ To eradicate extreme poverty and hunger, reduce child mortality and improve maternal health...’(18: p. 10).

Antenatal care

The teaching and counseling of women, in family planning and when pregnant, as well as medical care during this time, is known as antenatal care (3). Antenatal care is essential for a healthy pregnancy. ‘Although there is little direct evidence, outcome data suggest that neonates born to mothers who do not receive antenatal care are three times more likely to be of low weight, and five times more likely to die, compared with neonates born to mothers who receive antenatal care’ (3: introduction). It is advised to attend antenatal care regularly and from an early onset in the pregnancy, with about 7 to 11 visits, but the overall follow-up is individually dependent on each woman’s health condition. The antenatal care should ideally consist of nutritional advice; what foods to eat and not, surveying the woman’s health condition in order to reduce the risk of complications by identifying risk factors and treat them at an early stage, general information about pregnancy and follow-ups of the woman and fetus health condition during the pregnancy. Through antenatal care the health care worker can support and follow the woman in the pregnancy, ensure good behavior and growth of the fetus, which is important for the health of both the woman and her child.

*Recommendations on nutrition during pregnancy*¹

As already mentioned the medical guideline UpToDate recommend that women get educated about nutrition during pregnancy and get her nutritional status evaluated in the planning of having a baby -prior to the consumption – as the woman’s health and weight before pregnancy is found to be of big relevance when it comes to pregnancy, postpartum complications and the later health of the baby. The women’s food resources should be addressed when surveying the women’s nutritional status. During pregnancy the mother should gain weight appropriately, as both excess nourishment and undernourishment can lead to complications in pregnancy and at birth. The mother should have a varied diet of low-fat dairy products, vegetables, fruits and protein distributed on three meals a day on a regular basis. Good food hygiene in the preparation of food, and the total temperance of alcohol and tobacco are also important parts of a healthy pregnancy. Some of the vital micronutrients³ to consume during pregnancy are: folic acid, iron and calcium. Folic acid is known to reduce the

³ Micronutrients are substances composed of vitamins and minerals, they are essential to the body in small amounts (24).

risk of neural tube defect in the fetus, and should be given to the women when trying to conceive – ideally one month prior to consumption- and during the first trimester. Whilst iron is essential for the increase of red blood cells and development of the placenta and fetus, Calcium is necessary for the development of the fetal skeleton. It is recommended that pregnant women should consume a minimum of 27 mg of iron, 250 mg calcium and 0,4 mg foliate a day. A woman who does not get this through her diet is advised to get this met by supplements.

With everything we now have gone through in the introduction it will be interesting to look at the findings from our investigation of how midwives in rural Pailin Province convey information about nutritional advice, and how the pregnant women in this region choose their nutrition.

Method

Development and design

The aim of this project was to learn more about nutritional knowledge in a remote rural area. We did a literature review and found that there were very few studies already done on the topic of nutrition and pregnancy in rural Cambodia (6, 9, 10, 34). Hence, we found an explorative design most beneficial for the study.

Literature review: In the research for relevant material we used databases such as McMaster PLUS, Pubmed, UptoDate and Popline. While working with the material we found that the issues addressed in this study were closely connected to cultural aspects, so we thought it to be beneficial to use not only health science related databases, but also databases from social sciences and particularly anthropology. For that reason we did additional database search using Anthropology Plus, Sociological Abstracts and IBSS. Our research gave us in general a limited amount of hits that was related to- and could be of use in our study. During the processing of the study we learned that research for literature is an ongoing process, and when we got to know the material and came across new fields of interest it led us to do iterated research. Some of the keywords we applied in our literature search were: nutrition, Cambodia and birth, with their synonyms. We aligned them together in keyword sentence, like:

- (Nutrition) AND (Cambodia) AND (pregnancy)
- (Nutrition OR eating OR food) AND (Cambodia OR Cambodian) AND (pregnancy OR birth OR mother)

At the early development of the study we did not know how many participants we would manage to recruit. We expected a small sample size because of restrictions concerning the dependence of an interpreter, a driver and the local midwives to initiate contact with the local women. Transportation was an issue we also had to take into consideration, as Pailin is a rural area in which the participants live far from each other. After communicating with Margit Steinholt, our contact in Battambang, we estimated an expected number to be 10 participants. For those reasons it was reasonable to assume that the final data collected would be limited.

An explorative design enabled us to investigate causes of high maternal death and low birth weight in Cambodia, such as: Traditional beliefs concerning nutrition during pregnancy, lack of healthcare education or information provided to pregnant women, but also poverty leading to an unhealthy and nutrition-less diet. Qualitative research is known to be beneficial for inquiring and understanding people's experiences, beliefs and attitudes (2), which was our aim with the project.

Data collection procedures

During January 2015, we interviewed four midwives and seven pregnant women. The interviews with the midwives took place in the hospital of Pailin province, while the interviews with the women were conducted in the small villages in Pailin province, where the pregnant women lived. Participation was voluntary and both midwives and pregnant women were recruited through Margit Steinholt in association with health clinics in Battambang. They were either working in the clinics as a midwife or attending pregnancy check-ups.

We used both structured and semi-structured interview techniques. We started off each interview with noting the participant's age, place of residence, education level, livelihood, number of children and number of antenatal check-ups during the current pregnancy. The midwives were in addition asked open questions about their work experience as a midwife. We did not use a fixed list of questions, but rather defined a couple of main questions to serve as a base at every interview (appendix, p. 56), such as: "What do you know about nutrition during pregnancy?", "Where did you get this information?", and "What do you eat during this pregnancy?". One of the questions we asked the midwives was: "What do you advice the pregnant woman to eat during pregnancy?". Our aim was to let the women speak freely at the interviews, therefore we tried to create ample questions. This enabled us to see a bigger picture, and we could later focus the questions more specifically on topics of particular interest. Our aim was to have open conversation-like interviews with the participants and later analyse the material for tendencies and patterns in the answers given by the midwives and the pregnant women, in terms of eating, perceptions of nutrition during pregnancy, and about sources of information concerning nutritional recommendations.

We do not speak Khmer, and the participants spoke poorly English, with very limited vocabulary. Some of the pregnant women were also illiterate. It was therefore necessary to work with an interpreter. In that way, the participants could speak in their mother language, Khmer, which, we assumed, would give us better communication and connection with the women. The interpreter we worked with, Chandi Houy, is a midwife working as a Delivery Life Support Program (DLS) Coordinator at the Trauma Care Foundation (TCF) in the Battambang region. She is a part of the TCF team, working on enhancing the antenatal care applied by the midwives in the Battambang region by giving them additional education. All the midwives interviewed knew her personally, and some of the pregnant women had met her before through the antenatal check-ups. She has served as an interpreter for the Norwegian team from the TMC on many occasions earlier, and therefore had some experience. However, her role in the TCF and her relation to the interviewees created some challenges for the project (see ‘Reflections on methods’ below).

When we did the interviews we took notes and used a tape recorder. The participants gave verbal consent on tape prior to the onset of the interviews. After arriving back in Norway we transcribed the interviews. We divided the eleven interviews between the two of us and did the transcription separate from each other.⁴

In processing the transcripts we used coding (31) as a way to make it easier to evaluate the material and see trends among the participants.

The codes were arranged into three categories:

1. Content of knowledge

Codes: Food groups, food supplements, food hygiene, change of habit (time/amount), old traditions, avoidance, antenatal care, other nutritional knowledge.

⁴ There was a discussion on the benefit of using an external interpreter for the transcription in order to check how the interpreter conveyed the questions, which, we believe, would have been useful in the examination of the validity and confounding factors of the interviews. However, we found this to be too time-consuming for the frames of this project, hence the transcription was done using only the English communication between the interpreter and interviewers.

2. Source of nutritional knowledge

Codes: Close relations (Parents, siblings), community (old people, neighbours), health worker (traditional birth attendants, midwives and other educated health professionals), Multimedia (TV/radio).

3. Factors found to make discrepancy between knowledge and action

Codes: Economy, availability, time, socio-cultural aspects (old traditions, family hierarchy).

Reflections on methods

As this is the first time we are doing any kind of fieldwork it is safe to say that we are amateurs and inexperienced in this area. We had to learn from scratch how to search for relevant literature, how to ask and formulate questions, as well as the processes of transcription and coding. Beforehand we had little background information and prior to the interviews we did scarce reading on our subject. Neither did we have a defined issue to investigate. This made us rather unprepared in the interview settings.

Communication and language problems

The interview settings were complicated by the role of the interpreter. An interpreter should ideally be an outsider (33), with no connection to the study or participants. Moreover, the interpreter should ideally do verbatim translation between the interviewers and participants. However, our interpreter's relation to the participants, being a work colleague to the midwives and a known educator to some of the pregnant women, will most likely have had an effect on how the participants answered and verbalized their experiences. The midwives were working in association with TCF and received additional education, also on nutrition during pregnancy, from them, partly also from our interpreter. Because she was the midwife-coordinator for TCF and was a very experienced midwife, the interpreter also had some leadership position to them. Talking through her might have made them feel pressure, worrying that they could not remember everything they had been taught, or appear as they lacked knowledge on the issue.

Throughout the interviews the communication between the interpreter and interviewees were not a direct translation of the questions and answers. Rather, the interpreter and the women engaged in conversations, sometimes talking for several

minutes in Khmer. We noticed that the answers the interpreter gave back to us often consisted of two to three sentences only, obviously not corresponding to the length of the women's answers in Khmer. There is no doubt that the use of an external interpreter would have been preferable, and that translating the tapes with a second interpreter could give us information about what the women were saying – perhaps giving us additional information or unveil if the interpreter made some adjustments to what the women actually were saying. There is a possibility that the interpreter influenced the answers from the women by contributing with some of her own knowledge, as she was a more experienced midwife and worked as an educator of midwives.

Though the interpreter spoke good English, she did not have a diverse vocabulary, thus she occasionally used Khmer words to describe particular types of food, which made it difficult for us to get detailed information of all the different kinds of food mentioned. We could also have misunderstood statements that we later have not been able to invalidate or verify. Since four of the interviews were done outside in the village where there was a lot of noise from passing cars and other persons sitting close by chatting, it was sometimes hard to hear what the interpreter was saying, making it difficult to get all the sentences right when we were transcribing. Therefore some information may have gotten lost not only in translation, but also in transcription.

Our material is based on the conversations with the women and midwives. Because Khmer was the main language for both the participants and the interpreter, our lack of Khmer competence was a major challenge. We have in the process of this fieldwork found that language and communication problems might in fact be the biggest weaknesses of this study. As some of the women were illiterate, including the cultural differences, it could be that they learn and understand in another way than us, also making them express themselves in different ways. This could have made us misinterpret things they were saying. There were many occasions during the interviews where we experienced that our questions were misunderstood. When it became clear that they did not answer our questions, we tried to repeat them, phrasing the questions in different ways. However, sometimes we had to give up and carry on to the next question. While transcribing we felt that our questions were a bit closed, or sometimes leading, and that while trying to make ourselves understood we might have

“put words into the mouth” of the participants in the way we were asking the questions. This is surely a result of fieldwork being new to us, but could also have evolved during the interviews because we felt that our questions were not being answered and we felt misunderstood. We have learned that it is important to ask more open questions and avoid asking leading questions.

Interference of other people

When we conducted the interviews other people were sometimes sitting close by, at times in the same room. These people were mostly friends of the women, a husband or the women’s children, but there were also occasions when other participants in the study were sitting in close distance from where we were having the conversations. The presence of these people while we were interviewing, especially other participants, was something that we discussed as a factor that could influence the answers of our participants, and as a result reduce the trustworthiness of our material. When we interviewed the midwives at the health care centers and there were other midwives sitting in the same room, we asked for them to go outside, which they did. However, in the villages we did not feel like we could ask all the women’s friends and family to go somewhere else, as we were visiting their homes and we felt that we had asked them a lot already in participating in our study. On one occasion the midwife who had educated the woman we were to interview about nutrition during pregnancy was present, and thus her presence, since she personally had educated the woman, could make the woman feel stressed, we kindly asked her to leave the room. We believe that there would be a higher risk of influence on the participants with a midwife being present at an interview with a woman, than another woman being present for that same interview, though it would surely be better to do the interviews in an isolated setting.

Balance of power

Due to the fact that we are medical students, from a well-developed country, the women might have felt inferior to, or even threatened by us, which could have made them adjust their answers, maybe putting it the way they thought we wanted it to be because they wanted to appear well-informed. During the interviews the women seemed a bit nervous, they giggled a lot and excused themselves by saying they did not remember what they have been taught. Whilst the midwives were interviewed in

the health clinics and had to travel to participate in the interviews, which could have increased their experience of being inferior to us, the interviews with the women were done in their environment; in their homes or in meeting points in their village, that could have been a positive thing, maybe reducing the power-imbalance between us and making them a bit more relaxed. We also think that because of us being the same gender as all the participants, as well as the topic of this field study being about pregnancy, this increased our ability to get connect with them.

Our sample

The sample size is small, and the interviews were only done with women in connection to the antenatal care in relation to TCF's health clinics. Our study can therefore only account for this specific sample, and it does not represent Pailin Province in general. The study was also done over a short period of time, two weeks in January. A bigger sample would have given more comprehensive information, however, this was not possible in the situation. We hope that more studies are done in this field, also with larger sample size and with rural women who are not enrolled in the antenatal care programme, and with independent translation, enabling stronger validity, such as trustworthiness and transferability (32).

Findings and discussion

The participants

The midwives: For anonymity reasons we do not list up the midwives individually, rather we tell about them here as a group. Their age ranged from 30 to 41 years of age. They all reside in Pailin province but none of them are born and raised there. From the answers in the interview it is not possible to say for sure if any of them were born and raised in an urban area like a bigger village, town or city, or if they were raised rurally.

The first midwife has had three years of nursing school and one year of midwifery school. She has no official training or courses covering the topic of nutrition during pregnancy and has a five-year long working experience. The second midwife has had one year of nursing school and one year of midwifery school. Currently she is completing a three-year midwifery study. She has attended courses by the Ministry of Health covering the topic of nutrition during pregnancy. She has worked as a midwife for 14 years and started her career without any higher education. The third midwife has had two years of midwifery school and received additional training in nutrition during pregnancy by non-governmental organizations and the government. She has worked at the hospital for 15 years. The fourth midwife has completed four years of midwifery school and had several courses covering the topic of nutrition during pregnancy. All together she has worked 18-19 years. The length of the working experience of these women is counted up to the time of interviews, in January 2015.

The seven remaining participants, women being pregnant or having very recently been pregnant:

	Age	Education (general education)	Occupation	Number of children	Length of current pregnancy
1	25	8 th grade	Home with children	3	Given birth
2	24	None	Home with children	2	Given birth
3	26	None	Did not get a clear answer	5	Given birth
4	23	9 th grade	Shop manager/worker	1	4 months
5	27	5 th grade	Home with child, animals. Grows rice.	1	7 months
6	29	3 rd grade	Home with child	1	8 months
7	33	None	Home with child	1	9 months

From the table above it can be seen that the seven participants are either women being pregnant or having recently been pregnant at the time of the interview. At the time of recruiting these women they were all pregnant. As a simplification these women are referred to as the pregnant women through out this paper.

These women were asked directly about what they did for a living. As seen by the table above most of these women answered that they were home with the children. These women all lived rurally, in a farming area. It is therefore a strong possibility that these women might have done more than just watch after their children. It seems likely that some parts of the day were being spent working on their land and fetching water.

The first and second woman went to the midwife for pregnancy check ups five times during their last pregnancy. The third woman went only once and having been through four other pregnancies before this was actually her first and only pregnancy check up ever. The last four women were in different stages of pregnancy. The fourth and fifth woman had both went about every month during this pregnancy. The sixth woman being eight months pregnant had been to check ups three times. The seventh woman being at term had only had one check up.

Further on in the findings we have made an active choice of not completely separating the midwives and pregnant women into two different groups. Not completely separating them means that we most of the time, but not always, have labeled the information as to come from either a midwife or a pregnant woman where we have found this necessary to do. It would seem like the best choice would be to separate them as to more easily be able to compare them and especially look at the differences between the two groups. Our choice of not completely separating them was made based on our findings and problem in question as we are not looking at what the concrete differences between the two groups (midwives and pregnant women) are, rather, we are seeing a difference and then using this knowledge to drive our project and thought process further on.

Content of knowledge

This category covers the actual knowledge of nutrition during pregnancy that the participants revealed during the interviews. Several questions and different angles were employed to get an understanding of the knowledge they had.

Food groups

We were introduced to the term «three groups of food» while interviewing the midwives. This was a topic mentioned in all the midwives' interviews. These three groups included energy food, body building food and protection food. One midwife said:

«So the protection food, like vegetable, like fruit that they cook and meat, and explain each of these food groups to them, and during pregnancy they should eat all these kind of food groups, and if it have contain in all these three kind of food groups. So like energy food, that have contain in rice, in bread, honey, in the sugarcane, this is energy food. And also the bodybuilding food, like in all kind of meat and fish, that is bodybuilding food.» (When eating they should include all the different food groups: Protection food like vegetable and fruit, energy food like rice, bread, honey and sugarcane, and bodybuilding food like meat and fish.).

It was also mentioned by all the midwives that it was important that the pregnant women got to eat all these three food groups, that these food groups were good together and not on their own.

Several of the participants, both midwives and pregnant women, gave examples of each food group like the phrase above. Only two of the seven pregnant women spoke of the three food groups and one of those two only remembered two of the three groups.

There was talk of a porridge that was very popular and taught to many of the pregnant women because this was very nutritious, the ingredients were available to many and it contained all the three food groups. Both the midwives and the pregnant women mentioned this porridge. The last midwife we interviewed told us about a national nutrition model developed by the ministry of health, the MPA module 10. The porridge was even told by this midwife to be included in the MPA. The MPA will be described more in the next heading, under nutritional supplement, and has been written about in more detail as part of the introduction.

We asked some of the midwives and pregnant women to try to explain why the advice or knowledge was good or try to explain why they should do things differently while being pregnant. This, being answered by a midwife, was a typical answer: *«I explain why they need to eat all these kind of food, it will help the body of the mother healthy and also help the baby grow well also in the womb.»* This explanation was given almost every time we asked the participants to give details of why they should eat the way they did during pregnancy and why they avoided some kinds of food.

Nutritional supplement

We asked the participants directly about nutritional supplements like vitamins and minerals. It was never brought up spontaneously by any of them.

When asked, all the midwives spoke of iron tablets, which were accordingly given for free to all pregnant women attending antenatal check-up. Multivitamins were only brought up once. When it was asked about multivitamins we got answers like: *«And*

sometime we check that the mother is a little bit pale, anemia, we give multivitamins for them.”

When the last midwife talked about the MPA she mentioned many of the topics it covered, sometimes referring to the MPA as «the book». She said the manual includes information about what food the pregnant women should eat and how they should prepare it. It also was to contain instructions on breastfeeding and on what the baby should eat up till the age of six months. The importance of breastfeeding, she said, was also discussed in the book.

While talking about the MPA the midwife spoke of iron tablets. *“And also iron tablets they call red rose, I talk about the iron tablets that is provided to all women in reproductive age, that they should take these tablets to increase their red blood cells.”* She also said: *«And also during that they also educate to give 90 tablets of iron to the pregnancy mother before delivery and after delivery they give 40 tablets more.»*

Two of the midwives came with examples of how to incorporate vitamin A into the woman’s diet, this first one being told by the last midwife when she talked about the MPA.

«In the books also mentioned about how to cook food that is nutritious for the pregnancy mother, and they should add some oil, cooking oil, into the soup also so that this food can be good absorbed with vitamin A.»

«..., and also the yellow vegetable like papaya, pumpkin and carrots. This is important for their health and for their eyes. In the village we do not have carrots, we can use pumpkin and papaya instead of carrots. Pumpkin can replace carrot also, it is yellow color is the same.»

Some of the pregnant women told they were given iron tablets and had taken these. One pregnant woman had to be told by the interpreter that she most likely had received such tablets and only then could the woman maybe remember to have received such.

Hygiene

The knowledge of food hygiene was told spontaneously by all participants mentioning this topic. Advice or knowledge uncovered here was how one should wash hands, how especially vegetables should be washed properly, how it was important to keep the food well covered after being made if the food was to be eaten at a later time.

When asked about what was taught before the MPA existed the last midwife said that hygiene was one of the main things she focused on when educating pregnant women on eating habits while being pregnant.

It was also mentioned that food that easily got bad was something women should stay away from. One pregnant woman said: *«And her mother told not to eat the morning rice.»* We asked why and got the answer: *«Because we do rice that left over from evening and in the morning we can eat. But normal people can eat, for pregnant woman not to eat.»* Another woman put it in a more general way saying: *«... not to eat the long time food, cook long time. Its spoil and also it make stomachache or diarrhea.»*

The forth-pregnant woman brought up the subject of some food being fertilized, especially vegetable and fruit. Her solution to this was to buy and get her vegetables and meat from local sources as it was thought that locally it was used fewer chemicals.

Frequency and amount

The participants were talking about the change of frequency of meals per day and the amount of food eaten at each meal.

The midwives spoke of this without us pushing them in that direction. One midwife said:

«These first three months they have really severe morning sickness, a lot of vomit. They should eat small amount but frequently. After that they stop have vomiting, from four months and until delivery, they can still eat that way good amount, not a lot because it will bother their stomach because they have the baby and feel not comfortable if they eat a lot. So they should eat small

amount that they can feel happy and feel no problem, so small amount but five times per days, like this. So first stop frequently, after vomiting eat again 20 minutes.»

The pregnant women were most of the time asked by us directly and then usually in situations when the women seemed to not remember so much and this question was meant to trigger them. Some of the pregnant women told us they ate more frequently and knew they needed more now that they were pregnant. They would phrase it like: «*Before she ate only two time, two meals a day and now she increase to three times.*» Others said they ate exactly the same now as before getting pregnant or they said they ate less amounts as they got full more easily while pregnant.

Avoidance

Through the interviews there were made several suggestions as to what a pregnant woman cannot eat and should not do. Some of the examples of avoidance stood out as they were repeated by more than one participant and by both groups. Fermented fish, in Khmer «*prâhâpkâ*», came up in the interviews with both the midwives and the pregnant women as something to avoid. Staying away from wine, beer and smoking was also brought up several times. Though it is not about nutrition it is also worth mentioning that both groups of participants talked about avoiding actions such as lifting heavy things like water, lifting their arms high up over their head and not to take any medication without a doctor's prescription.

Some of the pregnant women seemed to not entirely understand the question about avoidance as they answered that they could eat exactly the same now as before they got pregnant. As a contrast one pregnant woman had picked up that coffee was not advised to drink during pregnancy.

Gourd was mentioned by one of the midwives to be disadvantageous for pregnant women's health. This vegetable, which is in the same family as pumpkin (22), was said to be avoided because it has seeds inside that can have a negative effect on pregnant women.

One midwife said:

«We also not advice them to drink the nutritious formula milk because from the national policy they are not allowed to advice the women to buy this for drinking, supplement formula milk. Because all the Cambodian people in the rural area are very poor, they could not afford to buy the formula milk supplement for drinking,...».

This formula milk was again mentioned by one of the pregnant women saying she had seen the advertisement on TV promoting this formula milk as *«very useful for the baby in the womb and also for the mother's health».*

Old traditions

Both midwives and pregnant women were asked about their knowledge of what old people following the old traditions advised about nutrition during pregnancy. Both groups had knowledge to share with us.

Old people would advice the pregnant women not to take the bus in the evening and at nighttime, as it would make the baby puffy and big. This again would mean a difficult delivery. Honey was believed to sting the fetus if eaten when pregnant. It would feel like an actual sting for the unborn baby like from a bee and this would give the baby an aggressive personality as a child and adult. Eggplant was another example told by the old people not to eat. This would make the pregnant woman itch.

If the pregnant woman drank fresh milk with ice and coconut juice the baby would be born more beautiful. The baby would also be born beautiful if the mother was to eat pineapple when at term. Eating the pineapple like that would even reduce the amount of amniotic fluid. There was mention by a midwife of a traditional herb drink that one could put in the kettle and boil with water. This same traditional herb drink was also brought up by a pregnant woman as something to avoid.

One pregnant woman told us that her parents had told her not to eat chili, as a lot of chili would burn the baby. In another interview where the chili was mentioned again it was made clear that they did mean it literally, that the baby actually felt a burning sensation when the mother ate much chili. It was yet in another interview pointed out

that eating chili would affect the baby but this woman had heard that the effect was on the eyes of the baby.

According to one of the pregnant women the old people had told her: «... *when she had pregnant she should not eat while walking, eat while sleeping and should get up early, not to, to be lazy. Have to be fast, active.*» This same story was brought up by another woman, saying that the consequence of this action was that the baby would be born lazy and not have good manners. Another version of this story was told like this: «*So what she follow like getting up fast and eat late, have to get up before the husband and when eating have to finish before the rest finish.*»

One midwife told us that old people advice the pregnant women not to eat porridge and not to drink sugarcane juice. The reason for this advice was that it was thought to «*produce a lot of fat*». Drinking sugarcane juice would also produce a lot of amniotic fluid and in Khmer they had a saying for this which translated into English as «*sick amniotic fluid*».

The last midwife told us about the time before the MPA. One of the things she said was:

“Before we had MPA module 10 all the pregnant mother prepare rice wine with fruits, herbs and honey mixed together for drinking in order to have easy delivery, this is our belief. But when module 10 developed, they told not to do that any more.”

Other nutritional knowledge

Much of the knowledge revealed during the interviews was examples of kinds of food available in the area. Morning glory, a common vegetable in the area, was said to be «*advantageous for the body, rich and nutritious*». Potato, tomato, cabbage, pumpkin, moringa and spinach were also examples of vegetables given by the participants. They were said to be good for pregnant women’s health.

One pregnant woman said: «... *should eat vegetable, meat, soup and the kind of soup that mixed with a lot of vegetable, meat inside. Especially vegetable, should eat a lot. Also should drink a lot of coconut juice.*» This was a typical example of what many of

the pregnant women answered when they were asked what they knew about nutrition during pregnancy or if they were asked to give examples of how they acted out their knowledge in practice.

The nutritious porridge mentioned under the heading «three food groups» is also worth mentioning again here. This same porridge was in another interview, this time in an interview with a midwife, called «the supplement porridge» and was said to be taught in pregnancy classes. They were taught to add:

«... all kind of vegetable, green vegetable and also pumpkin, yellow vegetable, pumpkin, papaya, potato and also sugarcane. And also meat like pork, like chicken, like beef. Fish and desert, like honey, sugar, sugarcane, that desert.»

Antenatal care

This topic does not fit in with the rest of these subjects talking about knowledge of nutrition during pregnancy. It is included under the category «content of knowledge» as it was naturally brought up by many of the interview objects and talked quite a lot about. We therefore felt it deserved at least some room in this report. This topic was many times talked about as a natural continuance to food supplements. The step was short from talking about iron tablets to talking about anti-worm treatment and tetanus injections.

The midwives gave greater details of what was included in the antenatal care service than did the pregnant women. The knowledge of what was done during a pregnancy check-up also varied greatly among the women. Most pregnant women mentioned only the tetanus injection⁵, the anti-worm treatment and maybe that a blood test was taken. From the midwives we understood that the blood test included testing for diseases such as malaria, HIV, syphilis and dengue. One pregnant woman stood out. She told us that the fetus was checked while at pregnancy check up and that this was done with an ultrasound device. This same woman also said that her weight had been measured as to see if she had gained weight or not.

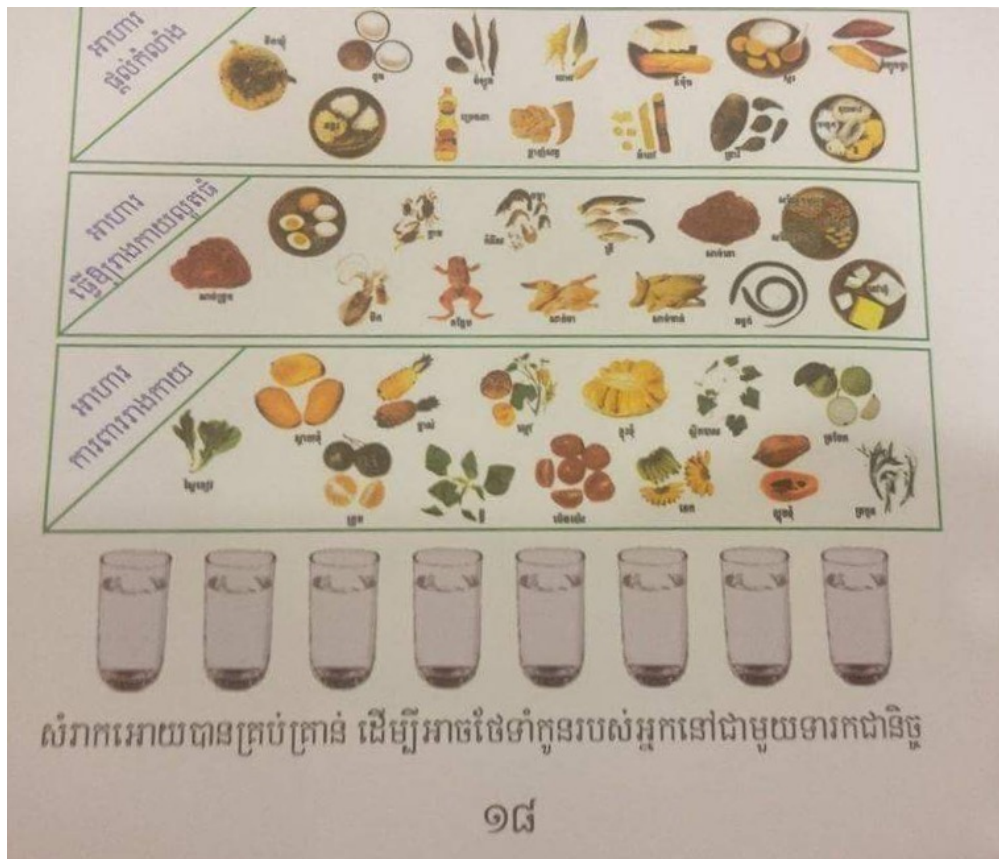
⁵ There was by the midwives mentioned a vaccine. The content of this vaccine or what it was suppose to prevent is not known, though it might be tetanus injection as this was mentioned in the same context, but it is something we should have further investigated.

Other than what is already mentioned antenatal care service seemed to consist of medical history, blood pressure was taken, nutrition was talked about by midwives and most women should have received a leaflet (picture A and B) with information to take home. It was also said that more now than before the man came along to these visits. From one midwife we also understood that one important and maybe the most important task at these pregnancy check ups was to educate the women in the danger signs of complications during delivery. When these danger signs occurred they were to go to the nearest hospital to seek assistance from medical staff. One of the midwives said that the danger signs were:

“Bleeding, bleeding and amniotic break before labor, high fever, headache, edema, dizziness, and baby position abnormal – like transverse lie, old mother with first pregnancy, anemia, the woman who has a lot of children and the baby who is short, not high. These are the danger signs that they should come to delivery at health center”.



Picture A: front page of “pregnancy check-up book” (11: cover).



Picture B: the three food groups (11: p. 17).

We have now looked at the different knowledge among our participants, which we divided into categories. In the next section we will discuss the main tendencies and examples that we found interesting and discuss these more in depth.

Discussion

We had not read a lot in advance about the international guidelines on nutrition during pregnancy of Cambodia, because it was difficult to find and the small of what we found was written in Khmer. The MPA Model 10 was our only source, which we familiarized ourselves with briefly after one of the midwives mentioned this model, almost as a coincidence, during one interview. However, we did not investigate if the Cambodian guidelines correspond to the knowledge of the midwives. Having seen that the midwives were the main health care workers that were giving antenatal care to the pregnant women and giving education to other health workers such as the TBA's and VHV, we choose to look at what the midwives were saying as the "baseline" for antenatal care in this area. From what the midwives were saying and the content of the "pregnancy book", though we do not understand any of the Khmer

writings in it, it seems like the antenatal care in Cambodia, in theory, is similar to our biomedical model. Their “pregnancy book” is likely similar to our “pregnancy health cards”, though with illustrative pictures to adjust to those who cannot read.

Our results show that all the midwives used the “three food groups” term. This was not surprising as we later were told that the “three food groups” was part of the midwives’ education and also taught to the pregnant women in pregnancy class. Only two of the pregnant women mentioned the “three food groups”, though most of the pregnant women had a lot of examples of different kinds of vegetables, meat and fish, examples that could fit into the three food groups, that they said was vital for nutrition during pregnancy. These examples, as well as one of the midwives mentioning proteins as an important part of the body building food, made us think that the content of the three food groups seems to have some correlation to our western way of dividing food in terms of their content of nutritional substances, such as; protein, fat and carbohydrates. Protein and carbohydrates are concepts that are widely used in well-developed countries, though they are built on biomedical knowledge and thus might require many years of education to completely understand. Many of our participants were illiterate and the education level was generally low. The mean years of schooling in Cambodia is 4,4 years (19). Thus the concept of the three food groups and what they contain might be a better-suited way to impart knowledge about nutrition for this population.

Another way of looking at the three food groups is to think of it as a way of insuring a varied nutrition during pregnancy, as it was pointed out by the midwives that all the three groups were to be represented in a pregnant woman’s diet. With the midwives examples, both in the “pregnancy book” and verbally impetrated, the concept of the three food groups is information that is easy to comprehend and remember. From our findings we experienced just that, that most of the women remembered what seemed to be the most vital thing: To have a varied nutrition. One of the reasons for us to conclude with this is according to the example of porridge, which was mentioned several times, in different contexts, both by the midwives and pregnant women. The porridge, seemed not to be one exact recipe rather it was a concept of putting many nutritious ingredients together always including a variety of the different food groups.

It was also said that “the porridge” was taught as part of the MPA Model 10 and in pregnancy classes.

It is always important to have a varied nutrition, but especially during pregnancy (1). In the international guidelines the importance of supplements was also pointed out (1), for that reason we brought up supplements in our interviews. According to our results many of the women said that they had been given iron supplement. Iron tablets were according to the midwives given to all pregnant women attending antenatal care check-ups, it is also a main part of the MPA Model 10. Whether or not the women understood the indications of why the supplements and other medical substances were given or if they actually took all the tablets is unknown. According to the international recommendations, folic acid is one of the main supplements to be given in pregnancy (1), this supplement was not mentioned, neither by the midwives or the women. When we asked about supplements, we mainly asked about supplements in general, giving iron as an example. This could have affected the results, as all the women and midwives mentioned iron tablets, which we asked about, but we never asked questions about folic acid. As already pointed out there were asked specific questions about why supplements was given and why different kinds of food were important to eat during pregnancy. According to the results the answers were mainly that “it is good for both the mothers health and the growth of the baby”, though one woman said that she was eating smaller amounts of food and increasing the times of eating per day and that this was due to prevent vomiting and to increase the space for the baby in the womb. It appeared to us as though the pregnant women did not have biomedical knowledge about the underlying causes of why supplements are given or why they should eat differently during pregnancy. It might also be that language problems could have made it difficult for the participants to express themselves.

As mentioned in the introduction, it is very common to use traditional medical practices in Cambodia, thus in our attempt of getting to know the participants knowledge about nutrition during pregnancy we asked about “old traditions”. Since there were many examples of traditional advices mentioned during the interviews we did not question an explanation for all of them. It also turned out that some of the advices had different versions. Sometimes the backgrounds for the advices were spontaneously described, for example the advice of ‘not to eat while walking and to get up early’, was, according to a pregnant woman, built on the belief that it could

make the baby lazy and not have good manners. In the processing of our material we have tried to make logical explanations to the different advices. An example of one of the old traditions mentioned that we tried to make logic of, was to ‘eat fast and finish the meal before the rest of the family’. We thought this tradition might be a way of ensuring that the pregnant woman gets enough food. One of the midwives also tried herself to explain one of the traditions, saying that she thought ‘not taking the bus at night time’ could be dangerous because the mother could slip since it is dark and harder to see clearly.

We think that it is important to differ between the different old traditions in terms of possible harm. From our results we can see that most of the old traditions mentioned are harmless, like the avoidance of foods such as chili and honey, or avoiding activities like taking the bus at night time, but staying on fire after delivery can imply a risk, and avoiding nutritious foods like porridge might lead to undernutrition in a rural population with scarce accessibility to different kinds of nutrition. Thus we do not think it is a problem that the pregnant women follow the old tradition as long as they do not follow the advices that are possibly harmful.

The avoidance of food when pregnant from a biomedical point of view and the “old traditions” beliefs might overlap, for example we do not know if foods as chili and “fermented fish”, that were said to restrain from, is advised to be avoided from a biomedical perspective, or if it is remains of the old traditions. Though “fermented fish” is a traditional dish with fish kept for a long time (23) and this could in fact result in pregnant women getting stomach problems and diarrhea. Gourd was another example brought up in the context of avoidance. While we were doing some research to find out exactly what this vegetable is it was discovered that this vegetable was earlier used as a laxative (22). This could explain why this vegetable was advised avoid. In our results one of the midwives also mentioned that the National Policy did not allow them to advice the pregnant women to buy formula milk supplement, as it is expensive and the people living in the rural areas could not afford it.

We have now brought up many different points from our findings, many of them being interesting and uncovering a lot of knowledge. There are different sources of knowledge of our topic of nutrition during pregnancy; The international guidelines,

the MPA model, the midwives and the pregnant women. Each and every one of them can be seen as levels of a chain where the international guidelines and the pregnant women's practice of the knowledge respectively is the first and last link on the chain. The conveying of knowledge between these levels, from the top to the bottom, will be places where knowledge can get lost on the way. In this paper we will not look at the differences between all the levels. As we have interviewed both midwives and pregnant women about their knowledge of nutrition during pregnancy we have a possibility of unveiling if there is a discrepancy between the knowledge in these two last levels of the chain and if so, to investigate some of the reasons for this discrepancy. From our findings it is obvious that the knowledge differs. Why is that?

We found, as expected, that the midwives know more details about nutrition during pregnancy than the pregnant women. Is the knowledge lost on the way from the midwife to the pregnant woman or is the knowledge "lost" when the woman chooses not to apply them, or both? From our findings we find evidence of the knowledge "getting lost" in both. Can the discrepancy we found between what the midwives told and what the pregnant women knew be a result of lack of understanding or not recollecting all the information? Can the discrepancy between what the pregnant women know and what they choose to do be a result of factors such as economy, geography and culture? We will come back to this later.

According to Kleinman and his sector model every society's health care system must be looked at as containing all of the three sectors: the popular, the folk and the professional sectors (25) (appendix, p. 57). The sector model also points out the importance of these sectors not standing alone but that they are intertwined and affecting each other. As we have only looked at the midwives as a source of the women's knowledge, maybe one reason for the difference between the knowledge of the midwives and the pregnant women can be that the pregnant women get information from other sources. We are now moving on to look at the pregnant women's sources of information, as the sources may contribute to the understanding of why the pregnant women do not seem to have the knowledge the midwives say to have given them.

Sources of nutritional knowledge among the pregnant women

In order to explore the context in which the midwives' nutritional knowledge was conveyed and received, we asked the pregnant women about the sources of information about nutrition in pregnancy. Moreover, we asked the midwives about their understanding of additional sources of the pregnant women's nutritional knowledge.

Close relations

While we expected close relations like parents to be an important source of information for a pregnant woman, this was not confirmed in the interviews.

Parents were mentioned by the third midwife as something she thought could be a source for the pregnant women's knowledge of nutrition during pregnancy. Close relations were not talked of by any of the other midwives.

The first pregnant woman did not bring up her parents or anyone near her as a source of her knowledge. The second one talked early in the interview about receiving certain information from her parent when being asked about old traditions. The third pregnant woman told us directly that she had not gotten any advice from her parents and this was commented on by the interpreter as «strange». The fourth pregnant woman said she had been taught by her mother about our topic and then becoming the only one of the seven women to admit to directly having gotten advice from close family members⁶. The rest of the pregnant women never mentioned any source fitting this category.

Community

Old people, elderly around or neighbors were spoken of by two of the midwives.

Every pregnant woman gave old people as a source of advice for nutrition during pregnancy. There were many different names of people from the neighborhood. One pregnant woman said she had gotten advice from elderly in the village. Another one

⁶ Close relations like family members might have been reported less by the pregnant women as sources to knowledge of nutrition during pregnancy as they knew the interpreter was critical to traditional practices.

said she got information from the old people neighboring but also mentioned later in her interview that she got her knowledge from old people most likely talking about the same people. One pregnant woman mentioned getting advice from old people but later when asked if she had heard of the old traditions she answered no to this. When asked directly who old people were the sixth pregnant woman said these were «neighbor, elderly neighbor, elderly mother.»

Health workers

Through out all the interviews many names came up as people working as health workers in different parts of the community. Traditional birth attendant (TBA), village health volunteer group (VHV), village health support group (VHSG), a midwife, a health center midwife, medical doctor and the hospital were the names brought up. The midwives thought TBA's, VHV's and VHSG's were central in educating the women, other than the midwives themselves. All the midwives mentioned one or more of the health workers during their interview.

The pregnant women all talked about getting advice from midwives or health center midwives. One woman said she had been to see a medical doctor as well. None of the other names of other health workers were brought up by the pregnant women.

Media

We also expected that the media would play some role in spreading health information to pregnant women, however, this seems to have reached the women only to a limited degree.

Only one midwife talked about media as a possible source to where the pregnant women collected advice and knowledge about nutrition during pregnancy. She admitted to thinking that people in town would much rather seek advice from sources like TV, advertisement and books than would the women living in rural areas.

The forth-pregnant woman was the first of her group to bring up any sources from this category mentioning both TV and books as sources for her knowledge. The sixth woman said straight out that she had not gotten any information from TV as her household did not have electricity.

Discussion

When we asked about the participants' sources of their nutritional knowledge we had a few surprises. We had beforehand suspected that the pregnant women would denote close relations, like their parents, as one of their main sources for nutritional advice, though our results show that most of the pregnant women said they hadn't got any advice from close relations, only one mentioned her mother. All the pregnant women did though say old people were a source of nutritional knowledge, mostly described as being people from the neighborhood.

When we asked about the participants' sources from close relations and the community, it seems as parents, old people and neighbors were used interchangeably. For example one woman said that old people were «*neighbor, elderly neighbor, elderly mother*». The same goes for the use of old people and old tradition, as one pregnant women said she had been given advice from "old people" when asked about her knowledge about nutrition during pregnancy, but when asked about "old traditions", she said she knew nothing about this. Thus our division of the codes close relations and community are a bit diffuse, and we cannot conclude that the pregnant women had little knowledge from their parents.

According to our results multimedia was not a main source of knowledge for the pregnant women. As mentioned in our introduction, different kinds of medias for communication is now supposedly more accessible in rural areas of Cambodia (10), though our findings make us question this. It might be worth mentioning that Internet or computer was never brought up or mentioned as a source of knowledge in any of the interviews. One of the pregnant women did not even have electricity, which gives us a clue of their standard of living, maybe making it difficult to get a hold of different kinds of food. The women all gives midwives as an example of source of knowledge, though this might be as expected, as they all had attended pregnancy health check-ups with the presence of a midwife. Our results show that the midwives had a greater focus on health workers being the source of knowledge, then what the pregnant women did, which made us think that the midwives maybe assume that they stand stronger as a source of knowledge for the pregnant women then they actually do. From our results, it seems, as the pregnant women's source of knowledge were mainly old people, old tradition, neighbors and midwives. We think that as there were

few of the women mentioning multimedia as a source of knowledge and the participants were all living in rural areas, it appears as though the women have limited access to information from outside their circle, and the midwives might very well be their only real source of new and evidence based knowledge. Thus we assume, from our results, that the knowledge of nutrition during pregnancy amongst the pregnant women in Pailin Province mainly circulates between the people in the rural area, not so much being influenced by new information.

We found that the pregnant women had other sources of knowledge than the midwives, as indicated also from Kleinman's sector model. This can explain why there is a discrepancy between the midwives' knowledge and the pregnant women's knowledge and action.

After looking at our findings we were left with a feeling that other factors also played a role. Taking health behavioral models like the health belief model and ecological models into consideration, we want to explore some of these other factors. In the health belief model conveyance of information is central (27). We think that this cannot explain the discrepancy alone. The ecological models put health behavior in a broader perspective, combining both individual and environmental factors. These factors can for example be further divided into levels intrapersonal, interpersonal, organizational, community, physical environmental and policy. Intrapersonal can include biological and physiological factors, and interpersonal can include social and cultural. When planning an intervention to change a health behavior the ecological models point out the importance of reaching out to more than one level. The more levels one can influence, the greater the chance of succeeding in changing health behavior.

With these models in mind we will now try to shed a light on other factors that might have led to the discrepancy we found in our study.

Factors found to make discrepancy between knowledge and action

We did not ask one specific question to find out answers on the discrepancy between reported knowledge and practice. In the interviews we often got a sense of hesitance from the participants, a feeling that things were not as easy as *«because we know that this is right to do this is what is done.»* In the following we turn to the challenges of nutritional adherence that we discovered. Adherence is defined as “ the extent to which a person’s behavior – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider” (26, page 18).

One midwife was asked what she thought the pregnant women do in practice when they get the information from the midwives. The answer we got was: *«Most women they accept this advice and also most of them have applied this knowledge in their daily food, yeah, not 100% but most of them.»*

Economy

There was a big difference between the midwives concerning their understanding of how poverty affected the women’s lives. One midwife meant that money was not an issue as the people had their own gardens and all they needed was planted and grown there. Another midwife gave us an example of an experience she had with the topic: *«For example we told to eat liver, pork, carrot and they say that oh, I don’t have even the normal food to eat, I don’t have the money to buy these kind of food.»* A third midwife said she had heard women telling her that they knew they needed iron tablets but that traveling to the health center to get them was something they could not afford. They could also not afford to eat in a way that would make them not need the iron tablets.

The last midwife meant that the wages from labor work was not enough to be able to buy and eat what they needed.

«Now the women have a lot of change and those who still don’t change because they are poor, specially the women who migrate from place to place to sell their labor, those group they don’t have the land to grow vegetable, those who grow up who are poor, cannot afford to buy all the food groups to

eat. So this group we cannot help the to change unless they get better from their income and they have proper land or proper residence.»

We asked one pregnant woman if she would eat differently if she was not poor. She said she would eat bigger amounts and more frequently if she had enough money. Another wish of hers if she had the money was to be able to eat what she wanted every time. The issue of money was raised several times by different pregnant women.

Availability

The subject of availability was brought up in many of the interviews, both by the midwives and the pregnant women. The three food groups, as mentioned earlier, was mentioned by a midwife to be especially smart to advice about as these groups were *«... available in all place, it can be found in the town or in the rural area.»*

A pregnant woman told us that she did not follow all the advice she was given. She could not always find what was recommended and so she bought what was available close to her home. Another pregnant woman said she ate all kinds of vegetables, some fruit and mango, as this was easy to find from her neighbors' garden. A third pregnant woman spoke of all the different things she ate while being pregnant and about the importance of eating fish, meat and vegetable in her daily meal. Then she revealed that this was not something she could manage every day, that she was not capable of getting this variation in her diet every single day but rather she needed a whole week to get the complete variation. Some of the vegetables were not available and she lived far away from the market.

A fourth pregnant woman brought up the issue of availability of different foods varying with the seasons. Now that she was pregnant during dry season she ate exactly the same as if she wasn't pregnant as the variation of foods was scarce.

«During the rainy season she can plant vegetable, long bean, cabbage or morning glory, from her own garden. But dry season, like this, she could not plant it, could not grow because far away from the water sources,...»

Time

A midwife told us that:

«some of them that cannot apply, not most of all of them, they understood but they don't apply all the time what we told them. We want them to apply all the time, all the time they cook, they eat, they should think about this and those who cannot apply this because they are busy, and also they forgot to eat and forgot to cook this. »

When asking the first pregnant woman about consent for participation, she asked how long the interview would last and said that she would much rather participate if it took less time than we had suggested. She said she had to get back to work and the less time the better as she was on a break from her work as a labor.

Old traditions/Old people

We asked the midwives how they coped with the issue of knowing that some pregnant women follow the old traditions and knowing that some of these advices are wrong and possibly harmful. This question was put into words in a more subtle way as we asked them what they told the women about the old traditions.

Most midwives answered that they did not touch the subject, that they let the pregnant women themselves decide what to do. They felt that all they could do is tell their version and let, with time, the medical advice be more accepted into the culture and society.

«We never tell the pregnancy mother not to follow their parents or old people, we never told like this, but we just explain from our view, our lesson, that they should know about this and that they should follow when they learn about this.»

This same midwife explained how they cooperated with the traditional birth attendants (TBA) in the villages. They taught the TBA's at the health center so that they next could go out locally and reach the pregnant women in their community with the same advice as the midwives gave at the health center. The last midwife stood out as she said she would bring up negative sides about some of the old traditions and tell these to the pregnant women.

Another midwife told an interesting story which points out her thoughts:

“We haven’t told the pregnant women not to follow the old traditional way but they understood from participating in the pregnancy class or educate from health centre midwife, then they understood that not all those food is always harm or give problem to the mother and the baby.”

This was illustrated with an example by the same midwife:

“For example one mother told that before she did not dare to eat the grilled chicken with banana flower, but after she received educate from health centre midwife she did eat it, she ate it and after that she did not feel any problem, so she realized that its not always wrong. So some people stop following what the old people told, they can try and they see that no problem. So now they can eat anything and not always follow the old people.”

Yet another midwife came up with a similar example just involving a woman drinking sugarcane juice. Sugarcane juice is said by the midwives to be very nutritious while the old people told not to drink this as this gave an increase in amniotic fluid. The woman drank the juice and nothing bad happened.

A third midwife explained another version of this reality very well:

«They listen when they provide education on nutrition, they listen, and they apply this, but sometimes if there are old women or old people sit nearby and talk about this, then they start to hesitate and withdraw from this training, hesitate to follow it.»

This midwife also shared her thoughts on the differences between people living in the city and in the countryside. Her opinion was that only the mothers living rurally had issues with whether to follow the midwives or the old traditions. The people living in towns would have more input from other sources like TV, books and advertisement. The midwives coming to visit the mothers for pregnancy check ups in the villages came often just once a month. A way to look at it was to see the options these women had, either to listen to the midwives coming once a month or to listen to the old people and other neighbors being around them every day.

The forth-pregnant woman we interviewed said straight out that she followed the old people's advice about not eating chili and sugarcane. The reason she gave for following this advice was that she was afraid of the consequence, of producing a lot of amniotic fluid, and also that when eating chili she could herself feel a burning sensation. This same woman admitted to also following the old people's advice about roasting, to stay on fire after having delivered, even though the midwives had told her that she should not do this.

The fifth pregnant woman had a similar dilemma, the midwives saying she should not drink wine while the old people told her to drink both wine and beer. She announced that she chose to follow the advice from the midwife, that she had not drunken wine or beer while being pregnant. She even chose to give birth in the hospital even though the old people had informed her that staying on fire after delivery while drinking herb wine was preferred.

Family hierarchy

A woman and her unborn child are not in all cultures a family's highest priority. One midwife told us that:

«They don't think about their own health, they only think about how to make money and buy food for daily eating for their family...Some mother they don't think about their own health, they think about their husband's health because the husband is the one who makes the main income for the family, so when they cook food, example like chicken soup, they keep all the good meat for the husband, they eat only the bone or not good meat, the head or the leg. They don't think about their own health, they give priority to the husband».

In one of the interviews with another midwife it was talked about how she had seen more understanding for and adjustment around a pregnant woman. She believed one reason for this change was that both the woman and her husband now often attended the appointment with the midwife. According to her this happened mostly in the urban areas like in the towns. When the man received information directly from the health personnel he would then show more understanding and let the pregnant woman work less heavily.

Discussion

The results show that when there was discrepancy between the women's knowledge and actions this was mainly due to poverty and lack of availability. The women participating in our study lived a hard life in the villages. Their family's livelihood was often laboring on other peoples' land and had a very low salary. Many depended on their own farm production for food, therefore making the availability dependent on what they produced, again depending on the different seasons. With a low salary some of them could not afford to buy from markets and with farming being very time consuming they also had little time to travel to these markets.

During one interview a pregnant woman asked how long the interview was to take, as she had to get back to work. One midwife said the women are busy and they forget to eat. Even though none of the pregnant women mentioned time as an issue, these examples can easily illustrate that time was an important factor in these pregnant women's lives. For us living in a well developed country, we take equipment that gives us more time in our daily life, things like a washing machine and food mixer, for granted, whilst the poor people living in rural Cambodia might prioritize to work to be able to survive and wash their clothes in stead of spending time making sure they prepare their food hygienically and eat all the foods they should.

It might also seem like the family hierarchy could be a reason for not following the nutritional advice. As one midwife said, some women had the knowledge, but they prioritized to give more food to their husbands and children. From the interviews we picked up that in Cambodian culture, the husband is seen as the most important member of the family, because he is the one making the main income for the family, and the unborn child and mother are the lowest in the ranking. This indicates that Cambodia is a country with challenges in terms of gender equality, as it is apparent that the man and the woman are not equally positioned. Our assumption of the family hierarchy leading to discrepancy is backed up in the theory of adherence (26).

The theory of adherence states that 'social support... has been consistently reported as an important factor affecting health outcomes and behavior' (26: p.XIV).

As mentioned earlier, the pregnant women were, according to old traditions, advised to eat fast and finish before the rest of the family. We also said that we tried to make

sense of this advice by assuming that this was an action executed by the women to ensure enough nutrition for her and her unborn child. This can be connected to the issue of family hierarchy, the man being prioritized as he is the source of income, but also economy as they do not have money to buy enough food for the whole family.

Furthermore, all the pregnant women we interviewed lived rurally. Most of them were very poor. It is reasonable to assume that poverty is one reason for the lack of knowledge, such as knowledge of nutrition during pregnancy. For example, a woman being poor and living rurally would visit health centers less as she lived further away from the health center, making it cost more to travel there and not affording to travel there in the first place. Thus she would get less education from the midwives than a woman having more access to a health center because she lived closer and had better economy. The women going less times to visit the health center would maybe more easily end up listening to parents or other relatives seen on a regular basis than to adhere to advice given by the midwife seen once a month or less.

On the whole, many of the women remembered little from the nutritional advice they had gotten from the midwives. Even though we asked them several times if they had changed their diet because of pregnancy, they said they were eating the same as before they got pregnant. From the questions asked and answers given we did not manage to find an understanding amongst the pregnant women of their knowledge. According to the health belief model, having a deeper understanding is a key ingredient for motivating a person to adhere and apply the advice given (27). This lack of understanding can again be traced back to their lack of education, their lack of access to outside sources like Internet and TV. The lack of Internet and TV can again be a consequence of not having electricity and this again be a result of poverty.

From this discussion one can see a complex between poverty, limited availability, little or lack of education, a stronger influence of cultural traditions, living situation and rural life.

Summary

We have investigated the nutritional knowledge of the midwives and pregnant women in Pailin province. From the interviews we were able to conduct, we understand the nutrition during pregnancy in Pailin province to be built on a main principle of the pregnant women having a varied diet. We found that most of the pregnant women have received and understood this message. It is also clear that the traditional pregnancy practices still have a strong position in the community. Despite this, several of the midwives were talking about being in a period of transition, from mainly traditional knowledge, to evidence-based medicine. We can sense that the midwives seem to have a hope and optimism that their work of spreading evidence-based nutritional advice is becoming more accepted in the community. It is still a long way to go but they are on the way in the right direction.

According to the midwives 70-100% of the women follow their advice.⁷ This means that they believe that a high percentage of the pregnant women in the area have the midwives as their main source of information, hence have a high nutritional adherence. Our finding concludes otherwise. It is, from our findings, a clear difference between what the midwives teach and what the pregnant women know. As Kleinman's sector model states and as we have found in our study, a patient has multiple sources for her or his knowledge, from different sectors in the health care system (appendix, p. 57). There is also, from our findings, a clear difference between what the pregnant women know and what they apply in their daily lives. We have therefore tried, in this paper, to explore some of the factors that influence the pregnant women's degree of nutritional adherence. Helping us in this exploration we used theory of health behavior and adherence. We felt that the ecological models fit well with our findings as we found the factors influencing a patient's adherence to be complex.

⁷ The midwives said their ability to conclude with these numbers was due to their observations of the women in their homes after giving them the nutritional education on antenatal check-ups, that they could see with their own eyes that the women were eating as they should. They also said that TBA's working out in the villages could confirm that the women were following the nutritional advice based on observation. If these percentages are to be trusted is doubtful, from our point of view it is not for certain that the women are following the midwives' advice concerning nutrition and the old traditions just by observing them on occasion. It could be that they adjust for the time being, when the midwives are observing them.

Confer from earlier about adherence and ecological model. A patient's adherence, in our case the pregnant women's adherence to the nutritional advice given, is reliant on multiple factors. From our findings we discovered factors like economy, geography, availability, family hierarchy, traditional beliefs, motivation, educational background and family background to play a role in the nutritional adherence.

The health behavior models we have discussed earlier in the paper and seen our findings in light of are general models. They are not adapted to one country or a particular culture. Though these models have been very helpful to show us the complexity of adherence and health behavior it is important to look at our findings in the Cambodian context.

As mentioned in the introduction, during our stay in Cambodia we both felt that people were still affected by the past, the chaotic and violent past that was over less than 50 years ago. The after math of the Khmer Rouge's reign even continued into the 1990's in Pailin province. Despite this, only one midwife brought up this topic. This midwife pointed out that when she was in nursing school the daily life and her education were interrupted by the commotion made by the Khmer Rouge regime. The Cambodian people were at war, affecting among other things the economy and social structure, and resulting in the number of skilled academics being considerably decreased. This puts things into perspective. As talked about earlier, the ecological model points out that to change health behavior one has to make an intervention reaching out to many levels of the society. One could say that in the absence of a stable social structure, it is an even bigger challenge to reach out and make health behavioral changes, leaving Cambodia with an enormous disadvantage.

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Appendix

Interview guide

Consent

The question of consent and the consent itself were conducted orally and recorded. For every participant we ask them, through our interpreter, if they agreed to participate in our study, answering questions about nutrition during pregnancy.

Structured interview

Introductory questions common for both groups:

1. What is your name?
2. How old are you?
3. Where were you born?
4. Where do you live now?
5. What education do you have?

Introductory questions for midwives:

- How long is your working experience?
- Do you have any education/courses about nutrition during pregnancy?
- What is your family situation?

Introductory questions for pregnant women:

6. What is your family's livelihood?
7. How many children do you have?
8. How many months pregnant are you?
9. How many times have you been to the health center for pregnancy check up?

Semi-structured interview topics

Knowledge of nutrition during pregnancy:

- Examples of questions asked to the midwives
 - What do you know about nutrition during pregnancy?
 - What do you teach the pregnant women about nutrition during pregnancy?
- Examples of questions asked to the pregnant women
 - What do you know about nutrition during pregnancy?
 - Do you eat differently now that you are pregnant?

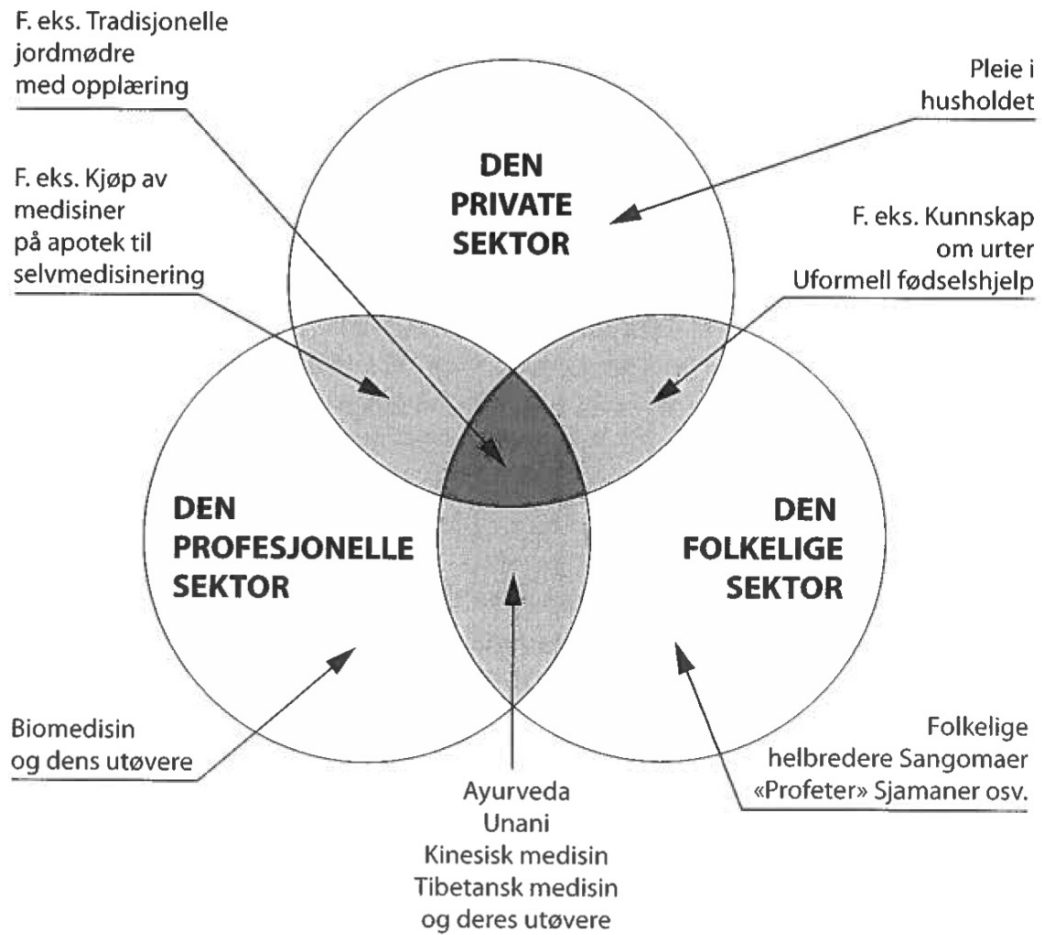
Sources of advice on nutrition during pregnancy:

- Examples of questions asked to the midwives
 - Where do you think the pregnant women get their knowledge from, besides you midwives?
- Examples of questions asked to the pregnant women
 - Who told you about this knowledge?

Factors of discrepancy between knowing and doing:

- Examples of questions asked to the midwives
 - You said that you think that not all women follow your advice so why do you think some of them do not follow your advice?
- Examples of questions asked to the pregnant women
 - Why do you not follow some of the advice that you have gotten? Why do you follow the advice you do follow?

Kleinman's sector model



Appendix object 1: Kleinman's structural model of the health system (25: p. 17).