Original Article

Behavioral Risk Factors of Non-Communicable Diseases among Pregnant Women Attending Health Centers of Morang Nepal

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ABSTRACT

Background: Obstetric transition, where patterns of maternal mortality due to indirect causes, such as NCDs, are replacing patterns of maternal mortality due to direct causes, including hemorrhage and infection. The change in the social determinants has affected the behavioral and metabolic risk factors of NCDs. Thus the aim of this study is **t**o assess the behavioral risk factors of non-communicable diseases among pregnant mothers attending health centers in Morang Nepal

Methodology: A cross-sectional study was conducted to assess the behavioral risk factors among 250 pregnant women attending health services in Morang district in 2022. Face-to-face interviews were done to gather data using the WHO NCDs STEPS survey questionnaire version 3.2 from two hospitals and 1 PHC and 100 pregnant women from each hospital and 50 pregnant women from taken PHC consecutively. Descriptive statistics like mean, proportion, and standard deviation were used to assess the prevalence of NCD risk factors. Likewise, total physical activity is categorized as respondents meeting WHO recommendations and not.

Results: The mean and standard deviation of respondents' age was 24.70±4.18. In dietary habits, 38.8% of respondents sometimes add salt to their food right before they eat, and 70% of respondents sometimes eat processed food high in salt. More than half (58.8%) of respondents did not meet the physical activity recommendations of WHO and more than half (56.8%) of the respondents received advice to eat at least five servings of fruit and/or vegetables from doctors and healthcare workers.

Conclusion: The study concludes that high amounts of salt consumption and insufficient physical activity are the behavioral risk factors of NCDs among pregnant mothers.

Keywords: Non-communicable Disease, Risk factors, Pregnant Women, Health Centre

INTRODUCTION

Noncommunicable diseases (NCDs) are considered a public health problem and becoming the major cause of mortality both globally and in the Southeast Asia area. Globally,71% of deaths are due to NCDs. The most common types of NCD include diabetes, cancer, chronic respiratory diseases like chronic obstructive pulmonary disease and asthma, and cardiovascular disorders The risk of NCDs increases by risk behaviors like cigarette use, physical inactivity, inadequate nutrition, and consumption of alcohol.[1] Several initiatives have been taken in Nepal to combat NCDs including the introduction of the PEN package (The package of essential non-communicable diseases) at health centres.[2]

NCDs influence women affecting the health and well-being of women and future generations.[3] Populations in low- and middle-income countries (LMICs) stand an unequal distribution of the burden. Two out of every three women die from an NCD each year, in total of 19.4 million deaths, which means 73% of deaths among women are attributable to NCDs.[4] Behavioral risk factors for chronic non-communicable diseases are very common and significantly higher in women.[5]

The obstetric transition is where increasing trends of maternal deaths due to direct causes to maternal death due to indirect causes, such as NCDs. The increasing pattern of urbanization and social factors like stress, tobacco and alcohol use, and women having children in older age can increase the risk of NCDs.[6] NCDs and their risk factors are connected to maternal and child health. The intergenerational effect of poor maternal nutrition and medical conditions at the time of pregnancy, especially NCDs-related pregnancy, can contribute to the increase in the burden of diseases. The financial expense of poor maternal health and pregnancy with NCDs complexities is conceivable extremely high yet isn't satisfactorily explored or reported with regards to long-term population health.[7] In the past few years, the burden of non-communicable diseases has 8% increased, in Nepal and other low- and middle-income nations. [8] The information regarding behavioral factors of non-communicable diseases among pregnant women remains not sufficient in the country context. Hence, this study aimed to assess the behavioral risk factors of non-communicable diseases among pregnant women.

METHODOLOGY

A cross-sectional study was conducted to assess the behavioral risk factors of non-communicable diseases among pregnant women in the Morang district located in Koshi Province of Eastern Nepal. The sample size was calculated using the formula Z^2 pq/ d2 assuming a prevalence of 50% and allowable error d=5%. The study was conducted among 250 pregnant women attending health facilities. Morang district consists of 3 hospitals, 6 Primary Health Centres, 60 Health posts,8 Urban Health centers,3 other health facilities, and 37 non-public health facilities. Two hospitals (Koshi Hospital and Rangeli Hospital) and one PHC (Jhorahat PHC) were selected purposively and 100 pregnant women from 2 hospitals and, 50 pregnant women from selected PHCs were taken as a sample by consecutive sampling technique. Pregnant women with gestational diabetes and pregnancy-induced hypertension were excluded from the study.

A face-to-face interview was done to gather data using the WHO NCDs STEPS survey questionnaire version 3.2 used in the STEPS survey 2019, Nepal.[3] This is already a valid tool used in the STEPS Survey 2019 in Nepal, free to use and the Nepali version is available. Tools are divided into two parts: STEP I-A. Demographic information: consists of questions related to demographic characteristics (age, religion, ethnicity, education, Marital status, occupation, family type, no of family members, assets, Place of residence, Health problems (history of chronic disease) obstetric information: Gravida, Para, weeks of gestation). B. Behavioral Measurement: This section consists of information related to Smoking, tobacco use, alcohol consumption, diet, physical activity, history of raised blood pressure, history of diabetes, history of raised total cholesterol, history of cardiovascular disease, and lifestyle advice.

Ethical approval was obtained from the IRC of the Tribhuvan University Institute of Medicine before the data collection. Approval was obtained from the concerned healthcare Written informed consent was taken from the respondents after explaining the component of the information sheet. Thirty to thirty-five minutes were taken to complete the interview. The completeness was checked on the same day of the data collection. The collected data was kept with the researcher in a locked cabinet and utilized only for this study.

Data processing was done in SPSS version 16. In descriptive analysis mean, proportion, and standard deviation were used to summarize continuous and categorical variables. Similarly, physical activity was calculated by adding all domains, and total physical activity was categorized as respondents meeting WHO recommendations (at least 150 minutes of moderate intensity per week) and not meeting WHO recommendations and interpreted.

RESULTS

The mean and standard deviation of respondents' age were 24.70±4.18 and 17.2% were 18- 20 years. Regarding the level of study, 10.8% of respondents have no formal education while 38.4% completed secondary school. One-third of the respondents (34.8%) were disadvantaged non-Dalit terai caste and 7.6% were Dalit, the highest number of the respondents were homemakers, and 53.6% of the respondents were from rural areas. With regards to family members, 79.6% have family members 1-5, and 88.8% of respondents have up to 2 members. Likewise, more than half (62%) of respondents have a family income of less than 25000 per month. (Table 1)

With regards to obstetric characteristics of the respondents, more than half (69.6%) of respondents of age at marriage were less than 20 years 49.2 % of Respondents were the first gravida, and 67.6% of respondents were more than 24 weeks of gestation. Similarly, 34.8% of respondents attended the 2nd ANC visit. When asked about the presence of NCDs, the majority 98.4 % have no history of NCDs whereas 1.6% stated they have NCDs. (Table 2)

Regarding the dietary habits of the respondents, the average consumption of fruits and vegetables serving per day was 3.28, the average consumption of fruits serving per day was 1.11 and the average consumption of vegetables serving per day was 2.17. The prevalence of insufficient fruit and vegetable intake (< 5 servings a day) was 95.3%. Adding salt to food while eating, 38.8% of respondents reported sometimes adding salt to their food right before they eat, and the majority (91.2%) of respondents reported always adding salt to their food while cooking. When asked about eating processed food high in salt 70% of respondents stated sometimes and 8.8% of respondents said never. When asked about the amount of salt they think they consumed nearly three-quarters (73.6%) stated the exact amount and 13.6% stated a low amount. With regards to the importance of lowering salt in their diet two two-thirds (62%) of respondents think that lowering the salt is somewhat important. Refer table number

Regarding the statement, that consuming too much salt can be harmful to your health more than three-quarters (79.6%) said yes, it is harmful. When asked about salt consumed majority (87.6%) said two-child logo salt and 12.4% stated dhulo salt. Similarly, most of the respondents (94%) used mustard oil for the preparation of meals.

In this study, the median moderate intensity physical activity (minute per day) was 120 (9.64-180) followed by walking physical activity (minute per day) 20 (0-30). Likewise, the median time spent on sedentary activity was 60 (0-120). The median of total physical activity (min per day) was 137(30 -240.0). More than half (60.8%) of respondents did not meet the physical activity recommendations of WHO. (Table 4& 5)

Findings showed that all the respondents had no history of raised cholesterol and no history of cardiovascular diseases respectively. In the same, almost all (98.4%,98.4%,99.6%) of the respondents had no history of raised blood pressure, raised blood pressure in the last 12 months, or raised blood sugar respectively

Regarding lifestyle advice more than half (56.8%) of the respondents received the advice to eat at least five servings of fruit and/or vegetables each day, likewise, more than one-third (39.2%) of the respondents received advice to reduce fat in their diet, and only 16 % and 17% of the respondents received advice to quit using tobacco or don't start and reduce salt in their diet respectively.

Table: 1 Socio-demographic Characteristic of Women **n= 250**

Variables	F	%
Age (completed years)		
18-20	43	17.2
21-30	177	70.8
31-40	30	12.0
Mean ± SD= 24.70±4.18		
Level of education		
1. No formal schooling	27	10.8
2. Less than primary school	13	5.2
3. Primary school completed	27	10.8
4. Secondary school completed	96	38.4
5. High school completed	63	25.2
6. Bachelor level completed	24	9.6
Ethnicity		
Dalit	19	7.6
Disadvantaged Janajati	36	14.4
Disadvantaged Non-Dalit Tarai caste group	87	34.8
Religious minorities	14	5.6
Relatively disadvantaged Janajati	59	23.6
Upper caste group	35	14.0
Occupation		
Government	8	3.2
Non-government	4	1.6
Self-employed	20	8.0
Student	6	2.4
Homemakers	212	84.8
Place of residence		
Rural	134	53.6
Urban	116	46.4
Family members		
1-5	199	79.6
>5	51	20.4
Family members less than 15 years		
Up to 2	222	88.8
>2	28	11.2
Family Income per month		
<25000	155	62.0
25000-50000	87	34.8
>50000	8	3.2

Table 2: Obstetric Characteristics of Women **n=250**

Variables	Frequency	Percentage
Age at marriage		
18-20	174	69.6
20-40	76	30.4
Gravida		
1	123	49.2
2	80	32.0
3	37	14.8
4	10	4.0
Weeks of gestation		
≤12	24	9.6
12-24	57	22.8
>24	169	67.6
ANC Visit		
1st	44	17.6
2nd	87	34.8
3rd	40	16.0
4th	71	28.4
5th and more	8	3.2
Presence of NCDs (n=250)		
yes	4	1.6
no	246	98.4
Type of NCDs(n=4)		
Hypertension	2	0.8
Thyroid disorder	2	0.8

Table 3: Dietary Habits of Women **n=250**

Statements	Frequency	Percentage
Add salt to food right before eating		
Always	8	3.2
Often	23	9.2
Sometimes	97	38.8
Rarely	35	14.0
Never	87	34.8
Add salt while cooking food		
Always	228	91.2
Often	7	2.8
Sometimes	13	5.2
Eating processed food high in salt		
Always	12	4.8
Often	23	9.2
Sometimes	175	70.0
Rarely	18	7.2
Never	22	8.8

Amount of salt you think you consumed		
too much	4	1.6
much	28	11.2
exact	184	73.6
low	34	13.6
Importance of lowering salt intake		
Very important	55	22.0
Somewhat important	155	62.0
Not at all important	40	16.0
Too much salt harms health		
Yes	199	79.6
No	51	20.4
To control salt intake		
Avoid/minimize consumption of processed foods such as achaar or papad	81	32.4
Look at the salt and sodium content on the food label	61	24.4
Buy low salt/sodium alternatives	115	46.0
Use spices other than salt when cooking	114	45.6
Avoid eating foods prepared outside of the home	55	22.0
Eat meals without adding extra salt to the table	10	4.0
Cook meals such as rice or bread without adding salt	1	0.4
Type of Salt used		
Dhulo salt	31	12.4
Two-child logo salt	219	87.6
Type of oil used for preparation of food		
Mustard oil	235	94.0
Refined vegetable oil	8	3.2
Butter& Ghee	7	2.8
1 kg sugar consumed in		
<7day	113	45.2
77-14 days	46	18.4
>14days	91	36.4

Table 4: Physical Activity of Women **n=250**

Physical activity	Average	Median	Interquartile range (Q1-Q3)
Moderate Intensity Physical Activity (minute per day)	113.94	120	9.64-180
Walking Physical Activity (minute per day)	23.05	20	0-30
Time spent on sedentary activity	77.60	60	0-120
Total Physical activity in minutes of moderate-intensity activity (min per day)	137	120	30-240

Table 5: Physical Activity by WHO Recommendations **n=250**

Physical activity	Frequency	Percentage
Meeting PA recommendations of WHO	98	39.2
Not meeting the recommendations of the WHO	152	60.8

DISCUSSION

This study showed that there is a high prevalence of insufficient fruit and vegetable intake (<5 servings a day was (95.3%). Regarding the dietary habits of the respondents, this study showed that 3.2 and 9.2% of respondents always and often add salt to their food right before eating followed by 34.7% who never add salt while eating which is consistent with the findings of the NCDs STEP survey 2019 showed 6.5% of women of all age often or always add salt before or while eating.[9] In the present study while asking about eating processed food high in salt 4.2% of respondents stated always and 9.2% of respondents said often which contradict with findings of the NCDs STEPS survey 2019 of Nepal showed 18.1% of women of all age consumed often or always consumed processed food high in salt.[9] This contradiction might be due to variation in sampling as the study was conducted among the general population countrywide taking a large sample. When asked about the amount of salt they think they consumed nearly three-quarters (73.6%) stated the exact amount and 13.6% stated a low amount. With regards to lowing salt in their diet two two-thirds (62%) responded somewhat important and 16% stated not at all important which in coherence with the study stated 78.1% of women of all ages stated reduction of salt is very important or somewhat important.[9]

With regards to the statement too much salt harm your health more than three quarter (79.6%) said yes coherence with the findings of the study revealed that 65.3% of women of all age correctly identified the health consequences related to too much intake of salt.[9] Similarly, to control salt intake nearly half (46%) of respondents said low salt/ sodium alternatives followed by 32.4% said avoid/ minimize consumption of processed foods such as achaar or papad incoherence with the findings of the study stated 2.2% of women reported doing something to reduce salt intake in their diet including minimizing consuming processed foods as much as possible, and not adding excess salt to meals, avoid food prepared outside.[9] The present study showed that most of the respondents (94%) used mustard oil for the preparation of meals and 2.8% used butter and ghee which is not supported by the study showed 43.8% used mustard oil and 51.4% used refined oil for the preparation of meals.[9]

The present study showed that the median moderate intensity physical Activity (minute per day) was 120 (9.64-180) followed by walking Physical Activity (minute per day) 20 (0-30). Likewise, the median time spent on sedentary activity was 60 (0-120). The median of total physical activity (min per day) was 137 (30-240.0) contradicting with the study showed average time spent on physical activity was 229.2 minutes, whereas for sedentary activity was 201.2 minutes.[9] The differences might be due to the variations in sample size.

With regards to physical activity according to WHO recommendations among respondents, this study showed more than half (60.8%) of respondents did not meet the Physical activity recommendations of WHO contradicting with the study showed 6.6% women of aged 18-69 years have an insufficient level of physical activity defined as <150 minutes of moderate-intensity activity.[9] Likewise another study showed around 8% of the respondents have insufficient physical activity.[3] Insufficient physical activity during pregnancy is the risk factor for development of gestational diabetes, increased weight gain and hypertensive disorders, and postpartum depression. . A study conducted in Nepal showed that the prevalence of insufficient physical activity has increased from 2.4% to 7.4% for adults age group 18-69 years of age. The increase in prevalence is more noticeable for women than men.[9] Another study showed that respondents aged 20–34 years, Adibashi/Janajati women, upper caste, Muslim/Buddhist, primary education, and secondary education , were less likely to be physically inactive.[21]

Regarding lifestyle advice more than half (56.8%) of the respondents got advice to eat at least five servings of fruit and/or vegetables each day, similarly less than half (46.4%) of the respondents start or do more physical activity. These findings in consistent with the findings of the NCDs STEP survey 2019 showed the most common received feedback from the health personnel was 52.3% eat at least five servings of fruits and vegetables each day, 48.2% lower fat diet.

CONCLUSION

This study concludes that a high prevalence of insufficient fruit and vegetable intake, high amount of salt consumption, and insufficient physical activity are the behavioral risk factors for NCDs among pregnant mothers. Health promotion activities such as awareness program at the community level regarding prevention and control of NCD risk factors is needed. Furthermore, counseling should be done at health facilities during antenatal Check-up to promote health. In addition, emphasis should be placed on periconceptional care to reduce the risk factors of NCDs during pregnancy to improve maternal and child health outcomes.

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