

Knowledge and Attitude Regarding Urinary Tract Infections and Its Prevention Among Mothers Attending Antenatal Sessions at Chipokota Mayamba Clinic in Ndola Zambia

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Abstract: Most of them were from low social economic status, owing to the lack of education and awareness of UTI, they tended to neglect minor symptoms and ultimately faced complications like premature births, low birth weight and increased perinatal mortality. Objectives: was to assess level of knowledge and attitude regarding Urinary Tract Infections and its prevention among mothers attending antenatal sessions. The study was conducted on 120 mothers attending antenatal sessions at the clinic by purposive sampling technique. The structured questionnaire was used to collect data. Results: The study revealed that 21 (17.6%) antenatal mothers had good knowledge, whilst 74 (62.2%) and 24 (20.2%) had average and poor knowledge respectively (Mean score = 3.16 points, SD = 2.74). Health center/clinic was cited as the main source of information regarding UTIs by 30.4% of the antenatal mothers. Regarding attitude, 13 (10.9%) had positive attitude, 59 (49.6%) had neutral attitude and 47 (39.5%) shown negative attitude (Mean score = 5.67 points, SD = 2.49). On the whole, respondents did recognize the threat posed by UTIs as most (70.6%) agreed with the statement: "I think that UTIs are serious and life-threatening infection during pregnancy." There was a statistically significant association between educational level, socioeconomic status and knowledge regarding UTIs and its prevention ($P=0.001$ & $P=0.011$), as well as between knowledge and attitude ($P=0.006$). This study concluded that knowledge enhancement program related to UTIs among mothers attending antenatal sessions in health centers/clinics or hospitals may change their level of knowledge and attitude.

Keywords: Knowledge, Attitude, Urinary Tract Infection, Prevention

1. Introduction

Urinary Tract Infection is the presence of pathogenic bacteria's within the genitourinary tract which generally may be diagnosed from the symptoms and Laboratory examination of urine. Clinically, manifestation of UTI varies but the symptoms may range from lower abdominal pain, fever of unknown origin and foul smelling urine [1]. *Escherichia coli* have been found to be the commonest (80-90%) cause of UTI among pregnant women then *Klebsiella*, *Enterobacter* account for the remaining cases [2].

In high-income countries several studies have been published regarding Urinary Tract Infection during

pregnancy and in Sub-Saharan Africa [3]. It has been found that, one of the condition which increases risk of developing UTI among pregnancy is due to hormonal and immunological changes during pregnancy [4]. However, if not treated during pregnancy UTIs can lead to complications such as abortion, preterm labour, preeclampsia, chronic pyelonephritis and rarely kidney failure. One of the ways of prevention and control of UTIs is by drinking about 6 to 8 glasses of water in a day, emptying the bladder in a clean toilet, wash genital area with warm water before and after sex, avoid tight fitting clothing and pantyhose. However, UTIs are typically treated with antibiotic drugs like cefprofloxacin or nitrofurantoin for 5 to 7 days, taken orally

[5].

As studies have shown that, UTI in pregnancy may result in maternal and fetal morbidity. Therefore, pregnant woman should be educated, about the physiological changes during pregnancy which may be one of the risk factors for development of urinary tract infection and also about its prevention. Regular antenatal care should be taken to minimize the complications of pregnancy, and to ensure that there is a healthy maternal and fetal outcome. The study therefore, was carried out at Chipokota Mayamba clinic in Chifubu area of Ndola, to assess the level of knowledge and attitude regarding UTIs and its prevention among mothers attending antenatal sessions.

However, in my review, there has not been much research of this nature done in Zambia, thus there may be lack of knowledge and attitude regarding Urinary Tract Infections and its prevention among antenatal mothers. Therefore, the results of this study would be useful in assisting antenatal mothers in the detecting of early common symptoms and prevention of UTIs.

2. Materials and Methods

The study population was composed of mothers (pregnant mothers) attending antenatal sessions at the clinic during the months of June and July 2018. It was a mixture of high and low socio-economic status' individuals. The study was a cross-sectional survey. Chipokota Mayamba clinic has a catchment area of 50028 people and does about 127 antenatal bookings per month and handles between 167-200 antenatal mothers. The gathering of data ranged from a simple observation at the clinic to collection of information through questionnaires from various antenatal mothers at the clinic. The method of research determined how the data was collected. Questionnaires were used to recover raw data in this case.

Sample size and Sampling: A StatCalc program in EPI INFO version 7.1.33 was used to estimate the sample size. The total population on the study area was 167 antenatal mothers and the sample size was calculated at 95% level of confidence level, marginal error of 5% and baseline levels was 120 antenatal mothers. Thus one hundred and twenty (120) questionnaires were distributed. To establish the knowledge and attitudes regarding UTI's and its prevention among mothers attending antenatal sessions at Chipokota Mayamba clinic in Chifubu. Out of the 120 questionnaires administered only 119 were validated and 1 where rejected for incompleteness. This gave a response rate of $[(119/120) \times 100]$ which is 99.17%. The survey was constructed as an interviewer-administered questionnaire with rating and closed end questions. Quantitative data was entered into the computer for analysis using Statistical Package for Social Sciences (SPSS) version 24 for analysis. The SPSS version 24 was used to process the frequencies and percentages which were used to discuss the findings. Tables, pie charts and bar graphs from Microsoft Excel 2010 were used to

present the data.

3. Ethical Consideration

Permission to conduct the study at Chipokota Mayamba clinic was granted by the Provincial Health Director from Copperbelt Provincial Health Office and Ethical clearance to conduct the study was sought and granted from Tropical Diseases Research Centre (TDRC) converge IRB (IRB No 00002911).

Respondents' information and results were treated with the utmost confidentiality and all the information in the study was restricted to the researcher, supervisors and participants involved in the study only.

4. Results

The calculated sample size was 120 but a total of 119 questionnaires were completed. The response rate which is $[(119/120) \times 100]$ came to 99.17%. Most respondents either fell in the 20-35 (47.1%) age category or >35 (36.1%) category, while the least were aged <20 (16.8%). Most pregnant women came from low social economic status (63.0%) and owing to the lack of education (80.7%). In terms of parity, antenatal mothers having given 1st Birth were the least (42.9%) while mothers having given 2nd to 3rd Births were the highest represented (57.1%). Antenatal mothers with gestational age of >3 months also dominated in this study (65.5%).

Table 1. Distribution of Respondents by Social Demographic Characteristics.

Characteristic		Number	Percentage
Age	<20	20	16.8%
	20-35	56	47.1%
	>35	43	36.1%
	Total	119	100.0%
Educational Level	Completed grade 12	23	19.3%
	Didn't complete grade 12	96	80.7%
	Total	119	100.0%
Residence status	Low Social Economic	75	63.0%
	High Social Economic	44	37.0%
	Total	119	100.0%
Parity	1 st Birth	51	42.9%
	2 nd -3 rd Birth	68	57.1%
	Total	119	100.0%
Gestational age	<3 months	41	34.5%
	>3 months	78	65.5%
	Total	119	100.0%

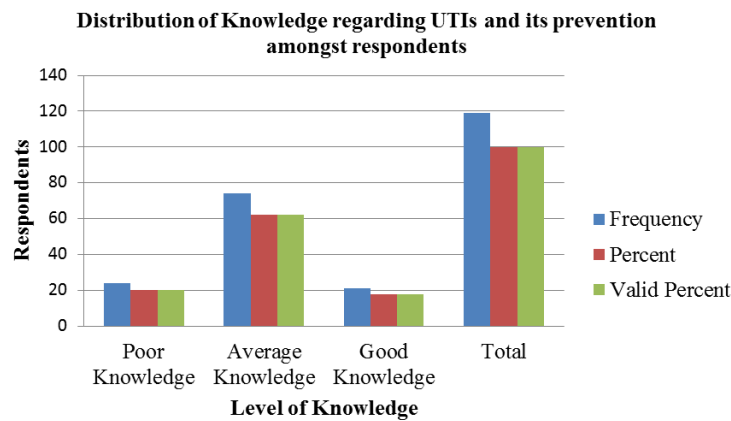
Respondents answered a number of questions to gauge their knowledge regarding urinary tract infections and its prevention during pregnancy. They ranged from basic information regarding UTIs to sources of information, symptoms as well as prevention and control of UTIs during pregnancy. The number of correct responses on knowledge (and their percentage of total respondents) is summarized in Table 2.

Table 2. Participants Knowledge regarding UTIs and its prevention during pregnancy.

Indicator	Response	
	Yes n (%)	No n (%)
1. Have you ever heard or received any information related to or regarding UTIs?	35 (29.4%)	70.6%
2. Can you prevent and control UTIs by drinking about 6-8 glasses of water a day?	54 (45.4%)	54.6%
3. Can you prevent and control UTIs by emptying the bladder in a clean toilet?	58 (48.7%)	51.3%
4. Can you prevent and control UTIs by washing genital areas with warm water?	47 (39.5%)	60.5%
5. Can you prevent and control UTIs by avoiding wearing tight fitting clothing and pantyhose?	47 (39.5%)	60.5%
6. Can you prevent and control UTIs by wiping your genital areas from front towards your back?	51 (42.9%)	57.1%
7. Can you prevent and control UTIs by avoiding usage of strong soaps, douches, antiseptic creams?	52 (43.7%)	56.3%

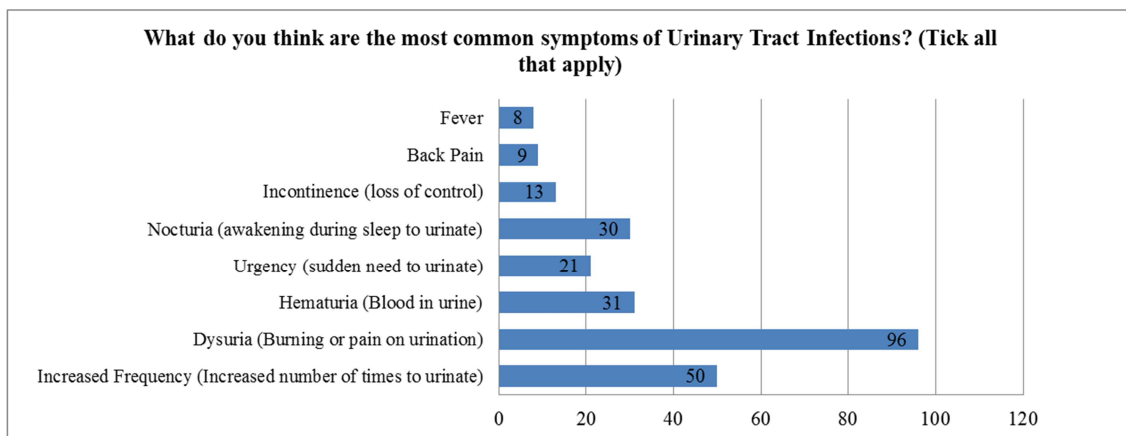
Overall Knowledge Score: In a study from India, common principles were used to measure knowledge regarding urinary tract infections including questions about transmission, prevention and control (Bhat AV., 2017). This study also used similar principles to generate seven multiple-choice questions, each of which was scored one point for a correct response and zero for the rest. An overall knowledge score was calculated by adding up the scores for each respondent

across all questions. There were 17.6% of respondents with good knowledge regarding UTIs and its prevention, 62.2% of them had average knowledge, while 20.2% had poor knowledge. The mean knowledge score for all respondents was 3.16 out of a possible 7 points (SD = 2.74). Distribution of knowledge regarding UTIs across all respondents is highlighted in Figure 1 and Table 3.

**Figure 1.** Distribution of Urinary Tract Infections (UTIs) knowledge amongst respondents.**Table 3.** Distribution of Urinary Tract Infections (UTIs) knowledge amongst respondents.

Knowledge	Number	Percentage
Poor Knowledge	24	20.2%
Average Knowledge	74	62.2%
Good Knowledge	21	17.6%
Total	119	100.0%

Some questions respondents were permitted to select multiple answers from a range of answers and most respondents 96 (68.5%) associated UTIs with dysuria, that's burning or pain on urination as summarized in Figure 2 below.

**Figure 2.** Number of respondents that selected different common symptoms of Urinary Tract Infections. N=119.

Sources of information regarding Urinary Tract Infections: Amongst antenatal mothers, 29.4% reported having received some information regarding UTIs and its prevention, whilst 71.0% reported not receiving any information as summarized in Figure 3.

Have you ever heard or received any information related to UTIs and its prevention? (Tick only one)

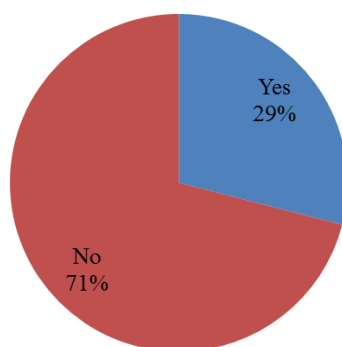


Figure 3. Respondents who reported receiving information regarding urinary tract infection and its prevention.

Sources of information: Health center/clinic was the main source (30.4%), followed by the Television (23.4%) and Radio (20.0%) were the most common sources of information amongst those that had received information regarding UTIs and its prevention as indicated in Figure 4. Other common avenues like newspapers (0.0%), church (0.0%), posters (1.7%), neighbours (4.0%) or schools (7.0%) hardly accounted for any UTIs information dissemination.

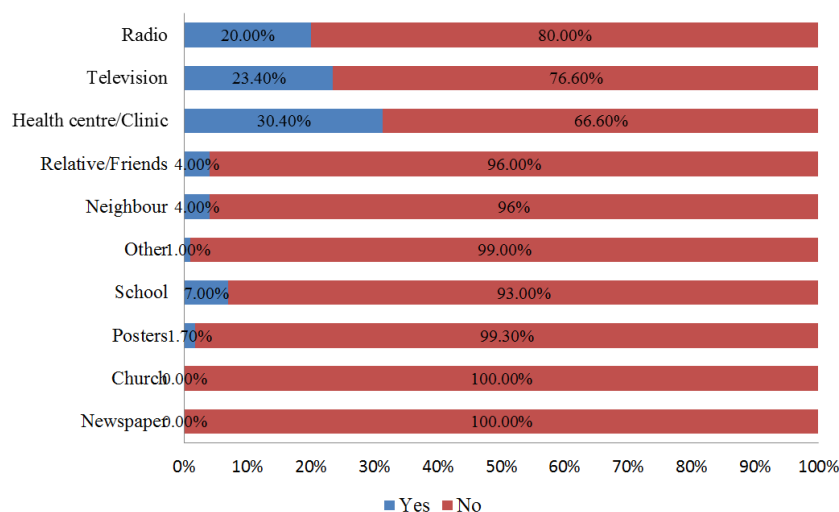


Figure 4. Percentage of respondents that had received information about Urinary Tract Infection (multiple-select question).

Antenatal mothers answered a combination of positive and negative statements to help gauge their attitude towards UTI's using a 2-point likert's scale

Table 4. Attitude regarding Urinary Tract Infections (UTIs) Indicator.

	Response	
	Agree n (%)	Disagree n (%)
1. I think that UTIs is a serious and life-threatening infection during pregnancy	70.6%	29.4%
2. UTIs can be transmitted from one person to another just like a common cold.	47.1%	52.9%
3. I think the best way to prevent myself from getting UTIs is to be very hygienic during pregnancy.	65.5%	34.5%
4. I am sure that anyone can get UTIs apart from just pregnant mothers.	42.9%	57.1%
5. I believe drinking about 6-8 glasses of water a day is one way to prevent myself from getting UTIs during pregnancy.	61.3%	38.7%
6. I am sure that I can treat myself if I get UTIs during pregnancy.	47.9%	52.1%
7. In my opinion, only pregnant mothers are at risk of getting UTIs.	43.7%	56.3%
8. If someone has got an UTI, people should avoid having close contact with her.	36.1%	63.9%
9. I think that I should go to the health center/clinic to have my Urine tested as soon as I suspect that I have UTI	37.8%	62.2%

1) to disagree (score 0). There were 9 questions related to attitude and the general attitude is summarized in Table 4 and Table 5. Conversely, many antenatal mothers (57.1%) is agreed/thought, that only pregnant mothers are at risk of getting UTI's while self-medication seemed prevalent as reflected by respondents indicating/agreeing that-"I am sure that I can treat myself if I get UTI's (52.1%) to going to the Health center/clinic to have the urine tested as soon as they suspect UTI's (37.8%)"

Table 5. Distribution of Urinary Tract Infection attitudes amongst antenatal mothers.

Attitude	Number	Percentage
Positive	13	10.9%
Neutral	59	49.6%
Negative	47	39.5%

Overall Attitude Score: When both positive and negative statements were scored with the right answer scoring 1 point and the wrong answer 0 point following the likert scale, an overall attitude score was determined for each antenatal mother by adding up the scores across the 9 attitude questions. There were 10.9% of respondents with a positive attitude, 49.6% of them had a neutral attitude, while 39.5%

had a negative attitude regarding UTI's. The mean attitude score for all respondents was 5.67 out of a possible 9 points (SD = 2.49). Distribution of attitudes across all antenatal mothers is summarized in Table 5.

Comparing knowledge scores regarding urinary tract infection and its prevention to different demographic characteristics (age, educational level, residence status, parity and gestational age) using the Chi-Square test indicated that there was no association between knowledge scores and the respondent's age ($p = 0.567$, Table 6) as well as knowledge scores and the antenatal mothers' parity and gestational age ($p = 0.862$, Table 6 and $p=0.143$, Table 7). There was statistically significant association between knowledge regarding UTI's and the antenatal mothers' educational level ($p = 0.001$, Table 6) as well as knowledge regarding UTI's and the antenatal mothers' residential status ($p = 0.011$, Table 6). This means that respondent's or rather pregnant mothers who didn't complete their secondary school (grade 12) and those from low social economic status, owned to the lack of knowledge and awareness of UTI, hence they tend to neglect minor symptoms and ultimately face complications like premature births, low birth weight and increased perinatal mortality.

Table 6. Association of Knowledge on Urinary Tract Infection with other Factors.

Knowledge	Factor			
Poor Knowledge	Age			
	<20 n (%)	20-35 n (%)	>35 n (%)	Total
	6 (30.0%)	11 (16.7%)	7 (21.2%)	24 (20.2%)
	11 (55.0%)	43 (65.2%)	20 (60.6%)	74 (62.2%)
	3 (15.0%)	12 (18.1%)	6 (18.2%)	21 (17.6%)
Total	20 (100.0%)	66 (100.0%)	33 (100.0%)	119 (100.0%)
		Chi 2 (2)=1.135		P-Value=0.567
Poor Knowledge	Educational Level			
	Completed grade 12 n (%)	Didn't complete grade 12 n (%)		Total
	8 (14.8%)	16 (24.6%)		24 (20.2%)
	29 (53.7%)	45 (69.2%)		74 (62.2%)
	17 (31.5%)	4 (6.2%)		21 (17.6%)
Total	54 (100.0%)	65 (100.0%)		119 (100.0%)
		Chi 2 (2)=13.988		P-Value=0.001
Poor Knowledge	Residence Status			
	Low Social Economic n (%)	High Social Economic n (%)		Total
	19 (24.7%)	5 (11.9%)		24 (20.2%)
	54 (70.1%)	20 (47.6%)		74 (62.2%)
	4 (5.2%)	17 (40.5%)		21 (17.6%)
Total	77 (100.0%)	42 (100.0%)		119 (100.0%)
		Chi 2 (2)=8.963		P-Value=0.011
Poor Knowledge	Parity			
	1 st Birth n (%)	2 nd to 3 rd Birth n (%)		Total
	14 (21.5%)	10 (18.5%)		24 (20.2%)
	39 (60.0%)	35 (64.8%)		74 (62.2%)
	12 (18.5%)	9 (16.7%)		21 (17.6%)
Total	65 (100.0%)	54 (100.0%)		119 (100.0%)
		Chi 2 (2)=0.297		P-Value=0.862

Table 7. Association of Knowledge on Urinary Tract Infection with other Factors (continuation).

Knowledge	Factor		Total
	Gestational age	>3 months n (%)	
Poor Knowledge	< 3 months n (%)	8 (13.8%)	24 (20.2%)
	16 (26.2%)	41 (70.7%)	74 (62.2%)
Average Knowledge	33 (54.1%)	9 (15.5%)	21 (17.6%)

Knowledge	Factor		
	Gestational age	>3 months n (%)	Total
Good Knowledge	12 (19.7%)	58 (100.0%)	119 (100.0%)
Total	61 (100.0%)	Chi 2 (2)=3.887	P-Value=0.143

Attitude: Comparing knowledge scores with attitude scores regarding UTI and its prevention among antenatal mothers using the Chi-Square test, indicated that there was statistically significant association between mothers' knowledge scores with their attitude scores ($p = 0.006$, Table 8).

Table 8. Association between Knowledge and Attitude regarding UTIs and its prevention during pregnancy (Chi square test).

Knowledge	Attitude		
	Positive n (%)	Neutral n (%)	Negative Total n (%)
Poor Knowledge	3 (15.8%)	12 (17.1%)	9 (30.0%) 24 (20.2%)
Average Knowledge	10 (52.6%)	48 (68.6%)	16 (53.3%) 74 (62.2%)
Good Knowledge	6 (31.6%)	10 (14.3%)	5 (16.7%) 21 (17.6%)
Total	19 (100.0%)	70 (100.0%)	30 (100.0%) 119 (100.0%)
	Chi 2 (2)=14.301		P-Value=0.006

5. Discussion

Age: With regard to age, in our study majority of pregnant mothers' (47.1%) were in the age group of 20-35 years. A similar study conducted at Nepal shown that 41.46% were in between the age group of 22-25 years. Another study conducted at Brazil shown that 67% pregnant mothers were aged between 20 and 29 years. Both studies are significant with present study [6].

Educational Level and Residential Status: Education background and Residential status that's basically socioeconomic status play an important role in the prevalence of UTIs (as shown in Table 2 and Table 7), huge number of pregnant mothers who did not show effective knowledge regarding UTIs and its prevention during pregnancy were found in the group of women who did not complete their grade 12 or had any educational background, by this in harmony with Kremery et al, who demonstrated that socioeconomic status, personal hygiene, education level, pregnancy duration, post-coital washing, contraceptive use, had a great impact on level of knowledge regarding UTIs and its preventive measures during pregnancy [7-8].

Parity and Gestational age: From present study 48.1% pregnant mothers with two to three births and 70.1% pregnant mothers in more than 3 months of gestational age had average knowledge regarding UTIs and its preventive measures (Table 2 and Table 7) by this were are in agreement with the previous research conducted in Al-Mukalla district, Yemen where the finding results confirmed that There was an increase in frequency of bacteriurea with progress of pregnancy, with 48.8% of infections in the women in the 3rd trimester as well as 75.6% of infected women who had 1-3 children [9].

The present study shows that knowledge regarding urinary tract infection scores to different demographic characteristics (age, educational level, residence status, gravidity and gestational age) using the Chi-Square test indicated that there was no association between knowledge regarding UTI's and the mothers' age ($p = 0.567$, Table 7) as well as knowledge

regarding UTI's and the mothers' parity and gestational age ($p = 0.862$, Table 7 and $p=0.143$, Table 8). [10]

A similar study conducted at Nepal [11-12] shown that there is statistically significant relationship was found on level of knowledge with age of women ($\chi^2 = 8.53$). It is contradict with present study.

There was statistically significant association between knowledge regarding UTI's and the mothers' educational level ($p = 0.001$, Table 7) as well as knowledge regarding UTI's and the mothers' residential status ($p = 0.011$, Table 6). This means that respondent's or rather pregnant mothers' who didn't complete their secondary school (grade 12) and those from low social economic status, owned to the lack of knowledge and awareness of UTI and its prevention, hence they tend to neglect minor symptoms and ultimately face complications like premature births, low birth weight and increased perinatal mortality.

6. Conclusion

Urinary tract infections are still among the most common pregnancy-related disorders in the vast majority of countries and unfortunately, their incidence has not been on a decrease. The symptoms may be nonspecific and may go unnoticed even in healthy pregnant mothers. Unlike in general population, asymptomatic infections during pregnancy require treatment in line with current practical recommendations from a number of international bodies and organizations. Early diagnosis and adequate treatment of asymptomatic infections allows to significantly decreasing the risk of maternal and fetal complications. The most common pathogens causing UTIs demonstrate sensitivity to many drugs that can be safely administered during pregnancy, also in the 1st trimester. In order to reduce the number of complications, urine culture tests should be performed as a routine bases from the 1st trimester and continue later in pregnancy.

This study was a facility-based study and therefore the results could not be generalized beyond the study population at Chipokota Mayamba Clinic. There is need for a

population-based study in order to understand the distribution of knowledge and attitude regarding Urinary Tract Infections and its prevention among mothers attending antenatal sessions at different health centers in Zambia. It is recommended that future studies should take this into account.

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