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SUBJECTIVE QUALITY OF LIFE OF WOMEN IN THE PERINATAL PERIOD: A POST COVID-19 PANDEMIC EXPLORATION IN NORTH MACEDONIA

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ABSTRACT

Subjective quality of life could be considered one of the indicators of health behavior and wellbeing of women in the perinatal period. Accordingly, the aim of this paper was to examine how women in perinatal period perceive quality of life in various domains. Its relationship to age, number of pregnancies, course of pregnancies, and method of delivery and experience with Covid-19 pandemic was investigated, as well. Our sample consisted of 366 pregnant women in any period of pregnancy who came in for regular outpatient examinations and control, those who were hospitalized due to pathological pregnancy or due to the need for intensive care, as well as women in their postnatal period, one year after delivery, who were seeking professional advice from a gynecologist. The majority were aged 20 to 30 years (53.8%). The findings showed that assessed domains of subjective quality of life were related to a variety of experiences with the Covid-19 pandemic. The results are presented and discussed in detail. Implications and limitations are given, as well.

Keywords: perinatal period, subjective quality of live, Covid-19

INTRODUCTION

There are various definitions of the perinatal period found in the relevant literature []. The ICD-10 defines “perinatal” as the time between the 22 completed gestation weeks and the seven days after birth. It is a period of great vulnerability from a developmental point of view, but also a period of great opportunities for reinforcing the interaction between parent and child [2]. Some of the most important health issues include maternal and neonatal services and mental health. Levels of maternal, neonatal and child health indicators in North Macedonia up to 2017 are worrying and unsatisfactory compared to European ones. The Macedonian Ministry of Health, with the support of WHO and other UN agencies, took initiatives that resulted in a reversal of the trend during 2018 and 2019 [3]. Sustaining this significant progress that has been made will require continued attention and initiatives over the next decade. Additional actions and investments will be needed to sustain improvements during the next few years, as outlined in Health Strategy of Republic of North Macedonia

2021 – 2030. A very important and related goal will be to increase the level of health literacy among the population of young women, parents, adolescents, and school-age children.

In order to raise the status and position of promotion in the health system, a number of key issues need to be resolved, including the contribution to improving maternal and early child health indicators, as well as the need to increase the level of health literacy of young women, parents, adolescents, and students. All aspects of maternal and child health depend on health culture and health literacy. Improving health status and changing health behavior is not a task for the health sector alone but must be part of a coherent government policy that will cover all aspects of social, economic, and fiscal policy. The subjective quality of life could be considered as one of the indicators of health behavior and wellbeing of women in perinatal period.

Accordingly, the aim of this paper was to examine how women in the perinatal period perceive their quality of life in various domains. Its relationship to age, number of pregnancies, course of pregnancies, method of delivery, and experience with the Covid-19 pandemic were investigated, as well.

MATERIALS AND METHODS

Study sample

The study sample consisted of 366 women in perinatal period, i.e., pregnant women in any period of pregnancy who appeared for regular outpatient examinations and control, those who were hospitalized due to pathological pregnancy or due to the need for intensive care, and women in their postnatal period, one year after delivery, who were seeking professional advice from a gynecologist. The sample included women from 18 to 45 years old, the majority aged 20 to 30 years (53.8%), followed by participants over 30 years (38.5%). Most of them were married (96%) and had sustainable socio-economic status (94.3%). Half of the study participants (50.8%) have earned a university degree, 33.1% and 13.7% have completed secondary education and primary education, respectively, and 2.5% were without formal education. Regarding religious affiliation, 54.9% of the respondents reported that they were Christian, and the remaining 45.1% identified themselves as Muslim. Demographic characteristics of the study sample are presented in Table 1.

Table 1. *Socio - demographic characteristics of the study sample*

Sociodemographic characteristics	N (%)
Age	
≤20	28 (7.7)
20-30	197 (53.8)
≥30	141 (38.5)
Marital status*	
Married	351 (95.9)
In extramarital community	12 (3.3)
Single	1 (0.3)
Widow	1 (0.3)
Divorced	1 (0.3)
Socioeconomic status	
Sustainable	345 (94.3)
Unsustainable	21 (5.7)
Education	
High	186 (50.8)
Secondary	121 (33.1)
Primary	50 (13.7)
None	9 (2.5)
Religion	
Christian	201 (54.9)
Muslim	164 (45.1)

The sampling framework was based on randomly selected women from 7 national health institutions: tertiary health care system (University Clinic for Gynecology and Obstetrics in Skopje), one from the secondary health care system (Special Hospital for Gynecology and Obstetrics "Mother Theresa" in Skopje), both covering the majority of the targeted population, and 5 regional maternity hospitals located in Tetovo, Bitola, Strumica, Stip and Kumanovo.

MEASURES

Quality of life

Quality of life was assessed using the WHO Quality of Life Scale (WHOQOL-BRIEF, WHOQOL group, 1998) with 26 items scored on a 5-point Likert scale from 1 - disagree to 5 - extremely agree. Higher scores indicated poorer quality of life [4]. The scale has good discriminant and content validity, as well as good internal consistency for all four subscales (physical domain, psychological domain, social relationship domain, and environment domain). Cronbach alpha of the

social domain scale, as recommended, should be considered with caution because this scale consists of only 3 items (WHOQOL group, 1998). Skevington et al. (2004) confirmed 4 factors/domains of the WHOQOL BRIEF, using confirmatory factor analysis and found good to excellent reliability on a sample of sick and well adults from 23 countries. The authors concluded that this is a sound measure that could be used in a cross-cultural setting [5].

Cronbach alpha reliability values in this study were: physical domain (0.73), psychological domain (0.71), social relationship domain (0.58), and environment domain (0.81). The reliability of the general/overall quality of life measured with 2 items was 0.68.

Fear of COVID-19

The Covid-19 Questionnaire, with 11 items, was developed for the purposes of this study. It is a self-report questionnaire, aiming to assess fear related to the COVID-19 pandemic. Ten items had dichotomous answers (yes/no). One item was assessed by 4 options. Cronbach alpha reliability obtained on this study's sample was 0.61.

Study design and procedures

A cross-sectional study at the national level was conducted during the month of June 2022. A total of 20 junior trainee doctors and specialists from the University Clinic of Psychiatry and University Clinic for Gynecology and Obstetrics were recruited and trained in data collection. Information regarding the study was disseminated through junior researchers to women attending the public health services. Junior researchers obtained referrals to recruit potential participants by collecting basic contact information (name, phone number and/or email). Personal data obtained, such as names and contact information was used solely to contact participants and was stored separately from data on the main study parameters.

Data were collected during face-to-face interviews using the WHO Quality of Life Scale (WHOQOL-BRIEF), Experience with Covid-19 questionnaire, as well as a socio-demographic questionnaire. The questionnaires were available in the Macedonian and Albanian languages.

Ethical approval

All relevant study documentation (questionnaires, informed consent forms, information letters) were submitted and obtained approval by the Ethical committee at the Faculty of Medicine, Ss. Cyril and Methodius University in Skopje. Permission to recruit participants through national public health institutions was obtained in cooperation with the Macedonian Ministry of Health and through the respective management teams of the included national public health institutions.

The informed consent form was accompanied by an information letter in order to inform participants about the purpose and procedures of the study. It also included contact information and emergency helpline numbers in case of need. The survey was completed anonymously, without the inclusion of identifiable personal information, and the possibility of withdrawing from the study at any time was clearly explained to the respondents. Participation in the research was voluntary and responses are presented in the report in an anonymous manner.

RESULTS

Frequencies, mean, standard deviation, minimum and maximum scores were used to describe study variables. To analyze relationship of quality of life to age, number of pregnancies, course of pregnancy, method of delivery and experiences with Covid-19, the Mann-Whitney test and Kruskal Wallis test were performed.

All participating women had a positive pregnancy history, more than half had one prior pregnancy (53%), and 16% respondents had three or more pregnancies. Distribution according to the number of pregnancies includes mostly women with one pregnancy and a pregnancy in progress (35.5% and 31.7%, respectively); women with a miscarriage (1.9%), women with an artificial abortion (0.3%), and 0.8% of the women at the time of the study were in the process of in-vitro fertilization. Participants with normal pregnancy (93.4%) were dominant; of them, 29% had a normal delivery, 2.5% patients had a preterm delivery, and 34.4% patients delivered via caesarean section.

Experiences with Covid-19 of women in the perinatal period who participated in the study are given in Table 2. It can be seen that as a consequence of the Covid-19 pandemic, 14.8% of the respondents reported having lost a loved one. The Covid-19 pandemic made it difficult

to access health services for 44.8% of respondents, 45.1% said that the restrictive measures had repercussions on the quality of pregnancy, in the sense of limited time and opportunities for sports and recreational activities and socialization outside the home. 31.2% of the respondents and members of their families have lost their job or experienced a decrease in income during the Covid-19 pandemic. 2.2% of the respondents reported an increase of intimate-partner or family violence during the pandemic. According to the received answers, this group of respondents was dominated by patients who had never experienced psychological issues before (89.9%). Among other respondents who were receiving treatment, 4.1% stated that they felt completely well and that the psychological issues receded, 5.5% still have psychological issues from time to time, and the treatment did not yield any results in 0.55% of the respondents.

Results on the subjective quality of life, as measured with WHOQOL-BRIEF scale, i.e. assessed physical domain, psychological domain, environment and social relationship, are presented in the following section. According to the answers received to the questions concerning the physical health (table 3), the respondents

Table 2. *Distribution of answers on COVID-19 questionnaire*

Covid-19 questionnaire		**yes N (%)**	**no N (%)**
Did you feel that the Covid-19 pandemic had an impact on your mental state before or after childbirth?		124 (33.9)	242 (66.1)
Have you contracted Covid-19?		141 (38.5)	225 (61.5)
Did you fear the infection of the fetus/newborn with Covid-19?		217 (59.3)	149 (40.7)
Did you have a loss of a loved one as a consequence of a Covid-19 infection?		54 (14.8)	312 (85.3)
During the pandemic, did you control your pregnancy through regular gynecological screening?		322 **(88)**	44 (12)
Do you feel that restrictive measures in the course of the Covid-19 pandemic have made it difficult for you to access health services?		164 (44.8)	202 (55.2)
Do you feel that the restrictive measures in the course of Covid-19 pandemic have affected the quality of your pregnancy? (Limited time and opportunities for sports and recreational activities and socialization outside the home)		165 (45.1)	201 (54.9)
Did you or a member of your family face a loss of job, or an income decrease during the Covid-19 pandemic?		114 (31.2)	252 (68.8)
Did you feel that violence by your partner/in your family intensified during the pandemic?		8 (2.2)	2 (0.6)
Did you fear the Covid-19 vaccination during your pregnancy?		240 **(65.6)**	126 (34.4)
		n (%)	
After I started the treatment until now:	Difficulties with my mental state have receded, I feel completely well	15 (4.1)	
	I feel difficulties regarding my mental state from time to time	20 (5.5)	
	I do not feel any improvement regarding my mental state	2 (0.6)	
	I do not have and I have not had any difficulties with my mental state	329 (89)	

most often: a little prevented by physical pain to do what they need to do (33.61%), not at all had a need for medical treatment for their day-to-day functioning (43.99%), have a great deal of energy for daily life (48.91%), are very satisfied with their physical mobility (34.43%), are satisfied with the quality of sleep, the ability to perform daily life activities and the capacity to work (48.91%, 59.29%, 62.29%, respectively).

In regards to mental health (table 4), the respondents most often: enjoy life very much (57.92%), their life is very meaningful (48.63%), are able to concentrate (56.83%), in general accept their physical appearance (41.53%), are satisfied with themselves (59.84%), rarely have negative feelings (59.84%).

According to the received answers to the questions concerning the environment in which they live (table 5), the respondents most often: feel very safe in their daily life (55.19%), their life is very meaningful (48.63%), perceive the physical environment as very healthy (59.29%), in general have enough money for daily living and in general have the information necessary for daily life at

Table 3. *Distribution of responses to physical health domain in a WHOQOL-BRIEF scale*

To what extent do you think that physical pain prevents you from doing what you need to do?				
Not at all **n (%)**	Slightly **n (%)**	Moderately **n (%)**	Very much **n (%)**	Extremely **n (%)**
113 (30.87)	123 (33.61)	105 (28.69)	22 (6.01)	3 (0.82)
To what extent do you need a medical treatment to function in your daily life?				
Not at all **n (%)**	Slightly **n (%)**	Moderately **n (%)**	Very much **n (%)**	Extremely **n (%)**
161 (43.99)	93 (25.41)	73 (19.95)	28 (7.65)	11 (3.01)
Do you have enough energy for day-to-day life?				
Not at all **n (%)**	Slightly **n (%)**	Moderately **n (%)**	In general **n (%)**	Completely **n (%)**
2 (0.55)	17 (4.64)	78 (21.31)	179 (48.91)	90 (24.59)
How satisfied are you with your physical mobility?				
5 (1.37)	32 (8.74)	94 (25.68)	126 (34.43)	109 (29.78)
How satisfied are you with your sleeping?				
Very dissatisfied **n (%)**	Dissatisfied **n (%)**	Neither satisfied nor dissatisfied **n (%)**	Satisfied **n (%)**	Very satisfied **n (%)**
8 (2.19)	32 (8.74)	104 (28.41)	179 (48.91)	43 (11.75)
How satisfied are you with your ability to perform day-to-day life activities?				
Very dissatisfied **n (%)**	Dissatisfied **n (%)**	Neither satisfied nor dissatisfied **n (%)**	Satisfied **n (%)**	Very satisfied **n (%)**
2 (0.55)	16 (4.37)	61 (16.67)	217 (59.29)	70 (19.13)
How satisfied are you with your capacity for work?				
Very dissatisfied **n (%)**	Dissatisfied **n (%)**	Neither satisfied nor dissatisfied **n (%)**	Satisfied **n (%)**	Very satisfied **n (%)**
/	17 (4.64)	41 (11.2)	228 (62.29)	80 (21.86)

Table 4. *Distribution of responses to mental health domain in the WHOQ-BRIEF scale*

Not at all **n (%)**	Slightly **n (%)**	Moderately **n (%)**	Very much **n (%)**	Extremely **n (%)**
5. How much do you enjoy life?				
2 (0.55)	11 (3.01)	90 (24.59)	212 (57.92)	51 (13.93)
6. To which extent do you think your life is meaningful?				
	4 (1.09)	31 (8.47)	178 (48.63)	153 (41.8)
7. How well can you (are able) to concentrate?				
1 (0.27)	10 (2.73)	92 (25.14)	208 (56.83)	55 (15.03)
Not at all **n (%)**	Slightly **n (%)**	Moderately **n (%)**	In general **n (%)**	Completely **n (%)**
11. Can you accept your physical appearance?				
4 (1.09)	11 (3.01)	35 (9.56)	152 (41.53)	164 (44.81)
Fairly dissatisfied **n (%)**	Dissatisfied **n (%)**	Neither satisfied nor dissatisfied **n (%)**	Satisfied **n (%)**	Very satisfied **n (%)**
19. How satisfied are you with yourself?				
	8 (2.19)	26 (7.1)	219 (59.84)	113 (30.87)
Never **n (%)**	Rarely **n (%)**	Often **n (%)**	Very often **n (%)**	Always **n (%)**
26. How often do you have negative feelings such as: anxiety, depression, hopelessness (despair), sadness?				
90 (24.59)	219 (59.84)	32 (8.74)	21 (5.74)	4 (1.09)

Table 5. *Distribution of responses to the environment domain in the WHOQOL-BRIEF scale*

Not at all n (%)	Slightly n (%)	Moderately n (%)	Very much n (%)	Extremely n (%)
8. How safe do you feel in your daily life?				
1 (0.27)	6 (1.64)	81 (22.13)	202 (55.19)	76 (20.76)
9. How healthy is your physical environment?				
	10 (2.73)	90 (24.59)	217 (59.29)	49 (13.39)
Not at all n (%)	Slightly n (%)	Moderately n (%)	In general n (%)	Completely n (%)
12. Do you have enough money to meet your needs?				
4 (1.09)	22 (6.01)	89 (24.32)	150 (40.98)	101 (27.59)
13. How available is the information you need in your daily life?				
1 (0.27)	19 (5.19)	60 (16.39)	149 (40.71)	137 (37.43)
14. To what extent do you have the opportunity for leisure activities?				
10 (2.73)	52 (14.21)	148 (40.44)	103 (28.14)	53 (14.48)
Fairly dissatisfied n (%)	Dissatisfied n (%)	Neither satisfied nor dissatisfied n (%)	Satisfied n (%)	Very satisfied n (%)
23. How satisfied are you with the living conditions in your space in which you live?				
3 (0.82)	10 (2.73)	38 (10.38)	186 (50.82)	129 (35.25)
24. How satisfied are you with your accessibility to health services and services?				
2 (0.55)	24 (6.56)	79 (21.58)	201 (54.92)	60 (16.39)
25. How satisfied are you with your transportation?				
1 (0.27)	16 (4.37)	49 (13.39)	197 (53.82)	103 (28.14)

disposal (40.98%, 40.71%, respectively), moderately have the opportunity for leisure activities (40.44%), they are very satisfied with the spatial living conditions, accessibility to health services and services, and transportation (50.82%, 54.92%, 53.82%, respectively).

Table 6 shows that respondents most often assess the overall quality of life and general health as good (55.19%, 52.19%, respectively).

As seen in table 7, the respondents are mostly satisfied with their relationships with other people (68.31%), with their sex life (62.84%) and with the support they receive from friends (59.02%).

Table 8 shows the basic descriptive statistics for the domains of physical health, mental health, environment, overall quality of life and general health, and social life and interpersonal relationships from the WHOQOL scale.

Table 6. *Distribution of responses on overall quality of life and general health in WHOQOL-BRIEF*

Very poor **n (%)**	Poor **n (%)**	Neither poor nor good **n (%)**	Good **n (%)**	Very good **n (%)**
1. How would you assess the quality of your life?				
1 (0.27)	3 (0.82)	31 (8.47)	202 (55.19)	129 (35.25)
2. How satisfied are you with your health?				
/	7 (1.91)	26 (7.1)	191 (52.19)	142 (38.8)

Table 7. *Distribution of responses for the domain for social life and interpersonal relations in WHOQOL-BRIEF scale*

Fairly dissatisfied n (%)	Dissatisfied n (%)	Neither satisfied nor dissatisfied n (%)	Satisfied n (%)	Very satisfied n (%)
20. How satisfied are you with your relations with other people?				
1 (0.27)	5 (1.37)	31 (8.47)	250 (68.31)	79 (21.58)
21How satisfied are you with your sex life?				
5 (1.37)	9 (2.46)	38 (10.38)	230 (62.84)	84 (22.95)
22How satisfied are you with the support you receive from your friends?				
1 (0.27)	9 (2.46)	41 (11.2)	216 (59.02)	99 27.05)

Table 8. *Distribution of total scores for WHOQOL domains*

WHOQOL.	**mean ± SD**	**min-max**	**median (IQR)**
Physical health	27.09 ± 4.3	0 – 35	28 (24 – 30)
Mental health	24.45 ± 2.9	12 – 31	25 (23 – 26)
Environment	31.08 ± 4.4	13 – 40	31 (29 – 34)
Overall quality	8.51 ± 1.2	4 – 10	8 (8 – 10)
Social life	12.25 ± 1.5	7 – 15	12 (12 – 13)

As seen in table 9, there were no significant differences in respondents with 1, 2 and ≥3 pregnancies in terms of quality of life from the aspect of physical health (p=0.27) and social life (p=0.12), yet they had significantly different quality of life from the aspect of mental health (p=0.045), environment (p=0.018) and overall quality of life and health (p=0.0023). Patients with 1 pregnancy assessed the quality of life to be much better than patients with ≥3 pregnancies in terms of mental health (median=25 vs 24, p=0.04), and in terms of the environment in which they live (median=32 vs 30, p=0.014). The perception about the overall quality of life and general health was significantly better in patients with 1 pregnancy compared to respondents with 2 and ≥3 pregnancies (median=9 vs 8; p=0.004 and 9 vs 8; p=0.012, respectively).

The course of pregnancy had no significant impact on the quality of life from the aspect of physical health, mental health, social life, and from the aspect of overall quality and general health (p>0.05), while it had a significant impact on the quality of life from the aspect of the environment. This is due to a much better perception of the domain of quality of life by patients with normal versus irregular pregnancy (median =31 vs 29.5, p= 0.0096). There was no significant difference in patients who had not yet delivered,

Relationship of quality of life to age, number of pregnancies, course of pregnancy and method of delivery

Table 9. *Differences in WHOQOL scores according to age, number of pregnancies, course of pregnancy and method of delivery*

variable		Quality of life WHOQOL-BRIEF **(mean ± SD) (median (IQR))**				
		Physical health	Mental health	environment	Overall quality of life and health	Social relations
Age	≤20	28.64±5.6 28.5(26.5-30)	24.86±2.4 25(23.5-27)	30.43±4.8 31.5(29-32.5)	8.32±1.2 8(8-9)	11.89±1.4 12(11.5-12.5)
	20-30	27.26±4.2 28(24-30)	24.73±2.6 25(23-27)	30.43±4.8 31.5(29-32.5)	8.57±1.1 8(8-10)	12.38±1.4 12(12-13)
	≥30	26.55±4.7 27(24-29)	23.99±3.2 24(22-26)	30.99±4.3 31(29-34)	8.46±1.2 8(8-9)	12.13±1.7 12(12-13)
	Kruskal Wallis test	H=5.3 p=0.07	H=4.1 p=0.13	H=0.5 p=0.8	H=0.9 p=0.65	H=3.1 p=0.2
Number of pregnancies	1	27.15±4.4 28(24-30)	24.59±3.1 25(23-27)	31.47±4.3 32(29-34)	8.59±1.2 9(8-10)	12.24±1.5 12(12-13)
	2	27.34±4.3 28(25-30)	24.59±2.4 25(23-26)	31.21±4.1 31(29-34)	8.61±1.1 8(8-10)	12.41±1.5 12(12-13)
	≥3	26.42±4.1 27(23-29)	23.73±2.9 24(22-25)	29.56±4.9 30(26-33)	8.05±1.2 8(7-9)	11.95±1.5 12(11-13)
	Kruskal Wallis test	H=2.6 p=0.27	**H=6.2 p=0.045 1 vs 3 p=0.04**	**H=8 p=0.018 1 vs 3 p=0.014**	**H=12.2 p=0.0023 1 vs 3 p=0.004 1 vs 3 p=0.012**	H=4.3 p=0.1
Course of pregnancy	Normal	27.21±4.2 28(25-30)	24.49±2.8 25(23-26)	31.24±4.3 31(29-34)	8.54±1.1 8(8-10)	12.29±1.4 12(12-13)
	Irregular	25.37±5.5 23.5(21-30.5)	23.83±3.3 24(21.5-26)	28.87±5.1 29.5(26-31.5)	8.04±1.3 8(7.5-9)	11.67±2.2 12(10-14)
	Mann-Whitney test	Z=1.8 p=0.08	Z=0.7 p=0.5	**Z=2.6 p=0.0096**	Z=1.8 p=0.07	Z=1.1 p=0.3
Method of delivery	Not delivered yet	27.27±4.4 28(24-30)	24.59±2.6 25(23-26)	31.29±4.7 32(29-34)	8.62±1.2 9(8-10)	12.37±1.4 12(12-13)
	Normal	27.32±3.9 28(25-30)	24.75±2.8 25(23-26)	31.18±4.1 31.5(29-34)	8.35±1.1 8(8-9)	12.38±1.5 12(12-13)
	Preterm	27.44±4.9 29(24-31)	24.55±5.5 27(25-28)	29.67±6.2 31(24-34)	8.33±1.6 9(8-9)	11.78±2.3 13(10-13)
	C-section	26.69±4.6 28(25-29)	24.06±2.9 24(22-26)	30.91±4.2 31(29-34)	8.55±1.1 8(8-10)	12.05±1.5 12(11-13)
	Kruskal Wallis test	H=1.3 p=0.7	H=5.6 p=0.13	H=1.6 p=0.7	H=4.7 p=0.2	H=2.6 p=0.5

patients with normal delivery, preterm delivery and delivery with caesarean section in terms of quality of life in all domains (p>0.05).

Relationship of quality of life to experiences with Covid-19 pandemic

Results from the relationship of quality of life to experiences with Covid-19 pandemic are presented in table 10. Quality of life from the aspect of physical health was significantly better in respondents who stated that the Covid-19 pandemic did not affect their mental state before and after childbirth compared to respondents who were affected (median=28 vs 27, p=0.0013; question 1), in respondents whose access to health services was not made difficult due to the restrictive measures in the course of the pandemic compared to those whose access was made difficult (median=28 vs 27, p=0.0015; question 6), in respondents whose quality of the pregnancy was not affected by restrictive measures compared to those who were affected (median=28 vs 27, p=0.015; question 7), in respondents without financial problems compared to those who personally or one their family member faced a job loss or reduced finances in the pandemic (median=28 vs 26, p=0.008; question 8), and significantly better in respondents who were not afraid of vaccination against Covid-19 compared to those who were afraid to get vaccinated (median=28 vs 27, p=0.021; question 10).

Quality of life from the aspect of psychological health was significantly better in the respondents whose mental state was not affected by the Covid-19 pandemic before and after childbirth compared to the respondents who were affected (median=25 vs 24, p=0.003; question 1), in respondents with a controlled pregnancy during the pandemic compared to respondents without regular gynecological screenings (median=25 vs 24, p=0.009; question 5), in respondents whose access to health services was not affected by the restrictive measures in the course of the pandemic compared to respondents who had difficulty accessing health services (median=25 vs 24, p=0.003; question 6), in respondents without financial problems compared to respondents who personally or one their family member faced a loss of job or reduced finances during the pandemic (median=25 vs 24, p=0.0014; question 6).

Quality of life from the aspect of the environment was significantly better in respondents whose mental state was not affected by the Covid-19 pandemic before and after childbirth compared to the respondents who were affected (median=32 vs 31, p=0.0025; question 1), in respondents whose access to health services was not affected by the restrictive measures in the course of the pandemic compared to respondents who had difficulty accessing health services (median=32 vs 31, p=0.0002; question 6), in respondents whose quality of pregnancy was not affected by restrictive measures compared to those who were affected (median=31 vs 30, p=0.039; question 7), in respondents without financial problems compared to respondents who personally or one of their family member faced a loss of job or reduced finances during the pandemic (median=32 vs 30, p=0.00001; question 8), and significantly better in respondents who were not afraid of vaccination against Covid-19 compared to those who were afraid to get vaccinated (median=32 vs 31, p=0.018; question 10).

Quality of life from the aspect of overall life and general health was significantly better in respondents whose mental state was not affected by the Covid-19 pandemic before and after childbirth compared to the respondents who were affected (median=8 vs 7, p=0.0018; question 1), in respondents whose access to health services was not affected by the restrictive measures in the course of the pandemic compared to respondents who had difficulty accessing health services (median=8 vs 7, p=0.019; question 6), and significantly better in respondents without financial problems compared to respondents who personally or one of their family member faced a loss of job or reduced finances during the pandemic (median=8 vs 7, p=0.0056; question 8). No statistically significant differences regarding the quality of life were found for the domain of social life and interpersonal relations with respect to questions 1 to 10 of the Covid-19 questionnaire.

DISCUSSION

This study aimed to examine how women in the perinatal period perceive their quality of life in various domains. We investigated how quality of life relates to age, number of pregnancies, course of pregnancies, and method of delivery and experience with Covid-19 pandemic.

We found that the perception of quality of life in the sample of women in the perinatal period in North Macedonia, estimated with the

Table 10. *Distribution of WHOQOL scores in relation to COVID-19 questionnaire*

Covid-19 questionnaire		Quality of life WHOQOL-BRIEF **(mean ± SD) (median (IQR))**				
		Physical health	Mental health	Environment	Overall life and health	Social life
CV-19 1.	Yes	26.02±4.4 27(23.5-29)	23.93±2.7 24(22-25)	30.21±4.1 31(29-32)	8.24±1.1 7(8-9)	11.94±1.5 12(11-12)
	No	27.64±4.2 28(25-31)	24.72±2.9 25(23-27)	31.53±4.5 32(29-34)	8.64±1.2 8(8-10)	12.40±1.5 12(12-13)
	Mann-Whitney test	**Z=3.2 p=0.0013**	**Z=2.9 p=0.003**	**Z=3.0 p=0.0025**	**Z=3.1 p=0.0018**	Z=0.9 p=0.3
CV-19 2.	Yes	27.29±4.0 28(25-30)	24.30±2.9 25(23-26)	31.28±3.9 31(29-34)	8.40±1.2 8(8-9)	12.29±1.4 12(12-13)
	No	26.963±4.5 28(24-30)	24.55±2.8 25(23-26)	30.96±4.6 31(28-34)	8.57±1.2 8(8-10)	12.22±1.6 12(12-13)
	Mann-Whitney test	Z=0.6 p=0.58	Z=0.6 p=0.53	Z=0.5 p=0.6	Z=1.2 p=0.23	Z=0.3 p=0.79
CV-19 3.	Yes	26.91±4.4 28(25-30)	24.34±2.8 24(23-26)	30.74±4.5 31(29-34)	8.41±1.2 8(8-9)	12.16±1.5 12(12-13)
	No	27.35±4.2 28(24-30)	24.62±2.9 25(23-27)	31.59±4.1 32(30-34)	8.64±1.1 8(8-10)	12.37±1.5 12(12-13)
	Mann-Whitney test	Z=0.7 p=0.48	Z=1.4 p=0.16	Z=1.9 p=0.06	Z=1.6 p=0.11	Z=1.6 p=0.1
CV-19 4.	Yes	26.37±4.1 26.5(23-30)	24.39±2.6 25(23-26)	30.54±3.8 31(29-33)	8.39±1.1 8(8-9)	12.06±1.3 12(12-12)
	No	27.22±4.4 28(25-30)	24.46±2.9 25(23-26)	31.18±4.5 31(29-34)	8.53±1.2 8(8-10)	12.28±1.5 12(12-13)
	Mann-Whitney test	Z=1.5 p=0.13	Z=0.2 p=0.83	Z=1.2 p=0.21	Z=1.03 p=0.3	Z=1.3 p=0.19
CV-19 5.	Yes	27.21±4.4 28(25-30)	24.63±2.8 25(23-27)	31.23±4.3 31(29-34)	8.56±1.1 8(8-10)	12.29±1.5 12(12-13)
	No	26.23±3.6 27(23-28)	23.18±3.2 24(22-25)	30.04±4.5 31(27-32)	8.14±1.3 8(8-9)	11.86±1.6 12(11-12.5)
	Mann-Whitney test	Z=1.9 p=0.057	**Z=2.6 p=0.009**	Z=1.4 p=0.16	Z=1.9 p=0.06	Z=1.7 p=0.095
CV-19 6.	Yes	26.32±4.4 27(24-29)	24.01±2.8 24(22-26)	30.15±4.3 31(28-33)	8.34±1.2 7(7-9)	12.04±1.6 12(12-13)
	No	27.72±4.2 28(25-31)	24.82±2.8 25(23-27)	31.85±4.3 32(30-35)	8.64±1.1 8(8-10)	12.42±1.5 12(12-13)
	Mann-Whitney test	**Z=3.2 p=0.0015**	**Z=2.9 p=0.003**	**Z=3.68 p=0.0002**	**Z=2.3 p=0.019**	Z=1.9 p=0.052

Covid-19 questionnaire		Quality of life WHOQOL-BRIEF **(mean ± SD) (median (IQR))**				
		Physical health	Mental health	Environment	Overall life and health	Social life
CV-19 7.	Yes	26.48±4.3 27(24-30)	24.17±2.8 24(23-26)	30.47±4.6 30(28-33)	8.37±1.2 8(8-9)	12.13±1.6 12(12-13)
	No	27.59±4.3 28(25-30)	24.69±2.9 25(23-27)	31.59±4.1 31(30-34)	8.62±1.1 8(8-10)	12.34±1.5 12(12-13)
	Mann-Whitney test	**Z=2.4 p=0.015**	Z=1.9 p=0.052	**Z=2.1 p=0.039**	Z=1.5 p=0.13	Z=1.3 p=0.19

CV-19 8.	Yes	26.17±3.9 26(23-29)	23.84±2.6 24(22-25)	29.32±4.7 30(26-32)	8.23±1.2 7(7-9)	12.09±1.5 12(12-13)
	No	27.51±4.4 28(25-30)	24.73±2.9 25(23-27)	31.88±3.98 32(30-34.5)	8.63±1.1 8(8-10)	12.32±1.5 12(12-13)
	Mann-Whitney test	**Z=3.4 p=0.0008**	**Z=3.2 p=0.0014**	**Z=4.8 p=0.000001**	**Z=2.8 p=0.0056**	Z=1.0 p=0.3
CV-19 9.	Yes	21.75±9.3 23(22-27)	20.75±2.2 21(18.5-22.5)	27.87±5.9 28(23.5-29.5)	8.12±1.9 8(8-9.5)	10.87±1.7 10.5(9.5-12)
	No	23.0±5.7 23(19-27)	20.0±1.4 20(19-21)	20.0±9.9 20(13-27)	6.50±3.5 6.5(4-9)	11.0±1.4 11(10-12)
	Mann-Whitney test	Z=0.3 p=0.79	Z=0.4 p=0.69	Z=1.2 p=0.24	Z=0.5 p=0.6	Z=0.3 p=0.8
CV-19 10.	Yes	26.75±4.3 27(24-30)	24.27±2.9 24(23-26)	30.65±4.4 31(29-34)	8.50±1.2 8(8-10)	12.19±1.6 12(12-13)
	No	27.75±4.3 28(25-30)	24.80±2.8 25(23-27)	31.91±4.2 32(30-34)	8.52±1.1 8(8-9)	12.35±1.4 12(12-13)
	Mann-Whitney test	**Z=2.3 p=0.021**	Z=1.2 p=0.22	**Z=2.4 p=0.018**	Z=0.4 p=0.72	Z=0.9 p=0.38
CV-19 11.	1	26.27±3.7 26(23-30)	22.53±3.0 22(21-24)	29.53±4.1 30(28-32)	8.60±1.1 8(8-10)	11.60±2.1 12(10-13)
	2	25.40±4.5 26(22-28.5)	21.80±4.4 21.5(18.5-25)	28.55±7.0 30(22.5-32.5)	7.70±1.8 8(7-9)	11.60±2.4 12(10-13.5)
	3	21.0±1.4 21(20-22)	14.50±0.7 14.5(14-15)	29.0±2.8 29(27-31)	5.50±0.7 5.5(5-6)	9.0±1.4 9(8-10)
	4	27.27±4.3 28(25-30)	24.76±2.5 25(23-26)	31.32±4.1 31(29-34)	8.57±1.1 8(8-10)	12.33±1.4 12(12-13)

WHOQOL-Brief, was more negatively affected in single or multiple domains in women who: perceived that the pandemic affected their mental health before or after childbirth, suffered a financial or employment loss during the Covid-19 pandemic, experienced limited access to health services, did not control the pregnancy with regular OB-GYN visits, expressed a fear of vaccination against Covid-19, and had an adverse course of pregnancy. It could be concluded that the overall quality of life and general health was significantly better in respondents whose mental state was not affected by the Covid-19 pandemic before and after childbirth, compared to the respondents who were affected. These findings are also true for the respondents whose access to health services was not affected by the restrictive measures in the course of the pandemic, compared to respondents who had difficulty accessing health services during the pandemic. This was significantly better in respondents who personally, or one of their family members, did face a loss of employment or reduced finances compared to respondents who reported financial adversities during the pandemic. Thus, a smaller number of stressors from different systems (micro, meso, exo and macrosystem), greater social support (especially from the family members and partners), and better overall mental health of mothers, appear to be particularly important for optimal functioning and general health in the time of the COVID-19 pandemic.

Limitations and direction for future studies

The present study has several limitations. First, the cross-sectional study design and the sample size may limit the generalizability of the findings and may not be fully representative of the full peripartum period. Our participants were mainly in their third trimester of pregnancy and during their first postpartum trimester. A potential weakness of studies which retrospectively assess experiences from the previous two years is the possibility of biased recollection of events. There is a possibility of over-reporting the most recent and most serious experiences. The possibility of differential memory exists, depending on the

nature and importance of the events. However, while such recall bias can be present in retrospective cross-sectional studies, the extent to which this actually influences research results is not yet understood well or depends greatly on the study context [6, 7]. Moreover, we employed a carefully developed study design and used instruments with good reliability. Future studies could provide additional information to accompany our results.

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Резиме

СУБЈЕКТИВЕН КВАЛИТЕТ НА ЖИВОТ НА ЖЕНИТЕ ВО ПЕРИНАТАЛЕН ПЕРИОД: ИСТРАЖУВАЊЕ ПО ПАНДЕМИЈАТА СО КОВИД-19 ВО СЕВЕРНА МАКЕДОНИЈА

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Субјективниот квалитет на животот може да се смета како еден од показателите за здравствено однесување и благосостојба на жените во перинаталниот период. Според тоа, целта на овој труд беше да се испита како жените во перинаталниот период го перципираат квалитетот на животот во различни домени. Испитувана е и врската со возраста, бројот на бремености, текот на бременоста и начинот на породување и искуството со пандемијата на Ковид-19. Примерокот го сочинуваа 366 трудници во кој било период од бременоста, кои се јавувале на редовни амбулантски прегледи и контрола, оние што биле хоспитализирани поради патолошка бременост или поради потреба од интензивна нега, како и жените во постнатален период, една година по породувањето, кои барале стручен совет од гинеколог. Од нив, мнозинството е на возраст од 20 до 30 години (53,8 %). Наодите покажаа дека проценетите домени на субјективниот квалитет на живот се поврзани со различни искуства со пандемијата на Ковид-19. Резултатите се презентирани и детално дискутирани. Дадени се и импликации и ограничувања.

Клучни зборови: перинатален период, субјективен квалитет на живот, Ковид-19