

Original Article

Individual Health Knowledge and Healthy Lifestyle Behaviors in Men

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Abstract

Background: The preconceptional period has an important role in promoting reproductive health. Most of the research on the preconceptional period and fertility focuses on women and ignores men.

Aim: The study was conducted to examine the effects of paternity experience on fertility health knowledge and healthy life behaviors related to the preconceptional period.

Materials and Methods: This relationship-seeking descriptive study was conducted between April and June 2023 with 128 men enrolled in a Family Health Center in Istanbul. Data were obtained using the "Information Form", "Fertility Health Knowledge Survey (FHKS)" and "Healthy Lifestyle Behaviors Scale-II (HLSBS-II)" prepared in line with the literature.

Results: While fathers gave an average of 19.8 ± 5.5 correct answers to the FHKS questions, non-fathers gave an average of 16.2 ± 7.1 correct answers ($p=0.008$). When compared in terms of total scores obtained from the HLSBS-II, non-fathers (133.1 ± 25.8) scored higher than fathers (123.4 ± 21.6) ($p=0.036$).

Conclusions: Fertility health awareness and healthy life behaviors in the preconceptional period are important for male reproductive health. The inclusion of spouses as well as women in reproductive health service provision is necessary for a healthy generation.

Keywords: Father; fertility knowledge; preconceptional period; healthy lifestyle

Introduction

With modern life, there is a serious decline in reproductive rates. Therefore, the negative impact of modern lifestyle on fertility cannot be ignored (Skakkebaek et al., 2022). Factors such as advanced age, poor eating habits, obesity, consumption of harmful substances such as cigarettes and alcohol, sexually transmitted diseases, and behaviors that cause genital heat increase (exposure to radiation

through electronic devices, long sitting times, tight underwear and clothing, hot baths or saunas) can negatively affect fertility (Bala et al., 2021; Vanderhout et al., 2021). The preconceptional period is a time to focus on activities that promote healthy lifestyles to increase healthy fertility and minimize risks (Rabiei et al., 2023). Services provided during this period aim to reduce maternal-fetal mortality by identifying physical, medical and psychosocial conditions that pose a risk to

health before pregnancy and resolving or referring to them appropriately (Lassi et al., 2020; González-Rodríguez et al., 2018). In today's society, although it is predominantly women who receive care in the preconceptional period, men also receive preconceptional care, which positively affects the pregnancy process, the baby, the reproductive health and general health of the individuals. (Basli & Aksu, 2022). Although there have been changes in the concept of fatherhood in Turkish society over time (Kara & Cetinkaya, 2019), there are no studies in the literature on men receiving training before the experience of fatherhood. In a systematic review of men's health knowledge about the preconception period, it was reported that men had low health knowledge (Rabiei et al., 2023). When the literature is examined, lack of adequate knowledge and awareness are among the most important factors that cause men to fall behind in preconceptional care (Basli & Aksu, 2022). Men want to be parents as much as women, but have limited knowledge about fertility. The concept of fertility is used in the sense of having the ability to reproduce and refers to the biological characteristics of men and women who are capable of reproduction (Kaya et al., 2017). In order to increase healthy fertility and fertility rates, it is effective for people to be aware of their health risks and to increase their healthy lifestyles (Rabiei et al., 2023). In this direction, studies have not addressed the level of fertility awareness and knowledge in men in the preconception period, which is thought to affect reproductive health, and the situation will be revealed with the current study. The aim of this study was to examine the effects of fatherhood experience on fertility health knowledge and healthy life behaviors related to the preconceptional period.

Research questions

1. Is there a difference between fertility health knowledge and healthy lifestyle behaviors in those with and without fatherhood experience?
2. Does experiencing fatherhood affect fertility health knowledge and healthy lifestyle behaviors?

Materials and Methods: This study was a correlational descriptive study. Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines were followed.

Study Population and Sample: The study was conducted with married men receiving services from a Family Health Center in Istanbul between April and June 2023. The number of married men receiving services from this center is 650. According to the sample calculation, 132 people were identified with a 5% margin of error and 80% power. The sample included sexually active men who were not health workers, had no education in the field of health, were at least primary school graduates, and had knowledge of internet use.

Procedure: The researchers sent an invitation to participate in the study via email to men who received services from the center. Within the study dates, 300 male participants responded to the mailing. Among these men, those who did not want to have children (n=140), whose spouses or themselves were health workers (n=12), and whose spouses or themselves received education in the field of health (n=10) were not included in the study. Research questionnaires were sent via Google Forms to 138 men who agreed to participate in the study. "Voluntary and Informed Consent Forms" were included in the first part of the questionnaire. Thus, the participants were informed before filling out the questionnaires and selected the option "I agree to participate in the study". 10 participants did not return for the study. The study was completed with 128 men who wanted children, had no fatherhood experience (n=64) and had previous fatherhood experience (n=64). The power of the sample size of the study was determined by post hoc t-test in G Power 3.1.9.2. program and found to be 0.88 with an effect size of 0.56 and a margin of error of 0.05.

Data Collection Tools: The research data were obtained from three sections. The first part included the "Information Form" to question the sociodemographic characteristics of the participants, while the second part included the "Fertility Health Knowledge Survey" and the third part included the "Healthy Lifestyle Behaviors Scale-II" questions.

Information Form: The descriptive information form was created by the researchers through a literature review (Hunter et al., 2021). This form included a total of 15 questions to determine the sociodemographic characteristics of men and health outcomes in the preconceptional period.

Fertility Health Knowledge Survey (FHKS): The scale was developed by Barron et al. (2020) to assess fertility health knowledge. A Turkish validity and reliability study was conducted by Sumen and Teskereci (2022). Consisting of 30 items, the scale has a single-factor structure. Scale responses are five-point Likert type and the 20th item in the scale is reverse coded. The Cronbach alpha value of the scale is 0.949 (Barron et al., 2020; Sumen & Teskereci, 2022) and the Cronbach alpha value of the current study is 0.818.

Healthy Lifestyle Behaviour Scale-II (HLSBS-II): The scale developed by Walker et al. (1987) based on Pender's Health Promotion Model to measure health promotion behaviors of individuals was revised in 1996 (Walker et al., 1987; Walker & Hill-Polerecky, 1996). Bahar et al. (2008) conducted a Turkish validity and reliability study of the scale. Consisting of 52 items and six subscales, the scale has no reverse items. The four-point Likert-type scale has a minimum score of 52 and a maximum score of 208. An increase in the scores obtained from the scale indicates an increase in the level of positive health behaviors of the individual. Cronbach's alpha coefficient is 0.920 (Bahar et al., 2008). In this study, Cronbach's alpha coefficient was 0.769.

Statistical Analysis: SPSS version 27 package program was used for data analysis. Shapiro-Wilk test was applied to evaluate the normal distribution. As a result of the test, it was determined that all continuous variables were not suitable for normal distribution. Therefore, Mann-Whitney U test was used to compare continuous variables between paired groups. Chi-square test was used to compare categorical data between paired groups. The significance level was accepted as $p \leq 0.05$ for all comparisons.

Ethics: Before starting the study, permission was obtained from the Ethics Committee of a university dated 22.12.2022 and numbered 2022-346. Permission was obtained from the

center where the study would be conducted. Written and verbal consent was obtained from the men participating in the study. Permission was obtained from the responsible authors of the "Fertility Health Knowledge Scale" and the "Healthy Lifestyle Behaviors Scale-II" to use them in this study. The Declaration of Helsinki was followed during the research process.

Results

Descriptive information about the participants is given in Table 1. Accordingly, the mean age was 35.7 ± 7.3 years in fathers and 28.8 ± 3.9 years in non-fathers. The mean age was statistically higher in fathers ($p < 0.001$). When compared in terms of Body Mass Index (BMI), the participants who were fathers had statistically higher BMI ($p = 0.009$). The duration of daily cell phone use was higher in participants who were not fathers ($p = 0.003$). The groups were similar in terms of daily sleep duration and daily sitting time.

The rate of alcohol use was higher in non-fathers (57.8% in non-fathers and 35.0% in fathers) ($p < 0.001$). Sauna habits were found to be higher in fathers ($p < 0.001$). In addition, the prevalence of sleep problems was higher in non-fathers ($p < 0.001$). There was no difference between the groups in terms of daily health behaviors such as smoking, caffeine use, preference for tight clothing and regular exercise ($p > 0.05$). Similarly, history of COVID-19 in the past, HPV vaccination or MMR vaccination were similar between the groups ($p > 0.05$) (Table 1).

The comparison of the participants' scores from the HLSBS-II and its subscales and the total number of correct answers they gave for the FSBS is shown in Table 2. The total score obtained from HLSBS-II was statistically significantly higher in non-fathers ($p = 0.036$). While fathers scored a total of 123.4 ± 21.6 points on the HLSBS-II, non-fathers scored a total of 133.1 ± 25.8 points on the HLSBS-II.

When evaluated in terms of the subscales of the scale, it was found that non-fathers scored higher in the "Health responsibility" ($p < 0.001$) and "Physical activity" ($p < 0.001$) subscales. The scores obtained from "Interpersonal relations", "Nutrition", "Stress management" and "Spiritual development"

subscales were similar between the groups ($p>0.05$).

When compared in terms of the number of correct answers given for the PHCS, it was found that fathers scored statistically

significantly higher than non-fathers ($p=0.008$). Accordingly, fathers gave an average of 19.8 ± 5.5 correct answers to the questions of the PBSS, while non-fathers gave an average of 16.2 ± 7.1 correct answers (Table 2).

Table 1. Descriptive Characteristics of Participants

	Fathers (N=64)		Non-fathers (N=64)		Z	p
Age	35.7 $\pm$ 7.3		28.8 $\pm$ 3.9		-5.948	<.001*
Body Mass Index (BMI)	27.2 $\pm$ 4.6		25.2 $\pm$ 3.8		-2.602	.009*
Daily mobile phone time (hours)	4.7 $\pm$ 2.8		6.3 $\pm$ 3.2		-3.008	.003*
Daily sleeping time (hours)	7.3 $\pm$ 1.5		7.3 $\pm$ 1.4		-.084	.933
Daily sitting time (hours)	4.2 $\pm$ 3.1		4.7 $\pm$ 3.3		-.762	.446
	Fathers (N=64)		Non-fathers (N=64)		χ^2	p
	N	%	N	%		
Daily cigarette use					F	.258
Never	26	40.6	25	39.1		
1-10	7	10.9	15	23.4		
11-20	20	31.3	14	21.9		
21-40	11	17.2	10	15.6		
Alcohol consumption					14.201	<.001*
Never	48	75.0	27	42.2		
Sometimes	16	35.0	37	57.8		
Caffeine consumption					F	.097
Never			4	6.3		
Sometimes	33	51.6	27	42.2		
Frequently	31	48.4	33	51.6		
Sauna habit					F	<.001*
Never	-	-	12	18.8		
Sometimes	46	71.9	46	71.9		

Frequently	18	28.1	6	9.4		
Thight clothing					.131	.717
Yes	26	40.6	24	37.5		
No	38	59.4	40	62.5		
COVID-19 history					.533	.465
Yes	61	95.3	59	92.2		
No	3	4.7	5	7.8		
HPV vaccination					.038	.845
Yes	18	28.1	19	29.7		
No	46	71.9	45	70.3		
MMR vaccination					0.878	.349
Yes	51	79.7	55	85.9		
No	13	20.3	9	14.1		
Sleeping problems					F	.017*
Never	31	48.4	17	26.6		
Sometimes	26	40.6	42	65.6		
Frequently	7	10.9	5	7.8		
Regular exercise					.323	.570
Yes	22	34.4	19	29.7		
No	42	65.6	45	70.3		

HPV: Human Papilloma Virus,
 χ^2 : Chi-Square Test,

MMR: Measles, Rubella, Mumps,
 F:Fischer Exact

Z:Mann-Whitney U,
 *p<.05

Table 2. Comparison of the Scores Obtained for HLSBS-II, HLSBS-II Subscales and PHCS

	Fathers (N=64)	Non-fathers (N=64)	Z	p
HLSBS-II Subscales				
Interpersonal relationships	25.2±4.7	25.1±4.8	-.416	.678
Nutrition	20.7±3.7	21.9±4.9	-1.302	.193
Health responsibility	16.9±4.1	21.6±5.4	-4.939	<.001*
Physical activity	15.9±4.7	18.5±5.2	-3.278	<.001*
Stress management	19.0±4.0	19.8±4.9	-.564	.573

Spiritual development	25.7±5.6	26.2±4.8	-.322	.747
Total HLSBS-II	123.4±21.6	133.1±25.8	-2.096	.036*
Number of Correct Answers for PHCS	19.8±5.5	16.2 ±7.1	-2.654	.008*

HLSBS-II: Healthy Lifestyle Behaviour Scale-II, PHCS: Fertility Health Knowledge Survey, Z:Mann-Whitney U, *p<.05

Discussion

It was determined that the studies on this issue were limited. Although the present study provides an overview of men's health knowledge about the preconceptional period, the results are not sufficient. Because the men in the study participated in the study voluntarily, it is difficult to determine the knowledge on this subject. In this section, fertility health knowledge and healthy lifestyle behaviors are discussed under the titles of fertility health knowledge and healthy lifestyle behaviors.

Fertility Health Knowledge

Not only the woman but also the man has an ethical responsibility during the preconceptional period to achieve a healthy pregnancy. According to the results of a systematic review, people of reproductive age have inadequate awareness about fertility, infertility risk factors and fertility planning (Pedro et al., 2018). The majority of the men in the study stated that they did not receive counseling (information, advice) during the preconceptional period. In addition, in the present study, it was observed that men's level of knowledge about fertility health was low in both groups. In studies conducted with women in the literature, fertility health knowledge levels were found to be better (Mirkhan Ahmed & Jamil Piro, 2017; Maeda et al., 2015). Providing information to men and changing behavior based on that information is important for improving reproductive health, pregnancy and newborn outcomes. Al-Akour et al. (2015) reported that nearly 50% of men were aware of the effects of family history on child health and more than 58% reported that women's health before conception can have serious consequences on infant health (Al-Akour et al., 2015). Another study showed that 51.9%

of men had insufficient knowledge about preconception care for women (Ishak et al., 2021). An Australian study found that participants were less likely to believe that male fertility was affected by obesity and smoking (Hammarberg et al., 2013). In one study, only a quarter of young men correctly stated that women are fertile on certain days (Polis & Zabin, 2012). The patriarchal role of the father in society always puts participation in reproductive health in the background. The father is defined as the owner and head of the house, while the mother assumes roles such as housewife and motherhood (Punduk et al., 2021). The current study showed that men with fatherhood experience had more fertility health awareness. This suggests that this is associated with men with previous fatherhood experience having access to fertility-related health services.

Healthy Lifestyle Behaviors

The preconceptional period is of fundamental and vital importance. It affects the future health of the mother, child, family and society (Koletzko et al., 2019). It's known that in pregnancy, 50% of DNA comes from male spermatozoa. It is observed that many factors such as environmental factors and lifestyle cause DNA damage through oxidative stress and consequently affect sperm quality negatively (Dutta et al., 2019). Today, the gap between biological age and social age is widening in men and the opportunity to become a parent is narrowing (Hammarberg et al., 2017). In the present study, it was determined that men who did not experience paternity in terms of sociodemographic characteristics were younger and their mean BMI was lower than the other group. Although it is a controversial issue that spermatozoa are affected with aging, it is known to negatively affect fertility (Almeida et al., 2017; Gunes et al. 2016). In addition, it

has been reported that men with high BMI are more likely to have oligospermia and hypovolemia compared to men with normal BMI (Maskey & Rijal, 2022). Studies have reported that daily cell phone use negatively affects sperm motility and has a negative effect on male fertility (Zhang et al., 2022; Gutschi et al., 2011). The high rate of daily cell phone use in men who did not experience fatherhood in the study carries a risk for fertility. It has been reported that prolonged sitting work, use of tight underwear, and sauna/bath habits that cause genital heat increase have negative effects on semen quality (Jung & Schuppe, 2007).

The men in the study were found to have risky behaviors related to genital heat increase. Approximately 37% (WHO, 2023) of men of childbearing age and more than half of the men in the study were smokers. Smoking may have a negative effect on semen parameters and affect sperm development and function (Sharma et al., 2016). There is also evidence that alcohol consumption negatively affects male reproductive function by affecting semen volume and reproductive hormones (Alghobary & Mostafa, 2022; Nguyen-Thanh et al., 2023). It is stated that positive changes in fertility will be seen with lifestyle change interventions (Aboulmaouahib et al., 2018; Salas-Huetos et al., 2017). In the study, the majority of men related to COVID-19 stated that they were exposed to the virus. According to the study result of Zeginiadou et al. (2023), it suggests that COVID-19 patients may face sperm changes and hormonal imbalances. However, conflicting data remain on whether semen changes are permanent or temporary (Zeginiadou et al., 2023). Immunization to prevent HPV, one of the sexually transmitted diseases, is also seen in our country. The fact that the majority of men have not yet received HPV vaccination is a negative situation in terms of reproductive health. Sexually transmitted diseases are known to disrupt male and female reproductive health and cause infertility (Goulart et al., 2020; Moreno-Sepulveda & Rajmil, 2021). In the present study, sexually active men who had not experienced fatherhood had higher scores in healthy lifestyle behaviors. In a study conducted among university youth, young men were reported to have healthy lifestyles with more exercise and better stress

management (Núñez-Rocha et al., 2020). In the present study, it was determined that the total scale score and the scores of "Physical activity" and "Health responsibility" subscales of men who did not experience fatherhood were higher and significant compared to the other group. It is thought that this situation is related to the fact that people do not allocate enough time for their own health due to the responsibilities of having a child. Further studies should be conducted on this subject.

Limitation: In the clinic where the study was conducted, men were less likely to receive reproductive health services. Therefore, contacting the participant men via e-mail is a limitation. Another limitation was that the variables such as age, body mass index and daily cell phone use time of the men in the groups were different. It is recommended that these limitations should be taken into consideration in future study plans.

Conclusion: The men in the study were found to have risky behaviors in general health conditions known to affect reproductive health. In general, participants had limited knowledge about fertility health awareness. Low fertility health awareness in men who did not experience fatherhood was determined as a negative situation in terms of fertility. In addition to controlling environmental factors that threaten testicular health, having fertility health awareness has an impact on male fertility. Men who experienced fatherhood had lower levels of healthy lifestyle behaviors. For a healthy generation, couples need to be healthy. In order to create this awareness, health professionals should include women's partners in the process while providing services to women. In addition, granting men the right to work leave for partner examinations is an option to raise awareness of fertility health.

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