



## LITERATURE REVIEW: DESCRIPTION OF MALE BEHAVIOR TO IMPROVE REPRODUCTIVE HEALTH STATUS IN PREGNANCY PREPARATION

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**MIKIA:**

**Mimbar Ilmiah Kesehatan Ibu dan Anak**  
(*Maternal And Neonatal Health Journal*)

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### Article History

Received: 20 January 2021

Accepted: 31 January 2021

Published Online: 30 May 2021

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### ABSTRACT

Male awareness of preconception health is exceptionally low, many men considering that maintaining preconception health is women's responsibility. Men spermatozoa contribute 50% of DNA, meaning that when a man's DNA is damaged, it affects fertility and birth defect. This study aims to explain the picture of male behaviour to improve reproductive health status in pregnancy preparation. The method used is literature review obtained from three databases namely PubMed, DOAJ, and Google Scholar using inclusion and exclusion criteria. Keywords used in literature search: "Men Preconception Health Behaviour", "Men Awareness in Preconception", "Fathers Role in Preconception", and "Paternal Involvement". From 10 journals found 7 types of male behaviour during the preconception period are smoking behaviour, alcohol consumption behaviour, vitamin and supplement consumption behaviour, unhealthy diet behaviour, awareness of environmental health and awareness of genetic conditions. There are still men who carry out negative behaviors during the preconception period such as smoking, consuming alcohol, and having an unhealthy diet, so that needing health promotion about the importance of improving reproductive health status during the preconception period or pregnancy preparation.

**Keywords:** Male Behaviour, Reproductive Health, Pregnancy Preparation

## INTRODUCTION

Most of men and women consider that improving the reproductive health status in preconception and pregnancy preparation is women's responsibility, whereas men and women should have the same responsibility in enhancing their health status during the preconception period (Mello et al., 2019). Research on male behavior during preconceptions is also restricted. Scoping review studies conducted by Kristi et al (2017) found only 11% involved men in their implementation from 94 studies.

A study conducted by Shawe et al (2019) on men of childbearing age in the UK found that the majority of respondents (57,2%) did not make behavioral improvements to enhance

their health status during preconception by not quitting smoking, consuming the alcohol and never consuming the vitamin. The same thing also occur in (Bodin et al., 2017) study that men of childbearing age in Sweden, 83% of respondents did not make lifestyle adjustments to improve their health status during the preconception period. There have been several studies suggesting that male spermatozoa contributes 50% of DNA thus when a man's DNA is damaged, it will affect fertility and birth defects (Frey et al, 2008) in (Kotelchuck & Lu, 2017) research.

The literature review research by Mc Bride et al (2018) on the impact of alcohol consumed by men on infant health stated that seven studies contributed information about the impact of alcohol consumption on men with fetal and infant health, three studies reported the occurrence of spontaneous abortions and two studies on birth weight, furthermore one study reporting live births, mental retardation, single heart ventricles, and acute lymphoblastic leukemia.

The periods of spermatogenesis in preconception period or pregnancy preparation can provide an opportunity to improve the quality of spermatozoa by carrying out a healthy lifestyle such as quitting smoking and stopping consuming alcohol (Jill Shawe et al, 2019). The most significant factor which causes a lack of male awareness about the importance of improving health status in preconception period is knowledge and pregnancy planning, low pregnancy planning is also due to a lack of information obtained by men about the importance of preconception health (Jill Shawe et al, 2019; Monandar MS & Subedi,2018). This study aims to describe male behavior to enhance their reproductive health status in pregnancy preparation such as nutritional pattern, alcohol consumption and tobacco moreover genetic conditions.

## **METHOD**

This study uses a literature review design obtained from three databases namely PubMed, DOAJ, and Google Scholar. The keywords used to search for the article are "Men Preconception Health Behaviour", "Men Awareness in Preconception", "Fathers Role in Preconception", and "Paternal Involvement". Articles appearing on the search page are filtered back using the article type filter.

The article which has been obtained is re-selected using the criteria of inclusion, namely:

- 1) The population in the study was men of childbearing age both married and unmarried.
- 2) Experimental and quantitative research design.

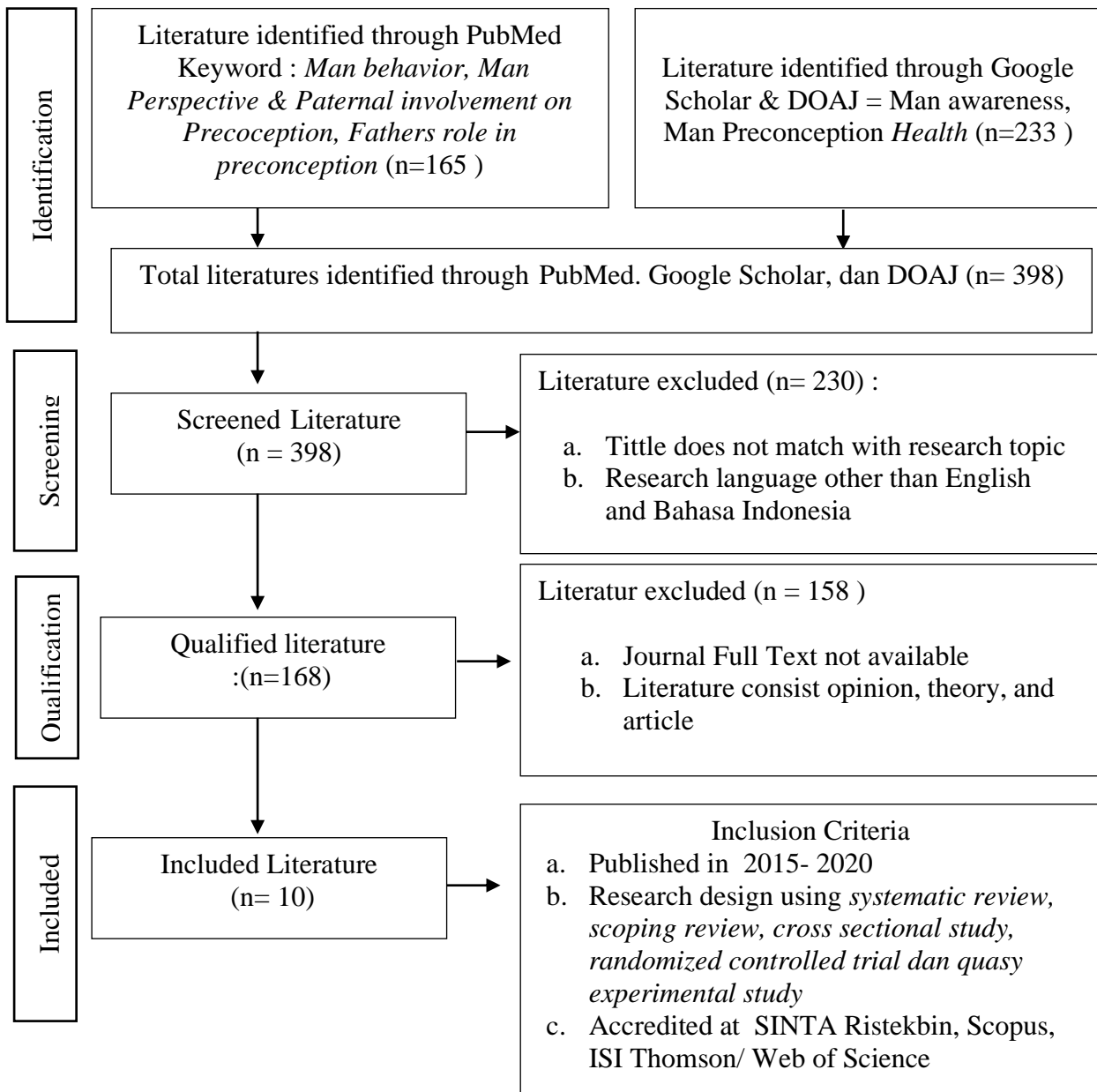


Figure 1. Article Search Chart

## RESULTS

Articles which conform to the inclusion criteria in table describing male behavior in preconception period are eight studies while two others discuss about intentions to alter healthy lifestyle during preconceptions and studies which conducted a review of research on behaviors during preconception such as smoking behavior, alcohol consumption behaviour,

vitamin and supplement consumption behaviour, unhealthy diet behaviour, in addition to men's awareness and knowledge about living a healthy lifestyle during preconceptions.

**Table 1 Description of Male Behavior in Enhancing Reproductive Health Status**

Author, Year of Publication	Research design	Intervention	Sample	Results
Monandar MS & Subedi/2018	<i>Cross Sectional Study</i>	Giving Questionnaire	344 students (249 female, 95 male)	a. 59.9% of respondents had sufficient awareness about increasing health status during the preconception period, 21.2% of respondents had low awareness and only 18.9 respondents had high awareness of preconception care.
Jill Shawe et al / 2019	<i>Cross Sectional Survey</i>	Questionnaire is given before the respondent meets the health worker	573 male respondents who came to the hospital to accompany their wives to check ANC	a. Only 19.1% of respondents came to health workers to get information about preconception and preparation for pregnancy b. 57.2% of respondents did not make behavioral improvements to improve their health during the preconception period
Agricola E et al /2016	<i>Cross Sectional Study</i>	Giving Questionnaire	336 men who are at least 18 years old, live in Italy, have a pregnant partner, or are planning to have pregnant	the results of the study, 8% of respondents were obese, the other 35% were smokers. Nearly 20% are reported to be exposed to teratogenic environmental substances such as pesticides, herbicides, so on.
(Bodin et al., 2017)	<i>Cross Sectional Study</i>	Questionnaire consisting of 64 questions	796 men whose wives gave birth approximately one year ago	81% of pregnancies were well planned however, in the aspect of behavioral adjustment, 83% of respondents did not make lifestyle adjustments to improve health status during the preconception period.

Author, Year of Publication	Research design	Intervention	Sample	Results
(Bodin et al., 2018)	<i>randomized controlled trial</i>	The questionnaire consists of 6 open-ended questions about reproductive health and 6 open-ended questions about lifestyles that affect reproductive health	201 men who visited reproductive health clinics, divided into 106 respondents in the intervention group and 95 respondents in the control group.	a. There was an increase in the score of men in the treatment group while there was no increase in the control group. b. Lifestyle related to reproductive health: The majority of respondents' lifestyles are tobacco consumption (58%), alcohol consumption (55%), and unhealthy diet (50%).
Choirriyah et al/ 2015	Survey	Giving Questionnaire	Males aged 15-44 years obtained from the National Survey of Family Growth (NSFG) data in 2006-2010 amounted to 10,395 respondents	a. 57% are obese b. 58% still consume alcohol
Kirsti et al./2017	<i>Scoping Review</i>	Journals and research articles discussing preconceptional behavior	94 studies on preconceptional behavior published from January 2010 to January 2016	Of the 94 studies found on preconception health identified only 11% of all studies involving men
Susan Mello, et al./ 2018	<i>Cross Sectional Study</i>	Questionnaire fills out online	340 women and 269 men aged 18-44 years who are physically able and have the desire to have children for 2 years later	The majority of men and women assume that improving health status during the preconception period is the responsibility of women
Jordan/ Al-Kour NA et al./ 2015	<i>Cross Sectional Study</i>	Giving Questionnaire	763 participants (537 males and 226 females) attending MCH clinic	Only 39.5% of women and 32.7% of men are aware that men's health during preconception also affects pregnancy and infant health. In this

Author, Year of Publication	Research design	Intervention	Sample	Results
			treatment at the selected health care	study, 92.7% of women and 88.5% of men stated that lifestyle adjustment needed to be made to enhance health preconception status.
Goossens J et al/ 2019	<i>Cross Sectional Study</i>	Giving Questionnaire	364 men aged 15-45 years who are planning to have children, and be able to speak Dutch/English.	The majority of men (85.3%) had the intention to follow a healthy lifestyle in the preconception period. The influence of the social environment close to the respondent increases the opportunity to follow a healthy lifestyle.

## DISCUSSION

Preconception period is the time in the provision of biomedical, behavioral and health interventions for women and couples before conception or pregnancy. It aims to improve the health status of either women or men, and reduce individual behavior moreover the environment which impacts maternal and child health (WHO, 2013). In literature review, there are 10 studies found that eight studies discussing male behavior and awareness about preconception health, and two others discussed the intention to change a healthy lifestyle in preconceptions furthermore a study conducted a review of research on preconception health behaviors.

There are three journals stated that there are men who consume cigarettes or tobacco during the preconception period. Jill Shawe et al (2019) in his study stated that the average man smokes more than 10 sticks a day. According to (Soares & Melo, 2008) tobacco compounds have a damaging effect on sperm production processes, increasing oxidative stress, and damage to sperm DNA. Men spermatozoa who smoke will reduce fertility capacity, and show lower implantation rates in embryos. Even exposure to tobacco leads to a decrease in sperm count in adult life. It suggests if smoking behaviour in men can effect the reproductive health status of themselves and may also impact on the future pregnancies.

Based on alcohol consumption, three journals explain that many men who consume alcohol during preconception even as his wife got pregnant. In this study, more than 50% of

men consumed alcohol during preconceptions (Jill Shawe et al, 2019; Bodin M et al 2018; Choirriyah et al/ 2015). (Muthusami & Chinnaswamy, 2005) stated that alcohol decreases semen volume, sperm concentration total, sperm motility, and sperm viability. Pituitary FSH levels in the blood increase due to loss of seminiferous tubule function in men consuming alcohol. Alcohol has a detrimental effect on male reproductive hormones and on the quality of semen, which will put people at risk of impotence and sterile. The above statement can be seen, alcohol has an impact on the quality of men's reproductive health therefore men are advised to refrain from consuming alcohol if they plan to have pregnancy.

Vitamin and supplement consumption behavior in preconception period were found in Jill Shawe et al (2019) research a small proportion of men as much as 28,4%. Nutritional screening have to review current dietary patterns and use of restrictive diets. According to Wong WY et al (2002) in Frey K et al (2008) research, iron and folic acid have antioxidant properties which counteract reactive oxygen species and protect sperm against oxidative stress and DNA damage. In a randomized controlled trial of 99 fertile men and 94 sub-fertile men, giving 66 mg of iron and 5 mg of folic acid per day significantly increased sperm concentration in sub-fertile men. This shows the importance of consuming various nutrients, especially iron and folic acid, which can improve the quality of male reproductive health.

Unhealthy dietary behavior was found in three journals where the majority of men in the study were obese (Agricola et al, 2016; Bodin M et al 2018; Choirriyah et al, 2015). (Stephens & Polotsky, 2013) stated men who are obese also tend to have oligosperms or azoosperms. The most consistent findings in obese men were decreased steroid hormone binding globulin (SHBG), decreased testosterone (T) levels, and increased estradiol (E2) levels. It can be present from the statement above that improving nutritional status by consuming healthy foods during the preconception period is very necessary to prevent obesity.

the aspect of male awareness during the preconception period found in 2 journals in the literature review stated that less than 50% of men are aware of the importance of improving health status during the preconception period, and the majority of men also assume that the responsibility in improving health status during the preconception period is the woman's responsibility (Al-Kour NA et al, 2015; (Mello et al., 2019) in other hand the aspect of male knowledge found in 2 journals revealed that only 19.1% of respondents received information about health preconception from health workers Jill Shawe et al (2019) and only 48% of respondents could answer correctly about knowledge related to preconception health (Bodin et al., 2017). According to Notoatmodjo (2011) theory, the formation of a new behavior,



especially in adults starting from the cognitive / knowledge aspect, meaning that the subject knows in advance about the stimulus in the form of material or external objects which rise to new knowledge on the subject, then cause an inner response in the form of the subject's attitude towards known objects and will cause more responses. Forming behavior process start from awareness developing into adoption later, the phase where a person can behave according to what he knows. This shows that a person's level of knowledge about preconception health can affect behavioral adjustment during the preconception period.

## **CONCLUSION**

From the entire study, it was found that there were still many men who carried out negative behaviors during the preconception period such as smoking, consuming alcohol, and following an unhealthy diet. This occurs due to the lack of awareness of men about the importance of improving health status during preconception so that health promotion about preconception health is needed for men in the future. Health workers have an important role in providing counseling for couples before marriage as part of preconception care. Collaborating within cross-sectors such as the Ministry of Religion through KUA is needed to organize classes for prospective brides that can be used to educate preconception.

## **ABBREVIATIONS**

DOAJ	: Directory of Open Access Journals
DNA	: Deoxyribo Nucleic Acid
KUA	: Kantor Urusan Agama
SHBG	: Steroid Hormone Binding Globulin
WHO	: World Health Organization

## **COMPETING INTEREST**

Authors declare that we have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## **AUTHORS' CONTRIBUTION**

Corresponding author conceptualized, designed, prepared the initial draft and framework also interpreted the data. The second and third author as an advisor who have been making sure that the research stay on the track and based on the data that have been collected.



## ACKNOWLEDGMENT

This paper and the research behind it would not have been possible without the exceptional support of my supervisor, Mrs Tarsikah & Mrs Naimah. Their enthusiasm, knowledge and exacting attention to detail have been an inspiration and kept my work on track from my first encounter with the first draft of my thesis to the final draft of this paper.

## REFERENCES

- Bodin, M., Käll, L., Tydén, T., Stern, J., Drevin, J., & Larsson, M. (2017). Exploring men's pregnancy-planning behaviour and fertility knowledge: a survey among fathers in Sweden. *Upsala Journal of Medical Sciences*, 122(2), 127–135. <https://doi.org/10.1080/03009734.2017.1316531>
- Bodin, M., Tydén, T., Käll, L., & Larsson, M. (2018). Can Reproductive Life Plan-based counselling increase men's fertility awareness? *Upsala Journal of Medical Sciences*, 123(4), 255–263. <https://doi.org/10.1080/03009734.2018.1541948>
- Dagun, M. S. *Psikologi Keluarga*. Jakarta : Rineka Cipta; 2002
- Kemenkes RI. 2015. *Kesehatan Reproduksi dan Seksual bagi Calon Pengantin*. Jakarta : Kemenkes RI
- Kotelchuck, M., & Lu, M. (2017). Father's Role in Preconception Health. *Maternal and Child Health Journal*, 21(11), 2025–2039. <https://doi.org/10.1007/s10995-017-2370-4>
- Lieberman, M.A. (1992). The Effect of Social Support on Respond on Stress. Dalam Bretnitz and Golberger (Eds). *Handbook of Stress: Theoretical & Clinical Aspects*. London: Collier MacMillan Publisher.
- Luthviatin, Novia. *Dasar- Dasar Promosi Kesehatan dan Ilmu Perilaku*. Jember : Jember University Press; 2013
- Maulana. *Promosi Kesehatan*. Jakarta : Buku kedokteran EGC; 2009
- Mardjan. *Pengaruh Kecemasan pada Kehamilan Primipara Remaja*. Pontianak : Abrori Institut; 2016
- M Nazir. *Metode Penelitian*. Jakarta : Ghalia Indonesia; 2013
- Mello, S., Tan, A. S. L., Sanders-Jackson, A., & Bigman, C. A. (2019). Gender Stereotypes and Preconception Health: Men's and Women's Expectations of Responsibility and Intentions to Engage in Preventive Behaviors. *Maternal and Child Health Journal*, 23(4), 459–469. <https://doi.org/10.1007/s10995-018-2654-3>

- Muthusami, K. R., & Chinnaswamy, P. (2005). Effect of chronic alcoholism on male fertility hormones and semen quality. *Fertility and Sterility*, 84(4), 919–924. <https://doi.org/10.1016/j.fertnstert.2005.04.025>
- Notoatmdjo. *Ilmu Perilaku Kesehatan*. Jakarta : Rineka Cipta; 2010
- Notoatmdjo. *Kesehatan Masyarakat Ilmu & Seni*. Jakarta : Rineka Cipta; 2011
- Neni Fidya, dkk. 2019. *Men's preconception health behavior: A qualitative study*. Elsevier España 2019;29(S2):505-509. DOI <https://doi.org/10.1016/nj.enfcli.2019.04.076>
- Rokhanawati, Dewi & Umu Hani. 2017. *Pendidikan Pranikah Terhadap Kesiapan Menghadapi Kehamilan Pertama Pada Calon Pengantin Putri*. Jurnal Kebidanan dan Keperawatan Vol. 13, No. 1 hal : 81-87
- Setyosar Punaji. *Penelitian Pendidikan dan Pengembangan*. Jakarta ; PT Kencana; 2010
- Soares, S. R., & Melo, M. A. (2008). Cigarette smoking and reproductive function. *Current Opinion in Obstetrics and Gynecology*, 20(3), 281–291. <https://doi.org/10.1097/GCO.0b013e3282fc9c1e>
- Stephens, S., & Polotsky, A. (2013). Big enough for an aromatase inhibitor? How adiposity affects male fertility. *Seminars in Reproductive Medicine*, 31(4), 251–257. <https://doi.org/10.1055/s-0033-1345272>
- Wikamorys & Rochmach. *Aplikasi Theory Of Planned Behavior Dalam Membangkitkan Niat Pasien Untuk Melakukan Operasi Katarak*. Jurnal Administrasi Kesehatan Indonesia Volume 5 Nomor 1 Januari-Juni 2017