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THE DETERMINANT OF SMOKING CESSATION BEHAVIOR AMONG PREGNANT WOMEN: SYSTEMATIC REVIEW

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Abstract

Smoking among women is one of particular concern for the maternal and child health community due to the strong association between prenatal smoking and adverse birth outcomes. Pregnancy is perceived to be a unique reason for smoking cessation, as a motivation to care the unborn fetus. This study aimed to find out the determinants of smoking cessation among pregnant women. Method that we use in this study is systematic review. We identified relevant studies by searching on science database online through SAGE journals, Proquest, Scopus, Emerald, JSTOR, and Spingerlink. Journals were screened by title and abstract according to the research topic then filtered using the criteria exclusion and inclusion. And then we do critical appraisal. The results of the four studies reviewed were found that the determinant of smoking cessation are parity, level of education, socioeconomic

status, household SHS exposure, smoking habits of both parents, partner smoking status, psychological factors, antenatal care, intervention for health care provider, age smoking duration. The factor most strongly associated with smoking cessation is Husband's Smoking Behavior (OR 0.98; CI 0.97–0.99). The results of this study are expected to give advice for develop future smoking cessation and relapse prevention programs.

Keywords

Smoking Cessation; Pregnancy; Tobacco Use Cessation

1. Introduction

The cigarette is one of the legal, yet dangerous product. According to WHO, by 2020, 10 million smokers in the world will have died (WHO.2013). Currently, the global consumption rate of cigarette is rising. This is triggered by a lot of factors some of which are the affordable price, wide market segmentation, the lack of awareness of the danger of smoking, and the inconsistency of the public policy regarding the use of the cigarette (WHO.2008).

According to the Tobacco Atlas 3rd edition year of 2009, it is said that 57% of smokers are located in Asia and Australia, 14% of the other are located in Eastern Europe and parts of the Soviet Union, 12% of the smokers are American, 9% of the smokers are Western Europe, and the 8% of the smokers are Middle Eastern and African citizen (Infodatin,2015) (Infodatin.2015).the number of female active smokers in the world is almost 150 millions of people, 22% of whom are in developing nations whilst the 9% of the other ones are in the developed nations¹.

Smoking for women is proven to create bad impact in fertility (Baird DD, 1985), as well as enhancing the risk for complication in pregnancy both for the woman and the fetus (Ates U, 2004). Epidemiologic study proves that smoking during pregnancy is related to the incidence of spontaneous abortion, placental abruption, placenta previa, ectopic pregnancy, premature water break, inflammation of the umbilical chord, and the amniotic fluid infection (Ashfaq M, 2003)(Bouyer J, 2003)(Levy D, 2013). In the case of babies, some of the impacts that might occur are low birth weight (LBW), small-sized during pregnancy, delayed growth and development, respiratory infection, otitis media, and also identified as the risk factor of Sudden Infant Death syndrome (SID)(Anderson ME, 2005)(Chong DS, 2004)(Horne RS, 2004).

In Canada, the number of pregnant women who smoke is 30% (the majority of which are women with lower socioeconomic status) in 1990. The number then declines to 17.8% in 2001. In the United Kingdom, the number of smoking pregnant women reaches 37% in the year of 1989 which later also decreased to 22.4% in the year of 2005. In Australia, the number of women smoking cigarette reaches 18.4% in 1990. The number then decreases to 11.4% in 2002 (Adams EK, 2002) (Centers for Disease Control and Prevention, 1990-2002). Although some studies regarding smoking in pregnancy show lowered prevalence, it is still statistically undeniable that one from every seven pregnant women in developed nations still smokes during pregnancy (Cnattingius S, 2004) (Colman GJ, 2003) (Mohsin M, 2003).

Pregnancy is proven to be one of the unique factors directly impacting smoking behavior among women. Pregnant women are motivated to quit smoke as an attempt of protection for the fetus being carried (Hannöver W, 2008). Quitting smoking in the early of the pregnancy is considered very effective in lowering risks of fetal death (Johansson AL, 2009).

A study proves that by lowering the intensity of smoking during pregnancy is not effective enough to lower the complications that might occur by the cigarette. Consuming under eight cigarettes per day can still causing the incidence of LWB. This phenomenon shows that total smoking cessation is extremely necessary to ensure babies being carried can be born in normal weight (England LJ, 2001).

Some other factors have also been proven to affect the sustainability of smoking behavior among pregnant women during pregnancy some of which are parity, socioeconomic status, the exposure of passive smoker, parents' smoking behavior, psychosocial pressure like anxiety, tension in the workplace, and the history of both physical and psychological abuse (Händel G, 2009) (Giglia RC, 2007) (Goedhart G, 2009) (Ockene J, 2002) (Arnold CL, 2001). The study in Swedish pregnant women proves that in the early times in smoking, the quantity of smoking, level of education of the women, and partner's support affect the women's success in smoking cessation (Lindqvist R, 2001). The motivation of the women is proven to have an important contribution and lowered possibility to consume cigarette again once the pregnancy period is over (Pollack KI, 2001). In the study among Hispanic women, it is found that ethnicity and age are significantly the most related factors to the smoking cessation behavior (Stella M., 2002). Pregnant women with low level of education, low income, as well as delayed first ANC visit are proven to encounter difficulty in quitting the smoking behavior (Lumley J, 2009).

The massive impact caused by smoking behavior during pregnancy period makes the factors determining the success in smoking cessation behavior important. Thus, the writer is intrigued to find out related factors in smoking cessation behavior among pregnant women.

2. Methodology

The method used in this study was a systematic review. The data were obtained from the exploration of scientific journals published in Scopus, SAGE Journals, Proquest, JSTOR, and Springerlink. The keywords used for searching were “*Smoking Cessation among pregnant women*” and “*factors associated with smoking cessation*”. After the searching was executed, there were 10754 articles found which were furthermore selected.

The selected articles were the one published between the one published between the year of 2005-2016 to maintain the updated information. Afterward, the articles selected based on the titles and the abstracts, whether any duplication was found, and the most appropriate criteria for eligibility. The articles categorized into the inclusion criteria were the ones executed in the quantitative study. The study should also present the factors affecting smoking cessation behavior among pregnant women. The study had also be executed in one group, and not comparing two groups in one study. Lastly, the articles needed to have OR value for each variables affecting the smoking cessation behavior.

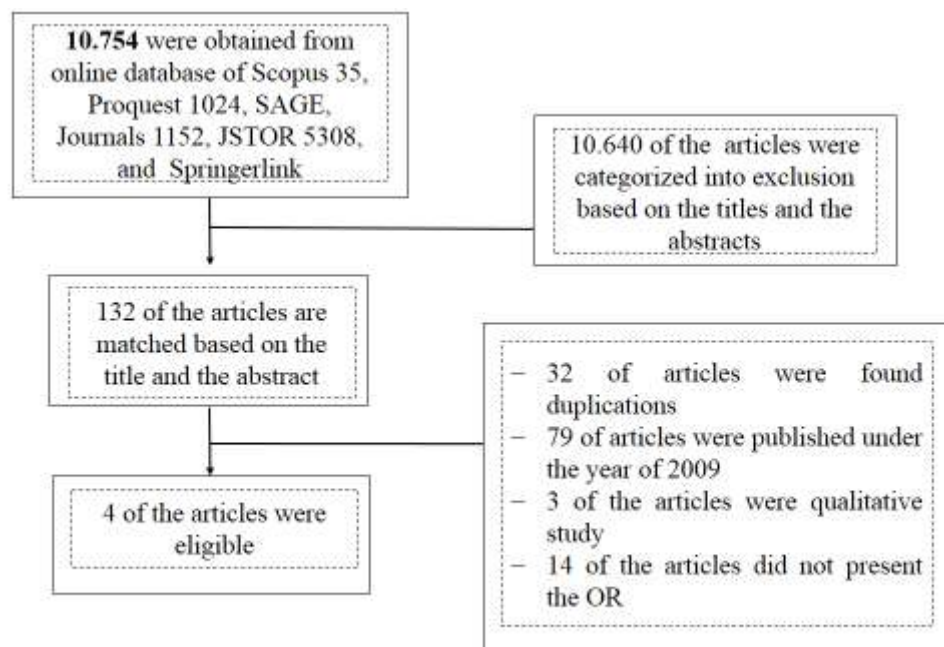


Figure 1: The Process of Systematic Review from the Published Articles

3. Result and Discussion

The amount of the first amount of the articles screened from keywords in the online database were 10,754. 10,654 of the articles were then reselected by using more specific keywords. Reviewing the keywords stating the smoking behavior among pregnant women specifically in the abstracts and the titles to ensure the articles selected would inform the proper content. In the end of the article searching, six articles were found based on the criteria matched in this particular study. The six articles were then rechecked again. Based on the year of publication and the fact that there was an article comparing two groups of women, eventually, only four articles were selected.

Table 3: Characteristics of Study

Article	Title	Major Writer and The Year of Publication	Location	Study Design	Subject and Sample of the Study
1	Factors Associated with Active Smoking, Quitting, and Secondhand Smoke Exposure among Pregnant Women in Greece	Constantine I, 2010	Greece	Cross-sectional	- 1291 Pregnant women - Both greek and immigrants written as the citizen in prefecture of Heraklion, Crete - Pregnant within the period of Feb 2007 to Feb 2008
2	Factors associated with Quit attempts and Quitting among eastern Hungarian women who smoked at the time of pregnancy	Kristie L. Foley, 2011	Szabolcs-Szatmár-Bereg County (Eastern Hungary)	Case-control	- 201 pregnant women who smoke - Delivering premature baby or LBW
3	Understanding Sociodemographic and Sociocultural Factors that Characterize Tobacco Use and Cessation During Pregnancy Among Women in the Dominican Republic	Essie T. Torres, 2013	Dominican Republic	Cross-sectional	- 613 women whose data are recorded in Institutional Review Boards (IRB)/Institutional Ethics Committee (IEC)
4	Socio-demographic factors associated with smoking and smoking cessation among 426,344 pregnant women in New South Wales, Australia	Mohammed Mohsin, 2005	New South Wales, Australia	Cross-sectional	- Utilizing the data from Midwives Data Collection (MDC) 1999–2003, a surveillance system covering all births in NSW

The writer found that the majority of the researchers used the quantitative design with cross-sectional approach. Only one researcher used case control. The data of the respondents existing in three articles were secondary data obtained from a big survey in countries the

particular study were conducted. On the sample selection, the writer noticed that all four of the writers investigated about pregnant women who had smoked, pregnant women who were currently smoking, and pregnant women who stopped smoking during pregnancy period. There were also some researchers who particularized pregnant women who stopped smoking during pregnancy but then started smoking again after delivering the baby. The data was then processed in order to identify the prevalence of pregnant women who were active smokers, the characteristics of the pregnant women smoking during pregnancy, as well as the factors determining the smoking cessation behavior among pregnant women.

Table 3.2: Characteristics' of Pregnant Women Smoking during Pregnancy

Variables	Article 1 Amount of total (%)		Article 2 Amount of total (%)		Article 3 Amount of total (%)		Article 4 Amount of total (%)	
	Age		29.1 ± 5.3		-		-	<20 20-34 ≥35
Domicile	Urban Rural	180 (19) 51 (18)		-		-		
Ethnics	Greek Bukan greek	222 20		-		-	Aborigine Non-aborigine	10579 (2.5) 415583(97.5)
Educational level	Low Medium High	66 122 47	High School	40 (18,3)		-		
Parity	Nulliparous Multiparas Primiparas	164 76		-		572 (93.3)		248991 (58.4) 177304 (41.6)
Working		-		42 (21)		-		
SES							Lowest Moderate Highest	166987 (39.5) 168661 (39.9) 87404 (20.7)
Marital status		-	Married	179 (89)		-		
First ANC visit							0-12 weeks 13-26 weeks ≥27 weeks	245729 (58.2) 156396 (37.0) 20314(4.8)
Smoking behavior		-	Attempt to stop after knowing the pregnancy Actually stop during the pregnancy	108 (54) 41(20.4)	Attempt to stop after knowing the pregnancy Active smoker	43(34.1) 127(22,4)		

From the table above, it is seen that the characteristics of the pregnant women smoking in each country were diverse. In the article 1 , for instance, the proportions of the pregnant women smoking were found higher in women with the ethnicity of greek compared to the non-greek. In Australia, active smoker pregnant women whose ethnicity were Aborigines had the smaller proportion (2.5%) in comparison to those who were non-

Aborigine (97.5%). The average age pregnant women smoking was 30-34 years old obtained from article 1-4). Multiparas were found to tend to smoke more during pregnancy compared to the primiparas.

Table 3.3 Comparison of P Value and OR towards Smoking Cessation Behavior Determinant Factors

		Article 1		Article 2		Article 3		Article 4	
		P	OR	P	OR	P	OR	OR	
Domicile	Urban Rural	-	1 0.68 (0.49–0.92)	-	-	-	3.367 (1.98, 5.74)		
Ethnics	-	-	-	-	-	-	-	Aborigin Non-aborigin	1.86 (1.51–2.30)
Educational Level	Low/ Medium high		1.40 (1.06–1.85) -	School graduates / higher	NA	7.48 (1.68–33.24)	Literacy	-	-
Parity	Nulliparous Multiparas Primiparas	-	-	Amount of children		1.03 (0.73–1.46)		-	-
Working SES		-	-			7.56 (1.88–30.35) 0.17 (0.02–1.49)		-	-
Marital Status		-	-	Married	NA	10.79 (1.00– 115.77)		-	-
First ANC Visit		-	-		-	-		0-12 weeks 13-26 weeks ≥27 weeks	2.33 (1.91–2.85) 1.75 (1.42–2.14)*
Husband's Smoking Behavior	Smoker Non-smoker	0.002	0.98 (0.97–0.99)		-	-		-	-
Husband's Ethnics	Greek Mom-greek	0.002	3.03; 0.95–9.70		-	-		-	-
Respondent's Mother Smoking Status		-	-		-	-		3.603 (2.31- 5.62)	-
Age of Respondent		-	-		-	-		3.367 (1.9- 5.74)	-

Table 3.3 explains the most significant and influential factors in the smoking cessation behavior by comparing between P value and OR in each article. In the study conducted in Greece, the factors affecting smoking cessation behavior are the spouse's smoking behavior, domicile, and socioeconomic status. Although many studies claiming that the mother factor is the most influential factor, but as what it's presented in the article 1 that the role of the spouses/partners is the most influential factor in the smoking cessation among pregnant women. Women choosing spouses not smoking have one chance higher in comparison to those choosing spouses smoking (Constantine I. Vardavas¹, 2010). Another study in Crata proves that the characteristics of the spouses and families become the most dominant variable towards the smoking cessation behavior during pregnancy (Chaaya M.).

Studies about the factors contributing towards the smoking behavior prior pregnancy, during pregnancy, and after pregnancy explain that women with low level of education, unavailability of the spouse, and no job tend to smoke during pregnancy (Kahn, 2002). As what is shown be the result of the article 3, the women illiterate (associated with the low income and low SES) is proven to be related to smoking behavior.

In line with the result presented by the article that parity, the level of education, socioeconomic status, the respondents' mother's behavior, the role of husband/spouse and family are the factors determining the smoking cessation behavior. It is also obtained from the literature study that healthcare providers are also the stakeholders able to affect smoking cessation among pregnant women. One from every three women quits smoking due to the knowledge transferred from the healthcare providers once being notified the pregnancy status (Bloch, 2010) (Nichter, 2010).

4. Conclusion

Both social environment and the level of demography existing in every individual are significantly impactful towards the smoking behavior and the smoking cessation during pregnancy. An innovative health approach related to smoking cessation during pregnancy period is extremely needed, especially, in the cases of teen pregnancy and pregnant women who are not able to access healthcare facilities. This paper is expected to be beneficial as a viable source of information exposing factors affecting smoking behavior among pregnant women as well as

consideration for policy makers in the future. It is also expected that any programs or policies to be made based on the condition and the background of the society living. As what the writer explains that the factors affecting smoking cessation can be varied depend on the regional location of the society.

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