Socio-Demographic Predictors of Midwives' Knowledge and Practice Regarding Preconception Care

Niloofar Sattarzadeh[1], Azizeh Farshbaf-Khalili[2], Elaheh Khari[3*]

Abstract

Objectives: Preconception care focuses on spouses' welfare and gestational health as well as related consequences before and after conception. The present paper was conducted in Tabriz health care centers, Iran in 2015-2016 in order to determine socio-demographic predictors of midwives' practice and knowledge regarding preconception care.

Materials and Methods: This was a cross-sectional study implemented on all midwives (202) occupied in Tabriz health care centers, Iran, using socio-demographic, knowledge and practice questionnaires. The instrument validity was determined based on content validity index (CVI) and CVR methods while its reliability was determined from 2 aspects of repeatability (ICC) and internal consistency (Cronbach alpha coefficient). The socio-demographic and knowledge data questionnaires were completed by midwives while observational checklist of practice was completed by researcher. The data were statistically analyzed using descriptive and inferential methods.

Results: Mean (SD) score of midwives' knowledge was 73.21 (± 11.83) and mean (SD) score of midwives' practice was 80.31 (±12.25). According to Pearson test, the direct relation between knowledge and practice was not significant ($P = 0.133$, $r= 0.238$). According to multivariate linear regression analysis, age, educational level, employment status and work experience were defined as predictors of midwives' knowledge and age, employment status and job responsibilities as predictors of midwives' practice.

Conclusion: With regard to the direct correlation between knowledge and practice, improvement of midwives' knowledge and so paying attention to the predictors of practice such as employment status and job responsibilities in order to promote midwife's motivation and practice seems to be essential to improve the quality of preconception care.

Keywords: Iran, Knowledge, Midwifery, Preconception care

Introduction

Maternal and infant health is an important indicator of health promotion which determines the health status of community and future generations. The goal of preconception care is to reduce the risk of adverse health effects for the woman, fetus, or neonate by optimizing the woman's health and knowledge before planning and conceiving a pregnancy. Because reproductive capacity spans almost four decades for most women, optimizing women's health before and between pregnancies is an ongoing process that requires access to and the full participation of all segments of the health care system (1).

Preconception care includes a wide range of diagnostic procedures, control and care of chronic and sexually transmitted diseases in women of childbearing age (2,3). According to ACOG (American College of Obstetricians and Gynecologists) statement published in 2005, preconception care includes reducing risk factors associated with pregnancy and promotion of women and babies' health status. It could be applied through higher awareness related to planning and decisions about pregnancy (1,4).

According to the World Health Organization (WHO) report in 2013, almost 289 000 women annually die due to complications related to pregnancy and childbirth while most of these deaths occur in developing countries. Many of these complications occur prior to pregnancy period that most of which are preventable and strongly associated with access to health services, poverty, inadequate knowledge, health services and cultural factors (2,5).

In 2013, the maternal mortality ratio was reported to be about 23 of one thousand live births in Iran (6,7). Neonatal and infant mortality rate were respectively 11 and 15 per 1000 live births in Iran in 2012 (8). Public health services introduced preconception care as the essential component of prenatal care. The Center for Disease Control and Prevention (CDC) in 2006 has recommended pre-impregnation care guide to change the habits and behavior of men and women in relation to pre-impregnation health (9,10).

The preconception care was considered in Iran subsequent to the formation of Committee for the Prevention of Maternal, Perinatal and Infant Mortality (11). Midwives as individuals responsible for offering preconception care should have adequate information about its benefits. They should assess the women referents in every visit and provide them with adequate trainings on importance of lifestyle and its impact on their current health (12).

Since midwives play important role in providing health

care and improving the health condition of mothers and children, midwifery is considered as a preventive medicine and so realization of health goals in the area of maternal and child health requires improved quality of pre-pregnancy by midwives (13,14).

Bayrami et al conducted a study to examine the knowledge, attitude and practice of 218 employees of health system to preconception care in Iran and concluded that health workers had average awareness to preconception care and their practice was in average level (15). The limitations of present study include lack of separation of different groups of health care workers and inadequate number of midwives under study. Moreover they did not determine the predictors of knowledge and practice.

The study by van Heesch et al in the Netherlands indicated that midwives mentioned that the accessible preconception care and its effects are important factors to achieve the goals of improving maternal health during pregnancy, however longer time is needed to improve practice and increase knowledge and awareness (16).

Midwives work is based on a comprehensive program in the field of maternal and child care in order to improve health care, so their training should be proportionate to the health programs at the international level (17,18).

According to mentioned studies, midwives are the core of preconception care in health system. The present study was conducted to determine socio-demographic predictors of midwives' practice and knowledge regarding preconception.

Materials and Methods

This was a cross-sectional descriptive-analytical study. After receiving permission from the Ethics Committee of Tabriz University of Medical Sciences, and also coordination with Research office of Faculty of Nursing and Midwifery as well as Health Vice chancellor, research was implemented on all of the midwives occupied at health care centers (202 midwives) of Tabriz, Iran based on census sampling method with sample size equal to research community centers in 2015-2016.

Inclusion criteria were willingness to participate in the study with more than one year of working experience and exclusion criterion was individual's withdrawal from the study. Study and its objectives were explained to the midwives and then participants signed an informed consent to participate in the study.

Questionnaires were delivered in a quiet environment. The data collection instrument included 1) Socio-demographic characteristic questionnaire on age, educational level, marital status, employment status, years of service, years of graduation, type of university, job responsibilities, number of children, average preconception care per month, attending workshops related to the promotion of maternal health, 2) Researcher-made knowledge and practice questionnaire designed based on a review of the literature and guidelines of integrated maternal health care (19,20). Knowledge questionnaire

consisted of 22 multiple-choice questions each with one "correct" answer. The "incorrect" and "I don't know" choices were awarded with zero while "correct" choice scored with point 1. Attainable score ranged between 0 and 22 that converted to percent.

The content validity was determined based on content validity index (CVI) included relevance, clarity and simplicity of each of the questions while content validity ratio (CVR) included necessity of items. The knowledge CVI as well as CVR were respectively 95% and 89%. After implementation of pre-test and post-test on 20 people, instrument reliability with interclass correlation coefficient (ICC) with 95% conference coefficient was 0.98 (0.96–0.99). The Cronbach alpha coefficient was equal to 0.84.

The practice observational checklist contained 26 3-option questions. Each of the completely conducted practices was scored with point 2, incompletely conducted practices with point 1 and practices not conducted with point 0. Total attainable score ranged between 0 and 52 that were reported based on percent. Midwives' practice measurement was implemented by the researcher. The practice CVI as well as CVR were respectively 1.00% and 99%. Moreover, 2 observers of practice completed the observational checklist simultaneously for each midwife and totally on 15 people and observers' reliability was examined with ICC method. The Cronbach alpha coefficient was equal to 0.79.

Data were analyzed based on statistical descriptive methods (central and dispersion parameters) and inferential statistics including Pearson, independent t test, one-way analysis of variance (ANOVA) and multivariate linear test using SPSS 21. To describe the demographic characteristics, knowledge and practice of midwives occupied in health care centers of Tabriz, descriptive statistics method including frequency and percentage, mean and standard deviation were applied. To determine the relationship between knowledge and practice of midwives with demographic characteristics, bivariate independent t test and one-way ANOVA were applied. Independent variables with $P < 0.2$ based on bivariate tests were included in multivariate linear regression model. To estimate the effect of independent variables (socio-demographic characteristics) on dependent variable (attitude and practice) and to control the confounding variables multivariate linear regression model with backward strategy was applied. Before multivariate analysis, regression assumptions such as residuals normality, homogeneity of residuals variance, linearity, outlier data and residuals' dependence were examined. To determine the relation between knowledge and practice, Pearson correlation test was applied. The entire analyses were implemented using SPSS 21 software.

Results

Totally, 202 midwives working in health centers were recruited for this study in 2015. The mean (standard deviation) age of midwives was 36.74 years (±7.91), work

experience 11.87 years (±7.93), years of graduation 12.47 years (±7.95), number of care per month 5.02 (±3.25) and number of children 1.6 (±0.77). The majority of midwives were married, contractual employee with Bachelor's degree working in private centers, graduated from public university, had multiple work responsibility (Table 1).

The mean (SD) score of knowledge and practice were 73.21 (±11.83) and 80.33 (±12.25), respectively. Based on Pearson correlation test, there was a direct relationship between knowledge and practice, however it was not at significance level ($P = 0.133$, $r= 0.238$) (Table 2).

Maximum knowledge scores were related to the beginning time of folic acid inatake (99%) and minimum scores were related to clinical assessment of women with overt diabetes before pregnancy (9.9%). Maximum scores of midwives' practice were in prescribing acid folic (98.8%) while the minimum scores were related to mental health training (22.5%).

According to multivariate linear regression model, age, education level, employment status and years of service by adjusting other variables were predictors of knowledge which could explain 44.1% of variance in knowledge scores (Table 3).

According to multivariate linear regression model, age, employment status and job responsibilities by adjusting other variables were predictors of practice which could explain 52.6% of variance in practice scores. So that, midwives with "registered employment" who had "single responsibility" and aged in groups 31-40 had better practice (Table 4).

Discussion

According to the results of this research, the average knowledge and practice scores of midwives were at a medium to good level. Age, education level, employment status and years of service were predictors of knowledge. Results showed that age, employment status and job responsibilities were predictors of practice.

The present study was consistent with the study by Bayrami et al and Bernstein et al which showed that midwives' knowledge to preconception care was at moderate level. It was inconsistent with the study Bayrami et al that midwives' practice was at weak level (15,20) which may have occurred due to different research environments and the limited number of midwives. However, holding educational workshops and standing educational programs as well as continues monitoring and assessment of the personnel practice according to international standards could be helpful in promotion of the quality of preconception services.

The study by Dattijo et al, is in agreement with current study showing that there were significant relation between knowledge and education level and employment status (21).

The study by Bahri et al showed that there was no significant relation between knowledge and years of service and the reason behind this nonconformity may be attributed to different research populations (22).

The weakest midwives' practice was related to mental health, sexual health and nutrition trainings while the maximum practice was related to folic acid intake, pregnancy history record and calculation of body mass index (2). The study of Sadeghi et al showed that significant relation was observed between employment status and practice (23). However, the study of Esmailpour et al indicated no significant relation between age and

Table 1. Socio-Demographic Characteristics of Midwives (n=202)

Variable	No. (%)
Age	
23-30	61 (30.5)
31-40	67 (33.5)
41-50	65 (32.5)
>50	7 (3.5)
Mean (SD)	36.74 (7.91)
Employment status	
Registered	88 (44.0)
Obligatory	13 (6.5)
Contractual	99 (49.5)
Years of graduation	
1-10	93(46.7)
11-20	73(36.7)
21-30	33(16.6)
Mean (SD)	12.47(7.95)
Marital status	
Single	48(24.1)
Married	151(75.9)
Number of children	
0-1	85(56.3)
2-3	66(43.7)
Mean (SD)	1.60(0.77)
Attending workshop	
Yes	174(87.9)
No	24 (12.1)
Level of education	
Associate Degree	23 (11.5)
Bachelor	172 (86.0)
Master of Science	5 (2.5)
Years of service	
1-10	94 (47.0)
11-20	77 (38.5)
21-30	29 (14.5)
Mean (SD)	11.87 (7.93)
Kind of university	
Private	81 (40.7)
Public	118 (59.3)
Job responsibility	
Multiple	167 (84.3)
Single	31(15.7)
Number of care	
1-5	117 (66.9)
6-11	51 (29.1)
>11	7 (4.0)
Mean (SD)*	5.02 (3.25)
Kind of healthcare	
Private	14 (57.0)
Public	86 (43.0)

Table 2. Relationship Between Knowledge and Practice

Variable	Mean (SD)	Attainable Range	Min.	Max.	r	P
Knowledge	73.21(11.83)	0-100	36	100	0.133	0.238
Practice	80.31(12.25)	0-100	36	100		

Table 3. Socio-Demographic Predictors of Midwives Knowledge

Variable		n	Mean (SD)	P[a]	B (95% CI)	P[b]
Age	23-30	61	74.49(12.71)		Reference	
	31-40	67	74.15(9.97)	0.019	-5.19(-11.85 to 1.33)	0.127
	41-50	67	72.44(11.65)		-5.89 (-12.12 to 0.95)	0.064
	>50	5	60.19(16.05)		-19.57(-32.53 to -6.62)	0.003
	Mean		73.21(11.83)	0.125	0.55(0.07 to 1.03)	0.025
Level of education	Master of science	5	65.02(12.14)		Reference	
	Associate degree	23	66.45(11.95)		5.339(-5.76 to16.44)	0.344
	Bachelor of science	172	74.36(11.47)	0.003	8.364(3.63 to 13.09)	0.001
Employment status	Registered	88	70.47(12.14)	0.010	Reference	
	Obligatory	13	77.92(8.59)		10.33(2.31 to 18.36)	0.012
	Contractual	99	75.02(11.46)		4.95(0.64 to 9.28)	0.025
Years of service	1-10	94	73.57(11.61)		-2.67(-17.71 to 12.36)	0.726
	11-20	77	75.04(11.40)	0.009	7.141(1.41 to 12.87)	0.015
	21-30	29	67.26(12.14)		Reference	0.824
	Mean		73.21(11.83)	0.054	-0.34 (-0.86 to 0.19)	0.209
Years of graduation	1-10	93	74.16(11.82)			
	11-20	73	73.85(11.30)	0.151		
	21-30	33	69.58(12.74)			
	Mean		73.21(11.83)	0.077		
Kind of university	Private	81	72.61(11.49)	0.576		
	Public	118	73.57(12.13)			
Marital Status	Single	48	74.70(11.48)	0.341		
	Married	151	72.82(11.92)			
Work responsibility	Multiple	167	73.38(11.78)	0.805		
	Single	31	72.80(12.43)			
Number of children	0-1	85	73.54(11.57)	0.408		
	2-3	66	71.90(12.40)			
Number of care	1-5	117	72.86(11.90)	0.999		
	6-11	51	72.91(12.88)			
	>11	7	73.05(10.23)			
Attending workshop	Yes	174	73.12(11.74)	0.836		
	No	24	73.66(13.15)			
Kind of healthcare	Public	14	71.86(13.02)	0.165		
	Private	86	74.22(10.79)			

Adjusted R^2 = 44.1%
[a] One-way ANOVA, independent samples t test, bivariate Pearson correlation.
[b] Multivariate linear regression.

employment status with practice; this disagrees with our study which can be attributed to different instruments used for practice and research purposes (24).

Recognition of socio-demographic factors of staffs could be beneficial to increase successful practice and planning of organizations. It could also affect the knowledge, practice and job skills of employees (22,25). The study by Heyes et al indicated that proper training and counseling before pregnancy should be comprehensively implemented in health centers which could be possible due to adequate knowledge and skill of employees (26). According to the study by Shahidi et al in Esfahan, women's awareness of

their risk factors before pregnancy lead to improving the pregnancy outcome (27).

According to the study by van Heesch et al, provision of more training to health care workers is recommended to increase their knowledge and pre-pregnancy services (16). Increased knowledge and awareness are essential factors to improve practice.

Based upon the results of this study, midwives in age groups of 31-40 years who were registered and had single responsibility had better practice. It seems that having work experience, stability of employment status and having determined rather than dispersed and

Table 4. Socio-Demographic Predictors of Midwives Practice

Variable		n	Mean (SD)	P^a	B (95% CI)	P^b
Age	23-30	61	76.93 (13.70)		Reference	
	31-40	67	84.55 (11.65)	<0.001	3.70 (-1.674 to 9.07)	0.174
	41-50	67	83.19 (7.16)		0.974 (-8.34 to10.28)	0.835
	>50	5	60.79 (8.16)		-19.93 (-32.59to-7.28)	0.002
	Mean		80.31 (12.25)	0.977		
Level of education	Associate degree	23	77.71 (12.98)			
	Bachelor of Science	17	80.55 (12.24)	0.614		
	Master of Science	5	89.13 (12.25)			
Employment status	Registered	88	83.26 (12.24)		Reference	
	Obligatory	13	81.28 (6.55)	0.106	-0.33 (-12.34to11.67)	0.956
	Contractual	99	77.23 (12.68)		-8.59 (-13.47 to -3.72)	0.001
Years of service	1-10	94	78.52 (12.63)			
	11-20	77	84.00 (10.00)	0.176		
	21-30	29	78.69 (14.28)			
	Mean		80.31 (12.25)	0.413		
Years of Graduation	1-10	93	78.62 (12.51)			
	11-20	73	84.43 (10.21)	0.019		
	21-30	33	80.61 (11.51)			
	Mean		80.31 (12.25)	0.678		
Kind of university	Private	81	78.81 (13.01)	0.268		
	Public	118	81.86 (11.37)			
Marital Status	Single	48	77.55 (12.71)	0.455		
	Married	151	81.27 (12.04)			
Work responsibility	Single	31	75.29 (14.99)		Reference	
	Multiple	167	81.46 (11.45)	0.080	-7.26 (-13.36 to -1.15)	0.020
Number of children	0-1	85	81.19 (11.35)	0.952		
	2-3	66	81.38 (13.19)			
Number of care	1-5	117	81.01 (11.83)	0.431		
	6-11	51	79.23 (8.61)			
	>11	7	91.30			
Attending workshop	Yes	174	80.50 (12.71)	0.658		
	no	24	78.39 (9.81)			
Kind of healthcare	public	14	80.97 (10.45)	0.673		
	Private	86	79.80 (13.55)			

Adjusted R^2 = 52.6%

[a] One-way ANOVA, independent samples t test, bivariate Pearson correlation.

[b] Multivariate linear regression.

unspecialized duties can be effective factors in promotion of preconception services quality.

The results of present paper will be beneficial to improve employment conditions, identify motivational factors and attend economic difficulties affecting the practice. To achieve WHO goals in term of improving maternal health and reducing child mortality, improved practice of an organization is necessary which depends on high knowledge and practice of entire staffs. This knowledge could be profitable to successful information, practice and planning in order to improve the maternal and child health.

The limitations of present study included disinclination to participate in the study and to fill out the questionnaires. This difficulty was removed somewhat by presenting anonym questionnaires and placing the completed questionnaires in the closed boxes. The other limitation was inadequate referrals of health care seekers to implement preconception care which were obviated by time schedule and waiting further referrals. The present study included only the population in urban areas which could not be generated to rural areas. Moreover, this study was a quantitative research that researchers suggest to do further studies with qualitative method.

Conclusion

Based on the results, knowledge and practice level of midwives was at moderate to good level. With regard to the direct correlation between knowledge and practice, improvement of midwives' knowledge and so paying attention to the predictors of practice such as employment status and job responsibilities in order to promote midwife's motivation and practice seems to be essential to improve the quality of preconception care.

Ethical Issues

This study was conducted on midwives after receiving permission from the Ethics Committee of Deputy of

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