Comparison Between the Health Belief and the Theory of Rational Action in Health Pregnancy and Presenting a Suitable Model

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Abstract: Suitable use of educational technology in design and presenting educational models has particular importance in health promotion. The present research has been carried out to compare the efficiency of the Health Belief Model and Theory of Rational Function during pregnancy period as well as designing and presenting a suitable model. The statistical society of this descriptive analytical research consisted of all pregnant women who were under coverage of urban and rural health and medical centers of Yazd town. A total of 365 women taken at random from 23 urban and rural centers. Data was collected by questionnaires which measured the structures of the two models. The only perceived the benefits and the guidance for function from the structures of Health Belief Model shows significant correlation with the health of pregnancy period in 0.1 level and the perceived barriers also showed rives and significant correlation with this structure in 0.5 level and the sum of variables of the earlier mentioned model was predicted to be 8.9% of changes in the health during pregnancy period. Among these, the forecasting power of the guideline for function has been more than all. The average health behaviors in the women with elementary school education were higher than other women. The average health behaviors of women with illiterate spouses were higher than other groups and also in women whose husbands were self-employed. The statistical tests showed significant relationship between education level and job of the spouses and the healthy behaviors during pregnancy. The Health Belief Model could be used as a framework for planning interfering programs in line with improving health measures during pregnancy and the Theory of Rational Functions is not efficient in this behavior. The model was presented based on the perceived benefits and barriers to be a guideline for mothers for their healthy behaviors and conduct during pregnancy for mothers.

Key words: Health pregnancy, Model of Health Belief, Theory of Rational Function, rural centers, Iran

INTRODUCTION

Physical health is one of the valuable blessing of God and benefiting from this gift depends on following health standards during life particularly benefiting from health in embryonic form. Since, the tomorrow society will be made by today's children and the happiness, soundness, health and development of future society is in the light of providing health for children, the necessity of following health measures before and after delivery in the most sensitive time of a person's life that is as an embryo and on the delivery time could be understood (Mohammad, 1994).

Pregnancy and delivery of infant are the most important experiences of any woman during her life. In this period, the mother and fetus relationship is very close and this is a joyful and happy time for family members,

particularly the mother. Any risky condition might affect the health of the infant and it is the dream of any pregnant woman to give birth to a healthy child (Davoud and Abolghasem, 2003). In any society, mothers and children form a priority group and in demographic aspect, nearly 70% of population in developing countries is mother and children. Mothers and children are not only a large population but at the same time, a vulnerable group under special risks and regarding women, this risk is more intensive during delivery and pregnancy and for infants and children, the risk is in growth, development and survival. In most developing countries including Iran, various factors affect the mothers' health and expose them to unacceptable events and despite efforts which are made to provide mothers' health, still health of mothers is one of the most challenging difficulties that could be observed (Arash, 2002).

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On the other hand, by following health measures during pregnancy a proper conduct could be established in mothers and other people in the society. Teaching health is a known path by which it would be possible to achieve health objectives and proceed and success in public health and medical innovations. There are several theories and models that contribute to this process by giving a framework in order to achieve the relevant goals (Naser, 2005). Among these, the Model of Health Belief is a comprehensive model that is mostly used in preventing diseases and establishing health programs. This model shows relationship between health beliefs and behaviors and is based on the hypothesis that preventing behavior is based on personal belief and in the Theory of Rational Function, the behavior of a person depends on his/her view regarding a particular behavior as well as the quality of other people's view on that behavior. These are two factors that determine the individual's behavior (Naser, 2005; Ahmad and Barghi, 2003).

In addition, the ultimate goal in the pregnancy duration health is the full health of mother and child and a safer delivery (Arash, 2002).The effective factors in establishing health behavior and promoting the health standards of the mothers in the subject study have remained unknown and no suitable and desirable solution is in access for this task to present the educational subjects desirably and facilitate learning (Naser, 2005).

In general in this study, the two models of health belief and Theory of Rational Functions are compared and the efficiency of each one in the health of pregnancy period has been evaluated separately to show us the probable subsequences of the earlier mentioned health affairs so by selecting the most desirable ones, the ultimate goal could be achieved.

MATERIALS AND METHODS

This research is a descriptive-analytical and cross sectional. The statistical society consists of all pregnant women under coverage at 23 health, medical and urban centers, the total number of them reach 7142 individuals. The volume of the sample is 365 women (Ghasem, 1999) selected from the society under coverage at random. The questionnaires wee used as data collection tools and the information available in pregnancy care forms as well as the most recent circulars and instructions were used. The questionnaires of Health Belief Model have seven sections, consisting personal data, behavior, perceived benefits, understood barriers, perceived sensitivity, the intensity perceived and guideline, making 48 questions. In the Theory of Rational Function, there are six parts including view, mental norms and behavioral beliefs,

evaluation of results, normative beliefs and motivation for obedience, making total 36 questions. To obtain the reliability of questionnaires, the views of professors and professionals of this field were used and after making some changes, the outcome was approved and data was collected accordingly. The reliability of the questionnaires was calculated based on α-Cronbach coefficient and the result showed that all structures of the model and earlier mentioned theory had acceptable validity (+65%). The information was coded and sent to the computer and was analyzed by using SPSS software. The data analysis was done by using descriptive statistics, t-test and Pearson correlation coefficient and regression analysis.

RESULTS AND DISCUSSION

A total of 365 subjects were studied in the research. The range of age was 17-40 years and the average age was 25.5 years. The 1st marriage age was 12-32 with 19.46 years as the mean, the 1st pregnancy aged was 14-35 with 21.21 years mean average. The number of previous pregnancy varied up to seven and the average of delivery was 1.6. The number of live birth was 1-7 with 1.51 average. About 63.4% of women had more than high school diploma, 85.8% of whom were housewives and 11.2% were employees. About 35.9% of husbands had high school diploma, 27.4% had junior high school and 2-0.3% had university education. About 50.1% of husbands were self-employed, 23.8% were civil employees and 19.5% were labors. About 90.6% of mothers had received medical care >6 times and 9.4% had taken medical cars <5 times. The place of medical care was governmental, private, state owned and houses in 98.6%. About 1.4% of mothers had not received medical care. About 80% of mothers took one iron tablet per day and 39.9% of them had received 2 or more times of vaccinations for tuberculin during or before pregnancy showing undesirable situation.

The oral examinations ranged from one time, 31.6%, twice, 13.5% and 3 times or more, 7.6%, not showing a desirable situation. According to the results, among the structures related to Health Belief Model that consisted behavior, perceived benefits, understood barriers, perceived sensitivity, perceived intensity and guideline for action, the average of tests scores showed that in terms of perceived benefits, 88.86 scores was received and this part had 1st rank, the perceived intensity had 2nd rank with 84 scores, guideline for action in 3rd rank with 82.9 scores, perceived sensitivity, 76 scores, 4th rank, behavior, 61.23 scores, 5th rank and understood barriers wit 32.06 scores in the last rank (Table 1). The results of the research on the correlation between the variables of

Table 1: Distribution of mean and deviation from standards in the structures of health belief models in women subject of study

Variables	No.	Mean±SD	Minimum	Maximum	Range of acquirable scores	Percent of scores	Rank
Behavior	365	10.41±2.41	3	15	0-17	61.23	5
Benefits	365	44.43±4.23	23	50	10-50	88.86	1
Barriers	365	9.62±3.36	6	26	6-30	32.06	6
Perceived sensitivity	365	22.8±5.92	6	30	6-30	76.00	4
Understood intensity	365	25.2±4.11	6	30	6-30	84.00	2
Guideline for action	365	8.29±1.19	4	10	4-10	82.90	3

Table 2: Matrix of Pearson's correlation coefficient, among variables of Health Model

No.	Variables	Pregnancy health	Perceived benefits	Understood barriers	Perceived sensitivity	Perceived intensity	Guideline
1	Pregnancy health	1					
2	Perceived benefits	0.141	1				
3	Understood barriers	0.133	-0.428**	1			
4	Perceived sensitivity	0.095	0.214*	-0.227**	1		
5	Perceived intensity	0.042	0.299**	-0.188**	0.465**	1	
6	Guideline	0.252**	134*	0.033	0.137**	0.235**	1

*Significant in 0.05 level; **Significant in 0.01 level

Health Belief Model and the health behaviors during pregnancy showed that there are only the perceived benefits and guidelines for actions in the structures of model that show significant correlation with pregnancy period health in 0.1 level and the perceived barriers show reverse and significant correlation with this structure in 0.5 level (Table 2). In addition to the regression analysis of Health Belief Model reveal that from the sum of variables of the structures of the Health Belief Model predicts 8.9% of changes in pregnancy period health and among these, the preventive power of the guideline for action was more than all (B = 0.244) which is significant statistically. In sum, the regression analysis show that this model is significant in statistical terms and fits with the data (F = 6.67, p = 0.000) (Table 3).

According to the results obtained from the structures of the theory of rational function that consist of view, mental norms, behavior beliefs, internal value of beliefs normative beliefs and motivation for obedience, the mean average of scores given to questions showed that in terms of scoring, the behavior beliefs with 93.4% of scores had 1st rank, motivation for obedience with 86.25 scores was in the 2nd rank, internal value of beliefs with 85.2 scores, 4th rank, normative beliefs with 83.09 scores in 5th rank and view with 68.2 scores had the last rank (Table 4). Therefore, none of the structures of the theory of rational function showed any significant correlation with the pregnancy period health therefore, the structures of this model did not underwent regression analysis; however, all structures of m model showed correlation with the direct and indirect intensions (Table 5).

Providing mothers and children health is a necessity in today's society. This group in addition of being a large population is vulnerable group under risk. The realization of this needs a comprehensive and full planning and by using the framework and a model, the services could be facilitated.

Table 3: Regression analysis of the structures of health belief models

Variables	Standardized B	t-value	p-value	Dependent variable	R²
Perceived benefits	0.091	1.526	0.128	Pregnancy	0.089
Understood barriers	-0.087	-1.501	0.134	health	
Perceived sensitivity	0.070	1.183	0.238		
Understood intensity	-0.095	-1.555	0.121		
Guideline for action	0.244	4.577	0.000		

The situation of number of cares performed during pregnancy for >6 terms; 90.6% and the result of another study in Yazd reported this index to be 92.2% showing the importance given by mothers and families to the pregnancy health and there shall be efforts to improve the health status of mothers and children as much as possible. Women received medical care at governmental and private center or their houses in 98.6% of cases. Another study in Yazd, reported the pregnancy care in that city to be 99.1% (Ghasem, 1999). Comparing this index and the results of present study shows similar situation and desirable conditions. About >80% of women took one iron tablet per day. In another study in the city of Yazd, the percent of prescribing iron tablet and other supplementary substances was reported to be 80.3% in that city and 80.7% in that country. The results had similar conditions with the present study and the Ministry of Health and Medical Sciences has recommended one iron tablet per day for pregnant women from the 4th month of pregnancy to 3 months after delivery so, mothers and infants would be in less risk of anemia and side effects and the Ministry also emphasizes on providing full services to mothers and make follow ups each month to lower the risk of anemia in pregnant and newly labored mothers.

Regarding the number of tuberculin vaccinations, 39.9% of pregnant women received twice or more tuberculin vaccines and this is an average to low index. According to another national survey, tuberculin

Table 4: Distriution of normative beliefs

Variables	No.	Mean±SD	Minimum	Maximum	Range of scores attainable	Percent of scores obtained	Rank
View	365	20.46±2.57	9	30	6-30	68.2	8
Mental norms	365	17.05±2.35	10	20	4-20	85.2	4
Behavior beliefs	365	23.36±2.58	5	25	5-25	93.4	1
Internal value of beliefs	365	25.8±3.49	13	30	6-30	86	3
Normative beliefs	365	45.7±6.22	27	55	11-55	83.09	5
Motifs for obedience	365	17.25±2.38	4	20	4-20	86.25	2
Indirect view	365	582.17±125.02	133	750	30-750	77.6	6
Indirect mental norms	365	7996.28±186.38	196	1100	66-1650	48.2	10
View + mental norm = intension	365	37.5±3.43	28	4	10-50	75	7
Indirect view + indirect mental norm = indirect intention	365	1379.7±269.5	738	1850	96-2400	57.48	9

Table 5: Pearson's correlation coefficient between variables of theory of rational function

Variables	Health period	Direct view	Mental norms	Behavioral ideas	Evaluation of results of ideas	Normative beliefs	Motivation for obedience	Indirect view	Indirect mental norms	Direct intention	Indirect intention
Health during pregnancy	1										
Direct view	0.036	1									
Direct mental norms	-0.027	0.004	1								
Behavioral beliefs	0.070	0.295**	0.304**	1							
Evaluation of the results of behavioral beliefs	0.046	0.080	0.391**	0.527**	1						
Normative beliefs	-0.047	0.195**	0.590**	0.379**	0.560**	1					
Motif for obeying normative beliefs	-0.003	0.013	0.550**	0.220**	0.298**	0.504**	1				
Indirect belief	0.062	0.209**	0.409**	0.850**	0.891**	0.548**	0.304**	1			
Indirect mental norms	-0.039	0.122*	0.648**	0.351**	0.491**	0.857**	0.871**	0.493**	1		
Direct intention	0.024	0.728**	0.688**	0.385**	0.345**	0.548**	0.385**	0.417**	0.534**	1	
Indirect intention	0.008	0.172**	0.639**	0.635**	0.758**	0.844**	0.747**	0.798**	0.917**	0.568**	1

*Significant in 0.05 level; **Significant in 0.01 level

vaccination for pregnant in the governmental and private sectors of Yazd was 36.8% and in the while country it is 91.2%. This index expresses the average to low status and has similar conditions to present research. In general, it could be concluded that although this index is not favorable by making careful and proper planning and using local media, networks, radio and television networks and holding training classes, good activities could be done to improve this index. Around half of the pregnant women received not oral and dental examinations during pregnancy and according to the national studies in the city of Yazd, 22.5% of pregnant women had oral and dental examinations while this figure is 64.5% in the country and thus, the index status of both studies was unfavorable. According to the instruction of Ministry of Health, it is necessary for pregnant women to receive careful and full oral, dental, gum and tongue examinations in three specified times that is 3rd, 5th and 7th month of pregnancy and have their dental and gum health conditions registered in those months (Hamid, 2005). In general, it could be occluded that although oral and dental health in pregnant women is not desirable by arranging on time consultation with health staff and turning to oral and dental helth clinics of those centers or neighboring centers, essential and useful activities could be done. In terms of the structures of Health Belief Model, the perceived benefits, the understood barriers, sensitivity, perceived intensity and guideline for function were studied. The answers given to the questions in perceived benefits in all structures of the model had 1st rank with 88.86% scores. In the other two studies, the level of perceived benefits were reported as high (Davoud and Abolghasem, 2003; Cousins, 2000) showing similar conditions with the present research. In general, it could be concluded that the subjects had good understanding of the benefits and advantages of health measures during pregnancy showing useful and desirable education and services provided by the medical and health staff in governmental and private sectors, leading to a safe pregnancy giving birth to a healthy infant and providing health for mothers.

The answers given to the questions on the perceived intensity were 84% and the understood sensitivity was 76%. In general, the high scores in perceived intensity and sensitivity shows that individuals had more knowledge and better performance of health behavior and taking health care and that they benefit from higher physical, mental and psychological welfare. In cases when the sensitivity and intensity is low or average, the society faces problems in performing that behavior and ultimately by making a careful educational planning, interferes and using useful media, the sensitivity and intensity of target

groups could be improved to do health actions. The perceived barriers has the lowest rank in the society subject of study showing that the individuals subject of study do not see much barriers in their way to show health behaviors during pregnancy. In answers given to the guideline for actions, 82.9% figure was obtained. The study shows that 89.9% of the women had gained the information via radio and television networks and 10.1% had received no information from radio and television programs. About 77% had seen posters on pregnancy health care in the health centers and only 37% of pregnant women had participated in the educational courses, 63% of the had no participation in such programs. In a study conducted in the city of Yazd, 92% of women had gained information from three sources, radio, television and health personnel. In another study, using mass media such as radio, television and magazines had increased the information level of women and improved their functions more than any other medias.

In general, the highest directives and information for the actions and conduct were received from radio and television programs and in next steps, there were educational classes, posters, pamphlet, models and media such as books, journals, newspaper and health answering machines and therefore, it is recommended to use these medias for providing a deeper and more effective learning. In present research, it is only between the perceived benefits and guidelines for action from the structure of Health Belief Model that show a significant correlation with the pregnancy health in 0.01 level and there is a reverse and significant correlation between the perceived barriers with this structure in 0.05 level.

On this basis in a study, there has been a significant correlation between the perceived benefits and barriers with optimistic and unrealistic conduct on breast cancer and prosthesis cancer (Clerke *et al.*, 2000). In addition in another study, there was a significant correlation between the perceived benefits towards preventing venereal diseases (p<0.0001) and the perceived barriers to prevent venereal diseases (p = 0.002) and also, there is sensitivity and intensity in perception towards the disease (Mohammad *et al.*, 1994).

In sum, from the total structures of Health Belief Model, 8.9% prevents changes in the pregnancy health and among structures, the prediction power of guideline for function was more than all (B = 0.244), being statistically significant. Based on another study, the perceived benefits predict 43% of changes in behavior (Adams and Scott, 2000). In another study, the most important predicting variable in using safety hamlet, the health belief was the perceived benefits and the variables by adding 40% intention and without the
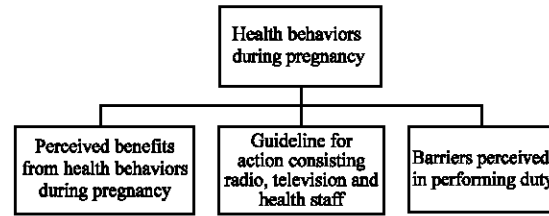

Fig. 1: Proposed model for teaching health measures in pregnancy

variable of intention 18% variance predicted the use of safety helmet (Quine *et al.*, 1998). In sum in terms of regression analysis, this model was statistically infant and fit the data and has application in pregnancy health.

Regarding the Theory of Rational Function, the women's view showed that the women believe the mentioned behavior suitable and other expectations of mothers in performing health conduct during pregnancy were specified as: husband's parents, health staff and friends, respectively. The findings show that other people's thoughts and views highly affect on the women's motivation in health care during pregnancy and since having a child and birth of another individual is important for all members of family members therefore, this conduct naturally is in a form that the people around the mother express their expectations from mother and ask her to do her utmost care for giving birth to a healthy child. As a result, it was predictable that the score of this structure would be high.

Women have strong beliefs on the health care during pregnancy. These findings show that the health behaviors and conduct during pregnancy are naturally those which receive relatively desirable feedback from all people of the society and are sign of growth of public information and knowledge on this subject (Fig. 1).

Regarding the ideas of others on the healthy behavior of women during pregnancy, the husband and health staff had stronger beliefs and the parents and friends came after them. The results obtained in this respect was fully predictable and as it was said on mental norms, health behaviors during pregnancy is naturally in a way that the relatives express their beliefs on this subject and thus, the pregnant woman becomes aware of the ideas of husband, health staff, parents and closest friends.

In general, in present study, none of the structures of theory of rational function showed any significant correlation with the health during pregnancy and the structure was not became a model of regression analysis; however, all structures of the model had correlation with direct and indirect intention. Ultimately, using the theory of rational function does not prevent health behaviors during pregnancy however in other studies, this theory

has been able to prevent some behaviors and it seemed that health behaviors during pregnancy are totally designated from the behaviors studied in other researches and this behavior is in a way that all structures of the Theory of Rational Function in its connection has high levels and this can be a reason for the absence of relationship between different structures of the theory and health behaviors during pregnancy.

CONCLUSION

Since based on the results of the research, there has been significant correlation between the structures of perceived benefits, understood barriers and guidelines for health functions during pregnancy and the Model of Health Beliefs and there was not any other relationships between other structures and with the Theory of Rational Function, no relationship was observed between structures and behaviors. Following model has been designed and developed to be used in teaching health measures for pregnancy in future.

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