

The relationship between media literacy and health literacy among pregnant women in health centers of Isfahan

Farideh Akbarinejad, Mohammad Reza Soleymani¹, Leila Shahrzadi¹

Department of Medical Library and Information Science, ¹Health Information Technology Research Center, Isfahan University of Medical Sciences, Isfahan, Iran

ABSTRACT

Background: The ability to access, analyze, evaluate, and convey information in various forms of media including print and nonprint requires media literacy, but the capacity to obtain, process, and understand basic information and services needed for appropriate decisions regarding health, considered an important element in a woman's ability to participate in health promotion and prevention activities for herself and her children, is needed to a level of health literacy. The purpose of this study was to determine the relationship between media literacy and health literacy among pregnant women in health centers in Isfahan. **Materials and Methods:** This study used a descriptive correlation study. Data collection tools include Shahin media literacy and functional health literacy in adults' questionnaires. The population include pregnant women in health centers of Isfahan (4080 people). Ten out of the 351 health centers in Isfahan were selected as cluster. Data were analyzed using both descriptive and inferential statistics. **Results:** Media literacy of respondents in the five dimensions was significantly lower than average 61.5% of pregnant women have inadequate health literacy, 18.8% had marginal health literacy, and only 19.7% of them have had adequate health literacy. There was a significant positive relationship between media literacy and health literacy among pregnant women. **Conclusion:** This study showed that the majority of pregnant women covered by health centers had limited health literacy and media literacy. Since one of the basic requirements for the utilization of health information is needed for adequate media literacy, promotion of media literacy is necessary for the respondents.

Key words: Health care centers, health literacy, Isfahan, media literacy, pregnant women

INTRODUCTION

Progress of human civilization depends on the literacy and development in the lower levels of society. Any activity based on systematic thinking and practical approach requires its simple concept of literacy.^[1] In the past, literacy was known as being capable of reading, writing and arithmetic, but in the present era of information and communication technology development, production and distribution of

diverse information, the emergence of networks, databases, multimedia, and the need of more people to information, literacy is considered as a diverse set of skills required to operate and conduct of a person in society. Some of these skills: Literacy, library, information literacy, computer literacy, network literacy, multimedia literacy, and media literacy are health literacy.^[2,3] The information provided through the media audience is often selective and manipulative and does not represent the main facts.^[4]

Address for correspondence: Dr. Mohammad Reza Soleymani, Health Information Technology Research Center, Isfahan University of Medical Sciences, Hezarjarib Ave., Isfahan, Iran.
E-mail: Soleymani@mng.mui.ac.ir

The term media literacy first was used in 1965 by Canadian thinker Marshall McLuhan.^[6] The ability to access, analyze,

Access this article online	
Quick Response Code:	Website: www.jehp.net
	DOI: 10.4103/2277-9531.204749

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

This article may be cited as: Akbarinejad F, Soleymani MR, Shahrzadi L. The relationship between media literacy and health literacy among pregnant women in health centers of Isfahan. *J Edu Health Promot* 2017;6:17.

evaluate, and convey information in various forms of media including print and nonprint is media literacy.^[6] Health information is an important piece of information and ways to improve its indices for everyone is very important. Media literacy is required for this information and the transfer of information in the media. But understand, this requires a level of knowledge that is referred to as health literacy.^[7] The term health literacy first was used as early as 1974 by Simonds.^[8] Health literacy involves knowing ways to spread and prevention of common diseases, sickness care practices and implement appropriate and timely physician orders, medication, and ultimately the ability to read and to apply materials using insurance and rehabilitation services^[9] and does not necessarily refer to general reading abilities.^[10] Among different groups of people, the health status of women is very important. The women's health before pregnancy, during pregnancy, and during development, directly impacts the child.^[11] Because women's educations improve the health of children and their families, it is vital. The number of mentally retarded children, and congenital diseases caused by lack of prenatal care of mothers and... in the country is increasing every year. According to Iranian student news agency, the world health organization estimates 120 million people worldwide, around 10 million children with mental retardation and genetic diseases and congenital malformations are born in the world. About 90% of these patients are developing or underdeveloped nations. However, the deputy prevention welfare states that mentally retarded birth in Iran is higher than the world average.^[12] And considering the costs of children (education, maintenance, occupation, etc.) in the future for family and community, it is necessary to consider the health of mothers and hence, women have been identified as initial population for increasing emphasis on health information.

Importance of media literacy and its role in the health has received a lot of attention in recent years, and few studies have been done in this area. But most of the researches have studied patient health literacy and media literacy separately in the following are few examples of them:

As seen in Table 1, most studies address health/media literacy descriptively, neglecting the factors affecting them. As previously noted, media literacy and health literacy complement one another^[25] and their important role in society and ultimately improve health care are to follow. Health literacy and media literacy are not assigned to a particular class, but the class was inclusive to all individuals at all levels and all classes are included. Accordingly, the present study investigates the relationship between media literacy and health literacy among pregnant women in health centers of Isfahan in 1392.

MATERIALS AND METHODS

The objective of the study is descriptive applying correlation method. The study sample consisted of all pregnant women in health centers of Isfahan in 1392 (4080 cases). Based on

the sample size Cochran formula, 351 women were selected from ten centers (Sepahanshar, Malekshar, Shahied Fadaii, 14Massum, Baharestan, Khane Esfahan, Ebne Sina, Zeynabyie, Navvab Safavi, Khor5asgan, and Shahid Motahhari) by cluster sampling. The data were gathered by personal reference to health centers and voluntary participation. To define media literacy, modified standard Shahin's media literacy questionnaire was used.^[19] The questionnaire consists of 29 items that are designed in the form of five-degree Likert scale from very high to very low. The questionnaire targeted the five dimensions of goal-oriented and more selective use of messages (questions 1–4), understanding how the media works (questions 5–11), evaluation of media messages (questions 12–19), the combination of media messages (questions 20–25), and summarizing media messages (questions 26–29). Validity was confirmed by experts in the field of media and communication and library. The reliability was calculated using cronbach alpha in first to fifth dimensions, respectively, as 0.813, 0.899, 0.909, 0.926, 0.773, and totally, 0.971. But to collect data on health literacy, functional health literacy in adults questionnaire test of functional health literacy in adults was used which is translated by researchers without borders. The questionnaire consisted of two parts. The first part is devoted to reading comprehension that includes three texts and measures the participants' ability to read and understand the three texts under headings "guidelines to prepare for the shooting of the Gastro Intestina (GI)," "patients' rights and responsibilities in insurance policy forms," and "the standard form of hospitals' letter of consent" (50 questions).

The second section deals with calculations (reference to physician time, medication taking times...). It has 10 explanations or health instructions on prescribed medicines, time to refer to the physician, financial aid use stages, and an example of the result of a medical test and measures the individuals' ability to understand and act upon the recommendations given by physicians and health educators, which require calculations (17 items). In each of these two parts of a score between 0 and 50 is considered. The total score for the two sectors, the health literacy score between 0 and 100, is calculated. The functional health literacy score for each individual is divided into insufficient levels (0–59), borderline (60–74), and sufficient (75–100). Mollakhalili^[13] acquired the reliability of the questionnaire using Cronbach's alpha coefficient as 0.97. Methods of data collection, visiting health centers, and respondents participated voluntarily and with full satisfaction. The data were analyzed using Statistical package for the social sciences software in both descriptive and inferential statistics levels (Pearson correlation test, Spearman and one-sample t).

RESULTS

Based on the research findings of this study, 39.3% were high school graduates and only 6.3% had a bachelor's degree and above. The most common age range was 26–30 years (41.6%) and the lowest in the age range was 41–45 years (2%).

Table 1: History of research

References	Results	Title of research	Authors
[13]	22.5% of patients admitted to university hospitals have inadequate health literacy, 30% had marginal health literacy, and 47.5% of them have had adequate health literacy. There was an inverse relationship between age and health literacy and there was a direct relationship between health literacy and education among patients	Evaluation of health literacy among patients at Esfahan Medical Science University Hospitals	Mollakhalili
[14]	Limited health literacy was a common problem for pregnant women in health centers. The level of health literacy was significantly associated with age and education level of respondents	Evaluation of health literacy among pregnant women under the health centers of Beheshti University of Medical Sciences	Ghanbari <i>et al.</i>
[15]	Levels of health literacy were insufficient among the elderly, and this issue will establish the necessity of more attention to health promotion programs	Evaluation of the elderly health education at Isfahan in 1390	Raeisi <i>et al.</i>
[16]	Prenatal care and pregnancy in women with moderate and good levels of health literacy in many cases is significantly better than women with low health literacy	Health literacy 's association with maternal prenatal care and birth outcome	Kohan <i>et al.</i>
[17]	Those patients' attitudes toward information technologies were relatively good. AbbasiGhadi and Ghadi and Sayedkhoundy performed a research as "media literacy in written media audience in Tehran." Results showed variables: Duration, amount, type of media used, the actual consideration of media content, motivation and target audience, and level of education had a significant relationship with media literacy	The role of information technology in individual health literacy: The patients' view	Sadoughi <i>et al.</i>
[18]	Variable duration, frequency, type of media, as the actual media content, motivation and target audience, and level of education had a direct relationship with media literacy	Written medical literate audience in the Tehran city	Ghadi and Sayedkhoundy
[19]	The level of media literacy among students at two universities is in higher than average level and is desirable. Direct relationship was between level of education and media literacy in students, but there was an indirect relationship between age and media literacy	A comparative study of media literacy among students of the Tehran University of Medical Sciences, Tehran	Shahin
[20]	15 participants (4.5%) had inadequate health literacy, 25 (7.5%) had marginal health literacy, and 292 (88%) had adequate health literacy	Brief questions to identify patients with inadequate health literacy	Chew <i>et al.</i>
[21]	85.4% of residents with inefficient marginal health literacy and only 6.14% of them had adequate health literacy. Health literacy among people with different levels of education, occupation and monthly household income is different. But the main factors affecting residents' health literacy, age and education were inversely associated with age and correlated to education level	Study of the status of health literacy and analysis of its influencing factors among permanent residents in Beijing Daksyng	Ao <i>et al.</i>
[22]	Patients with long-term problems may extend their health literacy skills by practice and more consultation. The results indicate the extension of health literacy in case of patient involvement in care activities	Creation of health literacy in patients with long-term health problems: Modeling the trajectory of health literacy	Edwards <i>et al.</i>
[23]	Patients with low health literacy sought less for health information. Patients who were more moderate in their level of health literacy used resources such as television, newspapers, and informal social networks to obtain the required information. Finally, patients who had the highest levels of health literacy used the internet and specialized information sources to obtain information	The role of health literacy and social networks on health information-seeking behavior of patients with osteoarthritis: A qualitative study	Ellis <i>et al.</i>
[24]	The audience need five component to understand messages: Awareness of its effect on person and society; understanding collective relationship; strategies to analyze media messages; awareness of media content as a text giving insight to ourselves and our culture; evaluation of contents	Health literacy: Key to understanding media messages	Silverblatt

Media literacy status of the respondents

One sample *t*-test was used to determine the level of media literacy in the respondents. Table 2 shows the results of these tests. As seen, the media literacy among pregnant women in Isfahan, in all dimensions and in total is significantly lower than average (3). Based on the findings, the intended and selective use of messages and messages summarizing jointly had an average of 2.69 maximum, and the combination of media messages, with an average of 2.51 to have the lowest rate.

Respondents' level of health literacy

Table 3 is devoted to the respondents' level of health literacy. As can be seen, perceived health literacy among pregnant women in the calculations, 28.25, the reading comprehension section 26.55, and their total health literacy score is 54.8.

Table 4 shows health literacy levels in pregnant women in health centers of Isfahan in 1392. As seen in 61.5% of them have inadequate health literacy 18.8 borderline health literacy levels and only 19.7 of the mare adequate level of health literacy.

Table 5 shows the relationship between media literacy and health literacy among pregnant women in Isfahan in 1392. As observed, to determine the relationship between the degree of media literacy and health literacy in respondents Spearman correlation test was used. The results of this test showed that there is a significant relationship between the educational degree of pregnant women in health centers in Isfahan and media literacy and health literacy.

To determine the relationship between age with health literacy and media literacy of participants, Pearson correlation test was used. The results of this test showed that there is a significant indirect relationship between media literacy and health literacy of the pregnant women in health centers in Isfahan. In other words, media literacy and health literacy levels are higher in younger respondents than their older counterparts.

The relationship between media literacy and health literacy of respondents

To determine the relationship between media literacy and health literacy of respondents, Pearson correlation test was used. Table 6 shows the results of these tests. As can be seen, due to the significant level, there is a significant positive

relationship between respondents' media literacy and reading comprehension, calculation, and health literacy. In other words, pregnant women who are media literate are entitled to the higher levels of health literacy.

DISCUSSION

Health literacy is a global issue, and the world health organization's statement highlights its pivotal role in determining health inequalities, both rich countries and poor countries. Center for health care strategies of America studies show, people with low health literacy are less likely to provide written, and oral information and instructions given by health professionals to understand and act. Therefore, have lower health status. Hospitalization rates and doctor are the most poorly acted in self-care skills, less preventive care, and thus incurs the cost of additional medical.^[26,27]

The results showed that more than half of pregnant women covered by health centers have inadequate or marginal health literacy. The results are consistent with findings of Kohan *et al.*^[16] Raeisi *et al.*,^[15] and Ghanbari *et al.*^[14] Ao *et al.*^[21] and Edwards *et al.*^[22] inconsistent with the findings of Mollakhalili,^[13] Chew *et al.*^[20] This discrepancy may be due to the fact that women with high education and high social classes usually prefer to go to private clinics instead of public health centers. Furthermore, a large percentage of respondents over age 30 were housewives, which low levels of health literacy appears to be due to low educational levels.

Based on the results of this study, media literacy levels in pregnant women in health centers of Isfahan are low. These results are consistent with research findings and the findings of Sadoughi *et al.*^[17] and is inconsistent with Shahin.^[19] These discrepancies may be due to differences in the educational level of respondent. Because the Shahin study's population were students while many of the participants in this study lack university education. Furthermore, it seems that the motives and goals of audience in using media is habitual and not oriented, consider the message of media unreal, and do not spend much time for media which can be a reason for low media literacy.

In addition, the findings showed that there was a direct relation between health and media literacies with educations and inverse one between them and age, which is Mollakhalili,^[13] Ghanbari *et al.*,^[14] Raeisi *et al.*,^[15] Abbasi Ghadi *et al.*,^[18]

Table 2: One-sample *t*-test to determine the level of media literacy respondents

Dimensions of media literacy	Criterion score=3				
	Number	Mean	SEM	SD	P
The intended and selective use of messages	351	2.69	-0.31	0.9	0.000
Understanding and how the media works	351	2.64	-0.36	0.88	0.000
Evaluation of media messages	351	2.59	-0.41	0.87	0.000
Combination of media messages	351	2.51	-0.49	0.98	0.000
Messages summarizing jointly	351	2.69	-0.31	0.89	0.000
Media literacy	351	2.61	-0.39	0.83	0.000

SEM=Standard error of the mean, SD=Standard deviation

Table 3: Health literacy rate in each of the sections of the questionnaire respondents

Characteristics	Minimum	Maximum	Mean	SD
Calculations section	6	48	28.25	8.81
Reading comprehension section	9	50	26.55	11.35
Total health literacy	22	97	54.8	18.6

SD=Standard deviation

Table 4: Health literacy level of the respondents

Health literacy	Frequency	Percentage
Inadequate (0-59)	216	61.5
Marginal (60-74)	66	18.8
Adequate (75-100)	69	19.7
Total	351	100

Table 5: The relationship between media literacy and health literacy and demographic characteristics of respondents

Characteristics	Number	Correlation coefficient	Significant level
Media literacy			
Educational degree	351	0.756	0.000
Age	351	-0.269	0.000
Reading comprehension section			
Educational degree	351	0.623	0.000
Age	351	-0.258	0.000
Calculations section			
Educational degree	351	0.609	0.000
Age	351	-0.159	0.003
Health literacy			
Educational degree	351	0.672	0.000
Age	351	-0.233	0.000

Table 6: Pearson correlation test to determine the relationship between media literacy and health literacy

Health literacy	Media literacy	
Reading comprehension section	Correlation coefficient	0.72
	Significant level	0.000
	Number	351
Calculations section	Correlation coefficient	0.66
	Correlation coefficient	0.000
	Number	351
Total health literacy	Correlation coefficient	0.76
	Significant level	0.000
	Number	351

Shahin,^[19] and Ao *et al.*^[21] Thus, most people who have low media literacy and health literacy, are older, have a history of poor education.

Years of education were most correlated with the level of health literacy and media literacy. Based on the report of the agency for research in healthcare, while the health literacy of

a person is related to his educations, and years of education is a good predictor for that the correlation is not complete. Hence, it is not a valid indicator for comprehension skills. However, with age there are some defects in persons' literacy due to cognitive performance reduction, distance from formal education years, and reduction of sensational abilities. Aging leads to physical, psychological, and social changes and increases the dependency to services and staff of health care. Therefore, the ability to self-care, interaction with health centers needs acceptable level of health literacy.^[28-30]

The findings indicate a significant relationship between media literacy and health literacy. The results are relatively consistent with Sadoughi *et al.*,^[17] Edwards *et al.*^[22] and Ellis *et al.*^[23] In fact, media literacy and health literacy are complementary, and many factors are involved in promoting health literacy. However, one of the main factors in order to increase awareness of health literacy, critical thinking, and attitude of the audience to health messages, media, recognition of trusted media to deal with the information explosion and pollution and the promotion of an individual's health is media literacy. Hence, the audience is better to learn media literacy as well, along with other factors, to improve health literacy and consequently their health.

CONCLUSION

Importance of health literacy to understand the risks before birth in pregnant women. Mothers' perception of risk may affect their desire to follow the recommendations in pregnancy. If patients remain unaware or underestimate known medical risk factors, they cannot be expected to follow modifiable recommendations evaluation and determination of performance literacy in terms of designing effective information transfer methods to those with limited comprehension and writing skills, is very important for healthcare system so that it can be sure that these persons can understand and execute medical orders.^[31,32] The results of the present study showed that the majority of pregnant women covered by health centers in Esfahan have inadequate health literacy and media literacy, and also very little percent of them have adequate health literacy. The results showed that there was a significant positive correlation between media literacy and health literacy. Since limited health literacy can inhibit understanding of health messages and also pregnant women as an important class and needing health information for understanding and using medical instructions, it is necessary that they have enough health literacy. The media, including oral, written, and electronic are the most important channels of health information transfer. On the other hand, for different reasons such as explosion and pollution of information, and complex function of media, to use the information from various media needs very critical media literacy. Distribution of brochures related to medical information for pregnant women in health centers, preparing educational programs of health information by national media, and holding educational workshops proportional to the education level of audience in health centers for

increasing media literacy and health of pregnant women is necessary.^[7,14] Furthermore, low-literacy patients usually are seeking information from sources except for printed materials such as TV, radio, family, or friends.

Many doctors and staff in health centers for improvement or more explanation of the information for patients use written material given as brochures to the patients. While in most times, these studies are beyond their understanding. It is recommended that educational material be brief, simple, and contain pictures,^[29] be prepared to the levels of 6th to eight grades.^[33] Nonprinted media are one of effective ways for sending health message to those who have no functional literacy; these media may include radio and video tapes, or interactive computer programs. Even patients who have no problem reading prefer nonwritten materials such as image books, videotapes, audiotapes, or multimedia.^[10]

Financial support and sponsorship

Isfahan University of Medical Sciences.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Borjian M, Khosravi, F. Librarians' information literacy and its conformity with acrl standard in National library of Iran. *Natl Libr Inf Stud Organized* 2011;23:178-91.
- Lindquist LA, Jain N, Tam K, Martin GJ, Baker DW. Inadequate health literacy among paid caregivers of seniors. *J Gen Intern Med* 2011;26:474-9.
- Mirjalili H. Information literacy: A glance on the evolution of literacy concept in the information age. *J Book* 2006;17:109-22.
- Potter WJ. Definition of media literacy translated by Lida Kavooosi. *Media* 2012;17:7-26.
- Heidari Z, Poor M. Media literacy and media education. *Res Assess* 2004;11:55-68.
- Marcuse H. Marshall McLuhan: The medium and the messenger. New York: Ticknor & Fields; 1965.
- Andrus MR, Roth MT. Health literacy: A review. *Pharmacotherapy* 2002;22:282-302.
- Simonds SK. Health education as social policy. *Health Educ Monogr* 1974;2:1-25.
- Hayryan A. The ability to apply information about public health. *Iran Health* 2008. Available from: <http://www.salamatiran.com/NSite/FullStory/?id=11532>. [Last accessed on 2013 Jul 07].
- Tehrani Banihashemi SA, Amirkhani MA, Alavian SM, Asgharifard M, Baradaran H, Parsian S, *et al.* Health literacy and the influencing factors: A study in five provinces of Iran. *Strides Dev Med Educ* 2007;4:1-9.
- Ferguson B. Health literacy and health disparities: The role they play in maternal and child health. *Nurs Womens Health* 2008;12:286-98.
- Iranian Student News Agency (ISNA). The most dangerous thing is that mentally retarded children. 2013. Available from: <http://www.isna.ir/fa/news/92030804657/>. [Last accessed on 2014 Jun 02].
- Mollakhalili H. Study of health literacy among patient at teaching hospitals of Isfahan University of Medical Sciences [Thesis]. Isfahan: Isfahan University of Medical Sciences; 2013.
- Ghanbari S, Majlessi F, Ghaffari M, Majdabadi MM. Evaluation of health literacy of pregnant women in urban health centers of shahidbehshiti medical university. *Daneshvar Med* 2012;97:1-12.
- Raeisi M, Mostafavi F, Hassanzadeh A, Sharifirad GH. The relationship between health literacy and general health status and health behaviors of elderly people. *J Health Syst* 2011;7:469-80.
- Kohan S, Ghasemi S, Dodangeh M. Associations between maternal health literacy and pregnancy outcomes. *Iran J Nurs Midwifery Res* 2006;11:42-33.
- Sadoughi F, Ahmadi M, Gohari MR, Jeddi FR. Attitude of inpatients about information technologies literacy. *Health Adm* 2010;40:31-40.
- Ghadi MA, Sayedkhoundy ZM. Written medical literate audience in the Tehran city. *J Cult Commun Stud* 2013;13:117-41.
- Shahin A. Survey of media literacy among students of Tehran University of Medical Sciences and Tehran University [Thesis]. Isfahan: Isfahan University; 2012.
- Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med* 2004;36:588-94.
- Ao X, Liu M, Gan Y, Wang H. Health literacy survey among permanent resident in Daxing District of Beijing. *Wei Sheng Yan Jiu* 2014;43:73-7.
- Edwards M, Wood F, Davies M, Edwards A. The Development of health literacy in patients with long-term health condition: The health literacy pathway model.x [15 screens]. Available from: <http://www.springerlink.com/content/u6p0532124573231/fulltext.pdf>. [Last accessed on 2013 Jul 10].
- Ellis J, Mullan J, Worsley A, Pai N. The role of health literacy and social networks in arthritis patients' health information-seeking behavior: A qualitative study. *Int J Family Med* 2012;2012:397039.
- Silverblatt A. *Media Literacy: Keys to Interpreting Media Messages*. Columbia: Praeger; 2011.
- Fuller HA, Damico AM, Rodgers S. Impact of a health and media literacy curriculum on 4th-grade girls: A qualitative study. *J Res Child Educ* 2004;19:66-78.
- American Cancer Society JCoNHES. *National Health Education Standards: Achieving Health Literacy*. Washington (DC): American Cancer Society; 2010.
- Reisi M, Mostafavi F, Hasanazadeh A, Sharifirad GR. The relationship between health literacy, health status and healthy behaviors among elderly in Isfahan. *Health Syst Res* 2011;7:1020-40.
- Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Viera A, Crotty K, *et al.* Health literacy interventions and outcomes: An updated systematic review. Evidence Report/Technology Assessment No. 199. (Prepared by RTI International—University of North Carolina Evidence-based Practice Center under contract No. 290-2007-10056- I. AHRQ Publication Number 11-E006. Rockville, MD: Agency for Healthcare Research and Quality; 2011.
- Safeer RS, Keenan J. Health literacy: The gap between physicians and patients. *Am Fam Physician* 2005;72:463-8.
- Health literacy Australia, 2008. Available from: <http://www.abs.gov.au>. [Last accessed on 2014 Jun 05].
- Headley AJ, Harrigan J. Using the Pregnancy Perception of Risk Questionnaire to assess health care literacy gaps in maternal perception of prenatal risk. *J Natl Med Assoc* 2009;101:1041-5.
- Nutbeam D. The evolving concept of health literacy. *Soc Sci Med* 2008;67:2072-8.
- Shieh C, Halstead JA. Understanding the impact of health literacy on women's health. *J Obstet Gynecol Neonatal Nurs* 2009;38:601-10.