Patient and Practitioner Literacy and Women's Health: A Global View from the Closing Decade 1990–2000

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The health status of women is partly attributable to literacy. This paper presents an overview of 106 articles that include discussion of the relative impact of literacy on women's health worldwide. This synthesis reflects ways in which health status of women has been reported across ethnicity, age, formal education, cultural beliefs about health, access to healthcare information and services, and prevalence of various health conditions in different communities. A mother's knowledge and perception as a caretaker of her children's health, and the impact of the education and perception of the healthcare practitioner on his or her efficacy as conduits for women's health education will also be addressed. Models and recommendations are noted. (*Ethn Dis*. 2003;13: 248–258)

Key Words: Patient Literacy, Practitioner Literacy, Women's Health, Child Health, Global Health

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Introduction

Griffith et al[1] have noted racial and ethnic inequalities for several disease categories and health service types. The authors report disparities for prevalence rates of heart disease, stroke, cancer, diabetes, HIV/AIDS, maternal child health (MCH), and mental health. They further identify disparities in physician and hospital services, emergency care, and post-hospital services by ethnic group, level of formal education, perceptions, and beliefs.

This paper will review the literature addressing the impact of literacy on women's health worldwide, regarding demographic and cultural factors that are often inextricable. For the purpose of this report, literacy (knowledge base) is defined as formal schooling, informal knowledge, cultural beliefs, perceptions, and attitudes, as discussed subsequently.

A search of the National Library of Medicine's database for a 10-year period (January 1990 to May 2000), using the terms "women's health" and "literacy" as keywords, identified 145 English-language publications, which addressed the following issues in descending order of frequency: formal education, age, information access, knowledge, practices, cultural beliefs, perceptions, attitudes, and information dissemination. The women's health conditions and practices addressed, in descending order of frequency, were: contraception, breast and other cancers, abortion, maternal child health (MCH), pregnancy, childbirth, diet, smoking, hypertension, cardiovascular conditions, AIDS/HIV, mortality, genetic diseases, anesthesia, Pap smears, malaria, Down's syndrome, lead poisoning, hormone therapy, diabetes, and domestic violence. Children's health status and practices affecting their health, in descending order of frequency, included: infant mortality, diarrhea, malaria, fevers, bottle feeding, and oral health. The impact of literacy on professionals was measured by: practices, perceptions, information dissemination, formal education, information access, attitudes, cultural beliefs, and age. Literature examining these issues nationally, or from large samples, included articles from: the United States, on cesarean section delivery[2]; Spain, on diet[3]; Zimbabwe, on health status and education[4]; the United Kingdom, on breast feeding[5]; Mexico, on Pap testing[6]; Switzerland, on smoking[7]; and areas in Africa, Asia, and Latin America, regarding contraception.[8]

Numerous other articles targeted regional domains. Emerging themes included: women's ethnicities and nationalities, age, formal education, cultural beliefs, access to knowledge, health, practitioners' knowledge; as well as recommendations and model programs. See Table 1 for grouping and frequencies of studies reported by continents, nations, and states; health conditions and practices; and models.

Ethnicities and Nationalities

Many nations and ethnic groups were represented in the literature reporting on literacy as a factor in women's health. The United States leads with 60 articles indexed during the decade studied. Of these 60 articles, 9 articles reported on a national scope and one article reported on a specific region. Research from Africa is the next most prolific with 23 articles, and being represented most often by Nigeria (5), Ethiopia (4), and Zimbabwe (3). Ten articles were found from the United Kingdom,

Table 1. Grouping of reports by geographical location, frequency, health concerns, and exemplars

Continent	Location	Reports	AIDS/HIV	Anesthesia	Birth Control	Brstcanc/scr	Cancer/other	Cardiovasc	Cervicancer/scr	Dental/child	Diabetes	Diarrhea	Diet	Domesviolence	Health/bel/beh	Healthcare	Hormontrtment	Infantfeeding	Immunization	Leadpoison	Malaria	MCH	Mortality	Mosquitoborne	Practknow/attit	Pregnancy/care	Smoking	Exemplars
Africa	Cote d'Ivoire	•	•																									•
	Egypt	•																								•		
	Ethiopia	•••			•													•			•							
	Ghana	•			•																							
	Kinshasha	•			•																							
	Malawi	•																			•							
	Nigeria	•••			•					•																•		
	South Africa	•																									•	
	Sudan	•										•																
	Tanzania	•																								•		
	Zambia	•			•																							
	Zimbabwe	•••	•									•			•													
Asia	India														•													
	Nepal	••														•						•						•
	Pakistan	••			•								•															
	Phillipines	•																				•						
	Vietnam	•																								•		
Australia	(same)	••							••																			
Canada	(same)						•																					
Europe	Armenia	•			•																							
	Denmark	•		•																								
	Finland	••			•					•																		
	Italy	•							•																			
	Portugal	•																							•			
	Spain	••					•		•																			
	Sweden	•																								•	•	
	Switzerland	•																									•	
	UK	••••••															••	••							••			
Mexico	(same)	••							•															•				•
Mid. East	Saudi Arabia	••			•										•													
North Am.	California	••	•						•																		•	
	Colorado	•											•															
	Connecticut	•																								•		
	Florida	•••				•	•								•													
	Illinois	•																							•		••	•
	Indianna	•				•																						
	Louisianna	•				•																						
	Maryland	•••						•					•										•					
	Michigan	•									•																	
	New England	••				•		•																				•
	New Jersey	•																								•		
	New York	•••••				••••																				•		•
	N. Carolina	••											•		•													
	Ohio	•••	•																	•						•		•
	S. Carolina	•																							•			
	Tennessee	••			•																					•		
	Texas	••••			•																				•	••		•
	US (national)	••••••••••••	•			••••		•	••				•	•											••			•
	Wash., DC	•											•															•
	Wisconsin	•	•																									
South Am.	Bolivia	•																				•						
Centr. Am.	Nicaragua	•																					•					
Combined	Af/As/LatAm	•			•																							
	Can/Eur/Aust	•		•																								
	97 3rd World	•																					•					

Note: scr=screening, bel/beh=beliefs/behaviors; know/attit=knowledge/attitudes.

2 with a national focus, 4 from Scotland, 2 from Wales, and 2 from England. The following countries/regions also published articles: Australia (5); Finland (5); Spain (4); Greece (3); Scandinavia (3); India (3); and, Pakistan (3). From this group, one article addressed the role of literacy in women's health with data on 97 developing countries and 2 articles presented cross-national perspectives (one for Africa, Asia, and Latin America, the other for Scandinavia, the UK, Canada and Australia).

The US-based studies most frequently addressed African-American (AA) women and breast cancer,[9,18] smoking,[10] obesity,[11] perceptions of mortality,[12] and health behaviors.[13] African Americans (AA) and European Americans (EA) were compared for breast cancer,[14] childbirth,[1] obesity,[15] smoking,[24] and locus of control.[16] African Americans (AA), Hispanic Americans (HA), and EA were compared for breast[27] and cervical cancer,[17] cardiovascular health,[19] childbirth,[20] and AIDS information provided to children.[21] Comparisons of HA and EA were made for Pap testing,[22] smoking,[23] knowledge of physician training,[25] and domestic violence.[26] In literature found on American Indians and Alaskan Natives, literacy was a factor for breast and cervical cancer.[28] English and Spanish speakers' comprehension of health brochures was also examined.[29] Lower literacy, rather than ethnicity, was more strongly associated with risks for poor health, except in the case of childbirth outcomes and smoking habits.

In England (UK), an analysis of breast feeding included the impact of literacy in terms of informal exposure vs theoretical knowledge.[30,5] A Scottish study examined knowledge and attitudes about hormone therapy.[34] In one study from Spain, literacy was considered as a factor for the use of Pap testing among natives vs non-natives.[31] The following reports also addressed literacy: education levels and participation in Pap testing for Vietnam-born and native

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Australians[32]; education, awareness, and attitudes about hormone therapy among UK Afro-Caribbeans, Indian-Asians, and Caucasians[33]; and, knowledge and attitudes about smoking among South African (SA) Blacks, Indians, and Coloreds.[35] Other cross-national comparisons included: Danes to Scottish, Canadians, and Australians on knowledge and perceptions of anesthesia,[36] and African, Asian, and Latin Americans on contraception.[8] In these studies, literacy, as gauged by formal education influenced perception of survivability and screening; however, maternal age, peer networks, and religion often had greater influence. Overall, for each health intervention, behavior, or condition (with the exception of the use of hormone therapy in the UK and smoking in SA), 'minorities' suffered most.

Definitions of ethnicity varied; there are cautions against comparing ethnicities since differences of age, formal education, beliefs and access to care vary across and within groups. Longshore, Hsieh and Anglin[60] made a generalizable observation by indicating that reliability of knowledge and attitude indices should be assessed for both individual and group education levels and norms. Attempts to understand the impact of literacy on women's health were confounded when comparisons were made without accounting for cultural dynamics.

AGE

Numerous studies targeted women of childbearing age in regard to: contraception,[8,53,69,98,99] abortion,[37,92,98,99] pregnancy,[5,29,47,61,91,102,105] and MCH.[40,42,58,62,66,101] However, older women were more often involved in studies related to: genetic disease,[27,87,94,95] smoking,[7,24,89] diet,[3,11,73] cardiovascular health,[4,19,85,104] and health beliefs and mortality.[12,16,50] In reports spanning youth to seniority, general health status was most frequently examined.[4,42,71]

Most studies accounted for maternal age when assessing: possession and transfer of knowledge, perceptions, cultural beliefs, or attitudes, especially those regarding contraception, pregnancy, Pap testing, and MCH. Studies on abortion in Riyadh, Saudi Arabia,[37] preterm labor in Connecticut (USA),[38] Pap tests in Turin, Italy,[39] and breastfeeding (UK),[5] all indicated that maternal age influenced health knowledge and behaviors. In many reports, younger women were found to have low levels of education and health literacy. Although criteria varied, younger or older was defined as those below, or above, mean age in a sample population.

FORMAL EDUCATION, CULTURAL BELIEFS, AND ACCESS TO KNOWLEDGE

Many reports documented literacy by years in school. References to 'more' or 'less' education were relative to the position within the range (total span of years) of education credited to individuals within particular populations. A study of rural Nepal reported that a woman's level of education predicted her use of medical services and ability to change health behaviors in her household.[40] In a study conducted in rural Ethiopia, bottlefeeding practices were determined by level of maternal education.[41] In a Santa Cruz, Bolivia, study, the level of grandmothers' education

had greater effect on maternal behavior when compared to level of mothers' education.[42] A few studies reported literacy assessed by scores on language comprehension levels,[9,29,43,44] numeracy,[45] knowledge organization,[46] or health knowledge.[46–48,86] Only 2 reports assessed health education materials for literacy level.[29,49]

Some studies found that, where formal education was high, health literacy was low due to a lack of specific information, misconceptions, or misinterpretations. These findings lead to the conclusion that formal education neither assured health literacy nor obliterated genetic or environmental predisposition for disease. A US study on breast and cervical cancer found that women encountered barriers of limited knowledge as well as misperceptions about survival rates, despite formal education.[50] In Pakistan, although urban women had twice the level of formal education compared to rural women, contraception use by both was, on average, low due to beliefs about having sufficient numbers of living children.[51] In a study from Barcelona, Spain, cervical cancer mortality was low among those with high levels of formal education, but colon, pancreatic, lung, and breast cancer mortality was high.[52]

Traditional beliefs, values, and religion influenced health knowledge and perceptions. Many beliefs manifested in ineffective rituals or resistance to change where societal pressures or kinship taboos prevailed. Social dynamics defined acceptable knowledge levels. In Nigeria, traditional contraceptive practice in Yoruba culture was universal.[53] In Saudi Arabia, a misunderstanding of a disease was attributed to women's level of education and beliefs.[54] Sahenian women of Northern Ghana were considered as property, with corporate family kinship and community dictates against contraception.[55]

Access to knowledge may influence whether women: 1) use health services; 2) commit to effective health practices in personal care or childcare; 3) change lifestyles; or 4) convey accurate health information. For example, in a Baltimore, Maryland (US) study on coronary care, less-educated females in the study group were less willing to undergo cardiac catheterization for the same reason as less-educated males and African Americans in the group: apprehension about the invasive nature of the test.[85] In rural Ethiopia, knowledge about malaria decreased among individuals living further away from a health unit, compared to those living in close proximity.[56] A study group of Australian women expressed: 1) difficulty getting information from doctors; 2) a lack of understanding of terminology, and 3) inability to ask about abnormal Pap results.[57] In Barcelona, a migrant sub-sample had less access to cervical screening than the rest of the sample—young educated women born in Barcelona or abroad.[31] In rural Ohio, gaps in lead poisoning knowledge among younger, disadvantaged mothers could be linked to a lack of prevention activities targeting this population.[58] In Lahore, Pakistan, although the study group of pregnant and lactating women knew they should change diets, few did so, due to poor knowledge of nutrition.[59] A US National Health Interview Survey indicated that cardiovascular disease knowledge was lower among respondents with less access to care compared to other participants.[19] A study in Tanzania found that women had a lack of knowledge about when a woman becomes capable to conceive or when antenatal care should be started.[61]

Based on the results of the studies involved in this review, youth or age, combined with reinforcement of beliefs and practices, lack of access to information, and lack of formal education, appears to limit health literacy. Where maternal age has a significant impact on health, lack of access to information impedes transmission of accurate knowledge and reinforces misconceptions about health and women's roles. Where accurate knowledge is absent, mothers' behaviors and practices may negatively affect child health.

MOTHERS AS CARETAKERS OF CHILDREN'S HEALTH

Infant mortality, diarrhea, malaria, fevers, bottle feeding, and oral health were prevalent concerns during the decade of the body of literature studied. Shimouchi, Ozasa, and Hayashi[82] identified literacy as a predictor of infant mortality in 97 developing countries. In Leon, Nicaragua, a survey of 10,867 women with infants found fertility and infant mortality declining over 30 years; the former explained by an increase in the level of education, the latter by targeting socioeconomically disadvantaged women with interventions.[83] In study groups in 2 villages in Sudan, both literate and illiterate mothers recognized diarrhea symptoms, but lacked the knowledge about its causes and, therefore, used harmful remedies.[62] Zimbabwean women, with and without formal education, held inaccurate beliefs about diarrhea, resulting in resistance to intervention and high child mortality.[63] In Malawi, where 45% of women lack formal education, children and women of reproductive age had highest rates of fever due to malaria.[64] In rural Ethiopia, recognition of symptoms and misconceptions of the transmission of illness was magnified with increasing distance from a health clinic and attributed to a decreased level of literacy. In this regional study, only 23% of 300 women were aware of malaria prevention[56] and outcomes of over-dilution or poor hygiene in mixing formulas, for the 174 children who were bottlefed, caused concern for researchers.[41] In Ibadan, Nigeria, women in antenatal clinics had appreciable, though inaccurate, knowledge of children's oral health.[65] In Finland, a study of toddlers and primiparous mothers indicated a need for dental

education for young mothers and rural families.[66]

Lack of access to information prevents mothers from optimizing their positive impact on the next generation's health status and practices. It contributes to high mortality or chronic illnesses that diminish individual prosperity and burden governments with epidemics or disabilities, as evidenced by a study from Chitungwiza, Zimbabwe. While this town experiences similar rates of high blood pressure for those 15 or older as found in other African towns, rates for women were higher among the 1992 study group of 150,102, with 10,658 cases of hypertension. Because the costs for caring for stroke victims were given priority, health resources were not available for the identification and treatment of the hypertensive cases.[4]

IMPACT OF HEALTHCARE PRACTITIONERS' EDUCATION AND PERCEPTIONS

Healthcare practitioners' efficacy in delivering services and disseminating information regarding women's health is influenced largely by formal education, cultural beliefs and perceptions about health, and access to healthcare information and resources. Although formal education and access to resources usually promote efficacy, limitations in staffing, services, continued training, evaluation, and administrative intervention can impede quality and equity in practitioner services. Innovations in these aspects enhance services and define standards for health care. Reports of traditional practices often reflect patient and practitioner relationships based on common links, informal literacy and perceptions, or oversight of the inherent disparities and barriers. In the literature of this review, healthcare professionals included traditionalists, midwives, dietitians, nurses, medical students, physicians, administrators, and patient representatives.

The traditional (non-physician) practitioner was many women's preferred healthcare provider regardless of practitioner level of literacy or training. A survey on the use of traditional contraceptives in Oranmiyan, Nigeria, involved 42 traditional healers working among 1,400 women of childbearing age.[53] Surveys in Vietnam indicated that non-physician providers were main sources of rural and urban prenatal care.[84] Eastern Nepal women used traditionalists more than formal health services due to low literacy, lack of access or time, costs, and poor services.[67] In Nigeria's Offot Clan, data indicated that, of 52 traditional birth attendants, the majority were illiterate and had no prior experience.[68]

Innovative training and administrative interventions have positioned trained (non-physician) practitioners in communities where either the traditionalist without formal training or the physician practitioner had previously been the norm. In Abidjan, Cote d'Ivoire, HIV counseling has been performed by trained midwives[69]; in central New Jersey, a study of 200 pregnant women found that those who perceived births as risky were more likely to select obstetricians while those who perceived births as normal were more likely to select midwives[70]; in India, trained birth attendants assisted 60%–80% of births.[71]

Training that has formalized standards for practice has helped to contribute positively to the attitude toward commitment to service within a specialty; however, interfacing and training across specialties is also critical. A US survey of 341 dietitians identified respondents as primarily college-educated European American women, with an average age of 40 years, who practiced as consultants or clinical dietitians. These dietitians indicated that they always practiced, or strongly agreed with, their code of ethics.[72] A Michigan survey compared levels of diabetes management to compliance of recommended diabetes nutrition, and found that persons with diabetes who were not managed with insulin were less likely to see dietitians because a physician had not referred them for such care.[73]

Successful innovative training and staffing for nursing specialties was reported in 2 instances in this literature review. Prenatal care by clinical nurse specialists for low-risk mothers in San Antonio, Texas, yielded greater client satisfaction and lower cost than physician or mixed staffing clinics.[74] In London, UK nurses with family planning and IUD insertion training were proficient and provided cost-effectiveness and increased client and nurse satisfaction.[75]

Medical students' and physicians' attitudes, perceptions, and training experiences are also indicative of levels of practitioner literacy that are and can be available in the delivery of women's health care and the potential for effective interfacing between patient and practitioner. In Lisboa, Portugal a medical informatics survey found 140 first year medical and dental students' opinions similar to those in more industrialized countries: 93% rated computer literacy important, 85% felt it would be very useful, 66% believed computer-based patient records would be available in 3–10 years; and, undergraduate computer education was demanded by 92%.[76]

Although first-year medical students are not healthcare practitioners, they are engaged in the educational process that contributes to their level of literacy as future practitioners. Their opinions and demands influence the resources that teaching institutions provide, ultimately influencing the level of preparation of future physicians to serve the public effectively. An Aberdeen, Scotland report on psychiatry training indicated that engaging the students in teaching activities led to more favorable attitudes (particularly among women) toward the specialty.[77]

In Canada, an analysis of physicians' anticipation of patients' opinions on ovarian cancer treatment found significant agreement between physician and patient, although life experience and demographic characteristics rarely improved the ability to predict an individual's judgement.[78] However, within the literature of the decade studied, the capacity for practitioner contributions to patient literacy and health, particularly in preventive measures, is least evident among female surgeons in the United States, as compared to other female specialists. A survey of 4,501 US female physicians identified surgeons as the younger specialists, typically US born, European American, single, childless, less avid preventionists than primary care practitioners, and somewhat less avid preventionists than other specialists.[79]

Administrators and staff are also critical to the competency of, and access to, the delivery of health care. A US study on minority representation among community and migrant health center administrators found that 20% were African American in Columbia, South Carolina, where 31% of the population is African American. The study concluded, "While minority and women professionals [were] underrepresented, there is partial fulfillment of upward mobility with room for improvement."[80(p169)] A study of 172 US hospital patient representatives, mostly female college graduates, ages 30 to 50 years, viewed their role as liaison between patients and administrators. Most held positive views of their role and several stated that they worked diligently to meet needs and expectations of patients.[81]

The healthcare practitioner's efficacy in delivery of services is inextricably linked to issues of practitioners' perceptions of health care for the patient population and practitioners' access to resources, particularly where there are projected needs that exceed the level of coverage provided. In Mexico, the cervical cancer detection program ironically reflected these links, as well as disparities in delivery and barriers to access. In the past 2 decades, the program: 1) required annual testing; 2) only provided 3,516,000 Pap tests for an estimated 16,507,011 women in 1996, and 3) excluded high risk women, while applying frequent testing procedures mainly to those at lower risk.[6]

EXEMPLARY PRACTICE IN CARE AND EDUCATIONAL INTERVENTION

Among the literature of the 10-year period studied, the most prevalent areas noting exemplary practice were: use of contraception; breast cancer screening; MCH; pregnancy; diet; smoking; AIDS/HIV; and mosquito-borne disease. Care and education were planned, initiated, or successfully administered. Increased health literacy for patient or practitioner led to improvement in health conditions and practices; models follow.

In Texas, 150 women, ages 13 to 40 years, who were tested for understanding pilltaking instructions and practicing contraceptive compliance were given additional instruction.[43] In Erie County, New York, 271 older African-American women participated in community-based breast screening in a mobile education vehicle.[87] In eastern Nepal, where only 17% of women are literate and adolescents seldom use formal health sectors, the Participatory Appraisal of Needs and Development of Action (PANDA) program helped women obtain, share, analyze, plan, and act on knowledge.[67] In Cleveland, Ohio, 82 pregnant cocaine users accessed Community Health Rap—a program designed to provide home health education. Computers and phones took their questions and prompted expert's answers.[88] In Washington, DC, 14 obese African-American women participated in a unique low literacy, low income, food preference, exercise, and behavior modification program, and had notable persistence and weight loss compared with participants in other weight loss programs.[11]

Although there were several reports on smoking behavior and its association with beliefs, knowledge, attitudes, perceptions, gender, socioeconomic status, ethnicity, and health status that account for levels of literacy in the literature sample, none of these reports described initiated or successfully administered direct intervention programs for smoking prevention or cessation. However, there are 2 reports in the literature sample worth mentioning: one planned and one indirect intervention effort. A Maine (US) survey of 678 adults' knowledge of skin aging and smoking reported that message-framing strategies emphasizing cause and effect await further study to be considered in all tobacco control and counter-advertising campaigns.[89] In Chicago, 722 female smokers with high school or less education were surveyed on their exposure to a smoking intervention program that featured information through television and booklets. The intervention successfully reached a portion of the sample, particularly women who were older, African-American, or at higher stages of readiness to quit.[24]

Direct intervention for AIDS/HIV in Abidjan, Cote d'Ivoire, consisted of testing 1,401 women, as well as these services: individual pretest counseling by midwives and posttest counseling.[69] An early intervention program, documented by the US National Health Interview Survey, indicated 74% (4,745) of a national sample of female parents of children, ages 10 to 17 years, discussed AIDS with them; of those, 76% discussed AIDS with their children after reading AIDS brochures from a provider.[21]

Finally, a report on interventions for mosquito-borne disease in Mexico documents a community-based instructional project in Merida, Yucatan. In this

report, 577 women demonstrated an ability to identify the *Aedes aegypti* mosquito, larval sites, and appropriate controls.[90]

RECOMMENDATIONS FOR IMPROVED PATIENT AND PRACTITIONER LITERACY

Recommendations are presented in order of frequency of mention for health condition or practice in the literature sample of the 10-year period and intended for use where relevant demographic contexts exist. Contraception research indicates the need for more effective planning services for unintended pregnancy.[91] Care should include an assessment of the capacity of patients to understand instructional materials.[43,44] Cost effectiveness and increased client satisfaction in care delivered by specially trained nurses should be considered.[75] Where traditional practitioners and devices prevail, program planners should be allies with traditionalists.[53,55] Where induced abortion is a major birth control method, particularly among parous women lacking information, campaigns should inform patient and practitioner of alternatives.[92] Additionally, contraceptive counseling and follow-up should be more thorough regarding contraindications, side-effects, use, and continuity.[8,93]

Reports on breast and cervical cancer screening suggest that where participation is low due to structural and functional barriers in delivery of services, educational components and screening should be combined into one unit of service. Older women's screening experiences should also be taken into consideration. Not only may their experiences inform practice in efforts to improve quality of services for this vulnerable group, but they may also enlighten practitioners as to the messages that might be conveyed to the younger generation.[87] There should be enhanced recruitment of minorities and the disadvantaged for screening.[18,28,94,95] Efforts should be linked to women's other health concerns.[50,96] At very least, minimum therapy should be given to older and minority women with positive diagnoses.[14] Reading level and health knowledge should be assessed[9] and more time devoted to medical student's education on breast screening.[97]

High abortion rates, reported in 2 African studies, warrant expanded family planning education and contraception availability.[98,99] Additionally, in instances where high rates of spontaneous abortion follow prior abortions, social values and self-concept counseling is needed.[37]

Reports suggest that MCH services work with governments to provide relevant educational interventions where females' schooling is limited[40,101] and work with non-physician providers of prenatal care.[100] They should use elders' insights in culturally sensitive ways,[42] and teach safe infant feeding where risk exists.[41] Where pregnancy risk awareness is low, antenatal education should be client-oriented[61] and target younger, illiterate women who lack knowledge of substance abuse.[47,102] Media programming is needed on: nutrition during pregnancy[59] and preterm labor.[38] Campaigns should use easy-to-read materials and face-to-face education techniques, [29]and improve the professionals' knowledge of nutrition.[59]

Studies suggest that diet practices and nutrition education for general health should focus on fiber, low fat, cholesterol, a definition of "healthy eating" based on balance and variety,[3] carbohydrates, and the interpretation of nutrition labels and other posted nutrition facts.[48] Nutrition education should be individualized and sensitive to food preferences,[11] to insulin treatment as a flag for nutrition intervention[73] and, to demographic and sociocultural factors in obesity.[15] Continuing education of dietitians should explore ways in which they can improve a client's self-efficacy, attitudes, and knowledge.[103]

Reports suggest that the knowledge of effects of active and passive smoking practices needs improvement[35]; more effective strategies for targeting heavier smokers and lower income women are needed[24]; ethnic differences should be considered[23]; and, the transition of smoking from upper to lower class women should be given attention.[7]

Cardiovascular research that describes the impact of the level of literacy indicates a need for: 1) disease education in subgroups, particularly where those of African and Hispanic heritage have less knowledge of cardiovascular health than individuals of Caucasian descent[19]; 2) increased patient education on invasive services prior to admission into care[85]; and, 3) national emphasis on behavior modification and control of risk.[104]

Reports on AIDS/HIV suggest the following. Professionals should educate patients on reduced risk of vertical transmission with AZT medication.[105] Pediatricians should help parents educate their children.[21] Where clinics have an overwhelming client load, screenings should routinely collect and analyze particularly detailed patient information so that, in the case of a patient failing to return, pre-test counselors can recognize the possibility of failure to return and provide more thorough interventions during what may be a patient's first and only visit.[69] Information dissemination should target female farm workers, who are often educationally disadvantaged;[106] people who are illiterate should receive assistance to adhere to antiretroviral therapies.[86]

It should also be noted that, although numerous studies included literacy as a factor in health knowledge and practice, literacy levels were most often defined as self-reported, or obtained from records of level of formal education. It would seem more appropriate if literacy levels (as well as the level of difficulty of health education materials) were assessed by standardized instruments. Appropriate use of such in-

struments would facilitate more competent matches in providing and receiving health care and health education.

CONCLUSION

This report presents a review of information available in the Medline database of articles published during a 10-year period, January 1990 to May 2000. Articles sharing the descriptors 'women's health' and 'literacy' that are archived in this database are representative of a range of types and levels of literacy and their relationship to a great variety of health conditions and practices worldwide. One limitation of this review is that the Medline database, although comprehensive, is not exhaustive of all research conducted during the targeted time frame. Also, the presentation of information on health conditions and related practices, within and across studies, is not mutually exclusive and, therefore, does not lend consistently to mutually exclusive discussions in this report of health conditions vs practices, and the concomitant influence of literacy variables. In many instances, the condition and related practices are either inextricable, by virtue of cause and effect relationships, or exist in tandem. Moreover, the development of this report is meant to capture the relative prevalence of the health concern, whether condition or practice, as it appears in the literature sample, which reflects the relative level of attention invested politically or economically. It should also be noted that some articles, cited for publication within the target decade, do refer to studies completed in the previous decade. Such articles do not precisely reflect the dynamics of the last decade exclusively, but also reflect the progress, continuity, or transition from the prior decade into the last decade where the particular health issue remains prevalent enough for selection into the database.

In this sample, the most frequently reported biological conditions or practices were those regarding reproductive organs, followed by smoking. However, the database is limited in representation of socially inflicted assaults to women's health and literacy, such as the atrocities found in parts of our global village where illiteracy is highest for women (as currently reported in the press, television, and in email petitions) and other socially inflicted consequences. For example, at the 2000 American Medical Student Association Convention, Marion Wright Edelman spoke of eligible children whose uninsured parents were unaware of health services and of the need to get leaders to see the resulting negative health conditions for these children by personalizing these children's stories qualitatively.[107] In another instance, the fact that 40 US states would have to relinquish unused funds for health care to states that had depleted their funds was reported in US broadcast news media reports in September 2000 and reiterated by the American Academy of Pediatrics.[108] In each instance, issues of literacy and access to information or resources is evident for patient and/or practitioner.

A critical challenge continues to be securing and sharing information responsibly. Where low literacy impacts health negatively, the women often suffering negative outcomes are women of color. It is a universal axiom that, whether rural or urban, low literacy engenders inferior health. What should be noted is that informal literacy prevails globally; its various 'ways of knowing' create collective consciousness or awareness that invites eclectic health intervention. In most of the cited models, women have exercised responsibility for the improvement of their literacy and their actions by participation in health intervention programs, persistence, and demonstration of achievement of positive outcomes. The relevance and applicability of the characteristics of these exemplary programs, regardless of the global region or ethnic group targeted,

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exceeds the extent of irrelevance that may be identified. There is a universality in the previously cited contexts of many of the models such as: facilitating the comprehension of, and compliance with, contraceptive prescriptions; providing community-based breast cancer screening; engaging women in obtaining, sharing, analyzing, and planning to act on knowledge; using computers and phones to provide a pipeline for answers to questions on health issues; conducting a weight loss program that is tailored to literacy level, income, food preference, and behavioral needs; using television and brochures to educate the public about the cause and effect relationship between smoking and skin aging; testing, counseling, and fostering intergenerational education about AIDS through brochure distribution; or, instructing on how to control health-threatening mosquitoes. There is much to be shared globally about interventions for health care and education.

In conclusion, the impact of literacy on women's health illuminates the measure of responsibility practitioners must assume in educating their patients and the magnitude of the need to provide systematic support. The literature sample indicates that additional research should be conducted to identify the relationships between literacy and women's health and the correlation of particular health conditions and related practices. Medical curriculum should incorporate components on sensitivity,

competency, and humility regarding diversity and health literacy to empower the triad of patients, practitioners, and policy makers. Technological innovations should be used to harness and direct available resources aiming at the achievement of a more equitable and appropriate delivery of health care and sharing of health literacy.

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