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Applying a Biopsychosocial Model to Research on Maternal Health

Many different conceptual models have been applied in research on women's health in general, and health of mothers specifically. Which model is used to approach a particular clinical or research question has important implications for health care and health policy decisions. In this article, we provide a brief overview of the biomedical, psychological, feminist, and biopsychosocial models, with particular attention to their implications for health policy.

Biomedical models

The biomedical model has long been criticized by feminist scholars and health care providers. Biomedical models often pathologize women by considering male bodies to be the normal standard, and understanding differences between men and women to be deficiencies on the part of women. This is particularly true in the case of women's reproductive health, whereby biological differences in the reproductive systems of women and men have been used historically (and in some contemporary settings) to justify social control over women's bodies, including limitation of women's access to education and employment (Hubbard, 1990). The biomedical model has been used to support policy decisions which have had negative implications for women's health (e.g., legislation restricting access to contraception and abortion), whereby predominantly male biomedical practitioners have become gatekeepers of these services essential to women's physical, emotional, and social well-being (Weisman, 1997: 182).

Psychological models

Many predominant psychological models are internally focused, deficit models, which take a reductionist approach to psychological functioning. As an

example, psychological theories have heralded the notion of "internal locus of control." Individuals with an internal locus of control take responsibility for their own successes and failures, while those with an external locus of control look for external factors to blame for their difficulties. External locus of control has been associated with psychopathology, including premenstrual depression in women (Lane and Francis, 2003: 127). However, as noted by Jordan and Hartling (2002: 63), the concept of locus of control rests upon the assumption that one does, in fact, have control over ones' successes and failures. As a result of sexism, racism, and other forms of discrimination, marginalized populations (including women) may rightly attribute lack of success to forces beyond their control. Reductionist, internally-focused models, however, would label this attribution as pathological.

Feminist models

As a response to the biomedical model, and in particular to its implications for public health policy, Women's Health Movements developed in the 1960s and 1970s (Morgen, 2002). These movements offered both opportunities for political activism/advocacy and alternative models of health care for women.

Contemporary feminist models of women's health share several common principles including the following:

> 1. Women's individual problems are often the result of the experience of living in societies that devalue them.
> 2. Pathology, which is defined by the dominant culture, is often environmentally induced. Likewise, what is considered "normal" is defined and maintained by the dominant culture, which is primarily composed of the middle-class, able-bodied, heterosexual white male.
> 3. Women and men do not have equal status and power. In most cultures, women are oppressed and in a subordinate power position. This subordinate position has negative health implications for women.
> 4. Contrary to theories of biological determinism, women differ from men primarily because social forces encourage differential constructions of gender. These gender-role-stereotyped constructions limit the potential of all human beings. (Worrell and Remer, 2003: 64)

Feminist models have enabled important progress in the conceptualization and treatment of women's health issues. For example, these models have drawn violence (and particularly violence at the hands of an intimate partner) to the forefront as a key women's health issue. In addition, feminist health activists have done critical work to improve women's access to abortion and contraception. However, feminist models also have limitations.

In response to the biomedical approach, which has essentially ignored social determinants of health, feminist theorists have generally put forward social variables, including sex-based discrimination, as root causes of health

problems in women. However, a focus on social issues to the exclusion of biological determinants of health limits the application of these models to health conditions in which clear biological causes have been identified. For conditions where biomedical models have been of benefit in understanding etiology and treatment (e.g., diabetes, depression), models that do not incorporate key roles for biological variables are well received by neither practitioners nor patients.

Further, feminist models that do not address biological determinants of health risk silencing or invalidating the experiences of women who perceive connections between their health status and their biological state.

Finally, feminist models of health and illness in women have generally been developed for use in conceptualizing health conditions at the levels of social theory and policy. Their application to treatment of individual women patients has generally not been tested and can be difficult. Empowering women to expose and challenge the contribution of sex-based discrimination to their medical problems is often a step towards, but not sufficient for, achieving recovery. For example, alerting a woman with severe postpartum depression to the role of social myths about motherhood in her condition is unlikely, in and of itself, to result in a great improvement in her symptoms during the period when she is most suffering.

In summary, just as biomedical and psychological models can be incomplete in that they may lack acknowledgement of social determinants of women's health, feminist models can be incomplete in that they may lack acknowledgement of biological variables in women's health. A compromise between these two, often oppositional, positions is needed.

Biopsychosocial models

Biopsychosocial models have been presented as an alternative to the biomedical model since the late twentieth century (Pilgrim, 2002: 589). In contrast to the reductionist perspective inherent in the biomedical model, biopsychosocial models are based upon the principles of general systems theory. In essence, general systems theory conceptualizes every being as comprised of component parts, which are themselves grouped into larger components, i.e. beginning with sub-atomic particles, which are organized into atoms, which are further organized into molecules, and ultimately organized into the "whole" person. However, even above the level of the whole person, there are further hierarchies of which the person is a component, including family, community, society, and the biosphere (Engel, 1980: 536).

A reductionist biomedical model requires that one level of this hierarchy be isolated for study (e.g., a particular system or tissue, or even the whole person). This invariably neglects the impact of external forces such as culture or society. As a result, the importance of gender as a determinant of health is virtually always ignored. The biopsychosocial model, however, proposes that the levels of the hierarchy are in constant interaction with one another. As such,

proponents of a biopsychosocial model would argue that what is happening at one level of the hierarchy (e.g., the person) cannot be understood without consideration of what is happening at other relevant levels of the hierarchy, including both lower levels (e.g., the cardiovascular system or central nervous system) and higher levels (e.g., the family or society).

What can biopsychosocial models add to research on women's health? In their application in traditional medicine, biopsychosocial models have not typically integrated any variables that are specifically relevant to women's health or gender issues. However, these models provide a mechanism whereby determinants of health that have been traditionally overlooked can be incorporated into a comprehensive framework. This framework can then be applied both to public policy and to individual patients seeking health care. We would argue that gender role socialization is one such determinant: it represents a variable which alters an individual's interactions with family and society, and as a result, has important implications for women's health. Similarly, the patriarchal structure of our social institutions is relevant to our understanding of "society," in particular as these institutions determine women's need for or access to health services. As Weisman (1997) has outlined, "gender is a fundamental social variable that affects individuals' social status, access to resources, experiences of health and illness, and interactions with the health care delivery system" (182). As such, "women-centered conceptions of health" must explicitly define the impact of feminine gender-role socialization and sex-based discrimination on women's state of well-being (Weisman, 1997: 183).

Can biopsychosocial models, then, overcome the deficiencies of the biomedical and psychological models, and integrate valuable insights from feminist models in conceptualizing maternal health and women's health in general? We would argue that yes, biopsychosocial models bring us as close as is yet possible to describing the "truth" of women's health. Biopsychosocial models acknowledge and encourage study of the biological differences between women and men (addressing a fundamental limitation of many feminist models), while at the same time drawing attention to the critical roles of social and cultural factors in the development of these differences. Biopsychosocial models provide a framework within which our theories about the impact of gender role socialization and sex-based discrimination can be practically applied to the prevention and treatment of health conditions in women.

An example of a biopsychosocial model: mental health in pregnancy and the postpartum period

Depression that is experienced by women during pregnancy and in the first months after childbirth ("perinatal depression") is an example of a women's health condition that can be better understood through the lens of a biopsychosocial model.

Perinatal depression has most often been studied using biomedical models. The most popular model holds that the dramatic changes in hormone

concentrations which occur during pregnancy and following childbirth are responsible for the mood changes that women commonly report at this time. Indeed, scientific studies have provided convincing evidence that women who experience postpartum depression are more sensitive than other women to "normal" physiological changes in concentrations of the hormones estrogen and progesterone (Bloch et al., 2000: 928), though no consistent linear relationship between any one hormone and symptoms of depression has been established. Feminist scholars have criticized this model, arguing that a hormonal attribution for postpartum depression pathologizes women's reproductive biology (Chrisler and Johnston-Robledo, 2002: 174). An alternative model proposes that perinatal depression is a culture-bound syndrome: a product of Western societies' tendency to isolate new mothers with little family or community support, and to place little social value on the "mother" role (Stern and Kruckman, 1983: 1027). There are also data to support this hypothesis: many studies have identified a strong and consistent relationship between postpartum depressive symptoms and a lack of social support (O'Hara, 1996: 43; Beck Tatano, 2001: 275).

To greatly oversimplify, biomedical models imply that perinatal depression is a medical problem, attributable to problems with an individual's biology. In contrast, feminist models imply that perinatal depression is a social problem, attributable to our institutions and social values. How can we reconcile these models, in the context of evidence supporting both?

One of the authors has studied mental health during late pregnancy and the first four months postpartum in a large sample of predominantly "healthy" women (Ross et al. 2004). Data on a number of potentially important biological (e.g., hormone concentrations, genetic loading) and psychosocial (e.g., social support, relationship satisfaction) variables were collected and examined for associations with self-reported symptoms of depression and anxiety.

Structural equation modeling statistical techniques were applied to the data in order to examine potential interactions between biological and psychosocial variables in symptoms of perinatal depression and anxiety. When the prenatal data were analyzed in this manner, an interesting pattern of results emerged. There was a strong relationship between certain "biological" risk factors (e.g., personal and family psychiatric history) and symptoms of depression and anxiety. However, once the psychosocial variables, including social support, were integrated into the model, the biological variables were no longer statistically significant predicators of depression. This suggests that the biological variables that were studied (including both genetic and hormonal variables) do not independently "cause" perinatal depression. However, the biological variables did make a statistically significant contribution to the model through an indirect pathway, by interacting with the "Psychosocial" variables (which included lack of social support, recent stressful life events, etc.). Using this model, then, we were able to demonstrate that biological variables contribute indirectly to the causal pathway of perinatal depression.

What might these results mean? We believe that the biological variables act to make an individual more or less likely to respond to environmental triggers, such as inadequate social support, with feelings of stress or anxiety. In other words, biological variables, including hormonal changes, are important, but can only be properly understood within a social context.

We wish to note some limitations of our research on perinatal depression. These are preliminary findings from a homogeneous group of research participants: the sample was largely Caucasian and generally well-educated. Further, the model described above for the prenatal data did not statistically account for the postpartum data, suggesting that additional variables may be important in explaining depressive symptoms during the postpartum period. However, despite the limitations, these results provide an example of the application of a biopsychosocial model to study the importance of both biological and psychosocial variables simultaneously. In order to understand perinatal mental health from a comprehensive biopsychosocial perspective, future research should incorporate measures of other possible social contributors to well-being. These might include endorsement of the "good mother" myth, feminine gender role identification, family division of child-care labor, and experiences of perceived discrimination. All of these variables can be operationalized and included in a statistical model such as the one tested in this study. In this sense, the most useful elements of the biomedical and feminist models can indeed be combined into a single, more complete model of women's mental health.

Future directions for biopsychosocial models in women's health

At the Fourth World Conference on Women, held in Beijing in 1995, a definition of women's health was adopted that clearly embraces a biopsychosocial perspective:

> Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Women's health involves their emotional, social and physical well-being and is determined by the social, political and economic context of their lives, as well as by biology. (United Nations, 1996: 667).

Although the concept of the biopsychosocial model offers a framework within which mothering and other women's health issues can be understood, feminist theorists and health care providers have much work to do before women patients will be able to reap the benefits.

First, we must continue to expand ideas about what constitutes a women's health issue. It is clear that poverty and sex-based discrimination are as much women's health issues as are issues relating to women's reproductive health, or breast cancer. We also need to broaden what we consider to be the "social" component of the biopsychosocial model to include other important determi-

nants of women's health, including political, spiritual, and ecological/environmental determinants of health. We must also continue to explore the intersection of various levels of the biopsychosocial hierarchy in determining women's health, and as such promote definitions of health that are applicable to diverse women whose needs must be met by our system. Ethnocultural variables, sexual orientation, ability, age, and all of the categories into which women can be marginalized intersect with gender-role socialization and sex-based discrimination, and must be acknowledged in order to provide a complete understanding of women's health.

Finally, we must be vigilant about the ways in which those in positions of power choose to interpret our biopsychosocial models in their health policy decision-making. As has been noted by the feminist bioethicist Laura Purdy (1996: 176), an emphasis on social determinants of health could encourage medical and legal intervention into domains of women's lives where we ought not to be regulated. The pathologizing and punishment of pregnant and parenting women who use substances is perhaps an example of the consequences of extending medical intervention into women's lifestyle choices and behaviors (Harrison, 1991: 261).

The biopsychosocial model offers opportunities to improve women's health by working both within and outside of our current health care system. The model recognizes the role for policy development to reduce and ultimately eliminate sex-based discrimination in improving women's health. It also recognizes the need for medical interventions which appropriately target the biological bases of women's health issues, while incorporating feminist principles and thereby acknowledging social determinants of health. Embracing a biopsychosocial model of women's health, we believe, requires that these two lines of work—at the level of social policy and at the level of the individual woman—be seen as inextractable from one another.

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