Depression and smoking in the pregnant rural population: A Literature Review

Joyce Marie Rhodes-Keefe, MS, RNC

Clinical Assistant Professor, Decker School of Nursing, Binghamton University,

jrhodes@binghamton.edu

Abstract

Background: There is a lack of literature specific to depression in the rural smoking population. The effect of smoking on the fetus and mother combined with the challenges posed by underlying depression make this issue complex and necessary to investigate. In addition, strengths and challenges specific to the rural population need to be considered, but have not been addressed in previous studies.

Purpose: The purpose of this review was to identify the current status of research on the topic of the relationship between smoking status, rurality, and depression in the pregnant population.

Methodology: An integrative review of the literature was conducted using the terms pregnancy, depression, smoking, and rural. Nursing and psychology domains were accessed as well as the Cochrane library. Within the Nursing domain, twelve articles were identified for review. One hundred fifty articles were found within the psychology domain. A search of the Cochrane library yielded one thousand thirty one articles. Inclusion of all four key terms was a criterion for review. Titles and abstracts were reviewed for relevance. Dissertations and opinion papers were excluded.

Results: Twelve articles within the nursing domain were reviewed and did not include all four key terms. Of the one hundred and fifty articles noted in the psychology domain, none contained all four of the key terms. Lastly, no articles stemming from the Cochrane library search addressed all key terms. Aspects such as depression management and depressive disorders were

predominant. A total of four articles were deemed appropriate for inclusion. All of these articles stemmed from the nursing domain search. None of the analyzed articles used a theory, model, or conceptual framework to guide their research. Of the four articles, only one was experimental. While rural was defined specifically according to Butler and Beale's criteria of metropolitan vs. nonmetropolitan in one article, it was not clearly defined in one article that was published in a rural nursing journal. The studies reviewed spanned a large segment of rural populations with samples drawn from various countries around the world.

Conclusions: There is a dearth of research in the area of depression in the rural pregnant smoker. Of the research located, there is limited definition of rural, no use of a theory, and no incorporation of concepts inherent to the rural population. In order to conduct a comprehensive study of this population, efforts must be made to address these concepts via information gathering, study design, and/or implementation processes. Research focusing on these areas will lend a truly holistic view of the topic.

Keywords: Pregnancy, smoking, depression, rural.

Depression and smoking in the pregnant rural population: A Literature Review

Pregnancy, for some, is known as a time of joyous anticipation. The family eagerly awaits the birth of a new member. Depression during and after pregnancy can lead to a multitude of negative consequences ranging from interrupted relationships to death. Risk factors associated with depression during pregnancy include few support systems, low socioeconomic status, lower educational level, and being of certain minorities (Logsdon, Birkimer, & Usui, 2000). In addition, Harvey and Punn (2007) found an unplanned pregnancy, financial stressors, and few supports as themes correlating to depression in the pregnant population. Sears, Danda, and

Evans (1999) discuss the relationship between depression, rurality, and smoking status in a low income female population. In their research validating the Mood Module of the Primary Care Evaluation of Mental Disorders tool's use in a rural setting, nurses in two rural clinical settings located in northern Florida administered the questionnaire. Participants were shown to have higher depression scores compared to participants' scores in urban settings. Little has been done, however, to investigate the interrelated nature of all of the above concepts. The purpose of this paper is to analyze the literature to identify studies that address smoking status, depression, and rurality in the pregnant population.

Analysis of the relationships of the concepts may define if smoking is a coping mechanism for the rural pregnant population as well as what role rurality and pregnancy play in the experience of depression. Several questions may be posed about the above relations. Just one of many possible questions is: "Is smoking a means of self-medicating for depression?" Answers to this question will have a profound impact on the healthcare provided this population, especially in regard to nursing care as nurses are on the forefront of patient contact. Nurses in rural settings play a pivotal role in care of patients, being instrumental in identification, follow through, and evaluation of treatment plans. Rural nurses balance familiarity with anonymity to establish a therapeutic relationship. Increased knowledge regarding depression and smoking in the pregnant patient living in a rural setting will provide nurses with the ability to provide optimal care.

An initial literature search was conducted to identify the current status of research on the topic of the relationship between smoking status, rurality, and depression in the pregnant population. Initially, the subject nursing was chosen to identify a suitable data base. Cumulative Index to Nursing and Allied Health Literature (CINAHL), Medline, Psychology and Behavioral Sciences Collection databases were initially chosen. The search was then expanded to all

databases available through nursing within the Binghamton University library electronic system. The initial search mode used was “find all search terms”. Peer review was the chosen limiter and the subject terms used were pregnancy, depression, smoking, and rural in that order. Poster abstracts, opinion papers, and dissertations were excluded. This search yielded nine articles. Four articles remained after a detailed review of the abstracts, all addressed the terms pregnancy, depression, smoking, and rural. Changing the search mode to “find any of my search terms” and keeping the terms pregnancy, depression, smoking, and rural, along with the prior limiters and exclusions, did not yield a change in the number and titles of articles found.

In the psychology databases utilizing the same search terms, delimiter, and exclusion criteria, no new articles were identified. One formerly identified article was produced as well as three articles that addressed stress or anxiety, but did not address depression in the rural smoking pregnant population.

As a final approach to on-line investigation for the literature search, the Cochrane Library was accessed. The topic Mental Health was chosen with 353 available articles. Further limiting the search to depression brought the count to 51 articles. Narrowing the topic further to Depressive disorders/major depression yielded a count of 49. Antidepressant prevention of postnatal depression brought the article count to three articles, none were appropriate based upon review of the abstracts. A different approach within the Cochrane review was to use tobacco addiction as the topic and 69 articles were found. Accessing a subtopic of cessation narrowed the number to 56; however, none were appropriate based upon review of the titles. The final topic accessed in the Cochrane library was pregnancy, yielding 609 articles. The subtopic of antenatal had nine articles, yet none were appropriate per title review. Basic care during pregnancy, another subtopic under pregnancy and childbirth, had 13 associated articles, but a

review of the titles demonstrated that none were appropriate. The final subtopic under pregnancy and childbirth, psychological well-being during pregnancy, had seven articles with none appropriate per title review (see figure 1).

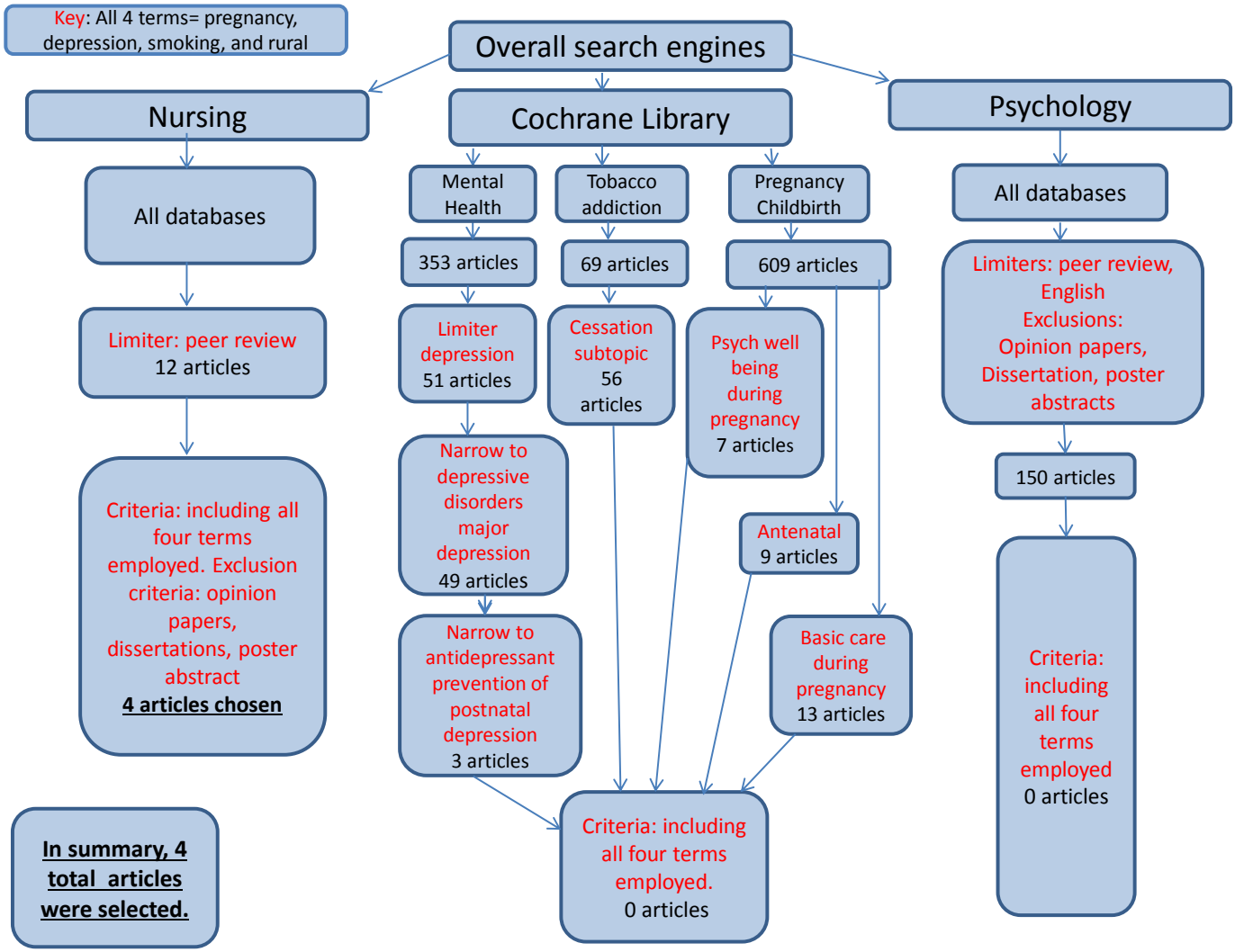
Considering that the above on-line search resulted in four potentially appropriate articles, it was decided to use an additional means of investigation. Six sources were accessed via a heritage search. Of the six sources noted, none contained all four of the required search terms, yielding no suitable results.

For the purpose of this review, four articles were chosen based upon the above inclusion criteria of all the terms pregnancy, depression, smoking, and rural as well as peer review. Exclusion criteria were poster abstracts, opinion papers, and dissertations. Chosen articles were required to address all four of the already mentioned terms (Bullock, et al., 2009; Guest, & Stamp, 2009; Ho-Yen, Bondevik, Eberhard-Gran, & Bjorvatn, 2007; Simmons, Huddleston-Casas, & Berry, 2007).

Due to the fact that only four articles with potential merit were identified in this exhaustive search, it would suggest that there is a scarcity of literature regarding depression and smoking in the pregnant rural population. Thus this is an area worthy of further study.

Further evaluation of the above four articles led to identification of strengths and gaps in the body of literature. Each article was evaluated individually for validity and reliability. Sample size, design, method of sampling, identification of a purpose and research question, use of a conceptual framework or theory as a guide, statistical tests, and clinical significance of findings were evaluated via a scoring tool (Association of Women's Health, Obstetric and Neonatal Nurses [AWHONN] (2003). The search flowchart demonstrates the multiple sources accessed with only four potential articles yielded, with several limitations (see figure 1).

Figure 1 Flowchart of Literature Review



Strengths and Gaps in the Literature

Strengths

A majority of the articles reviewed had a larger sample size (Bullock et al., 2009; Ho-Yen et al., 2007; Simmons, et al. 2007) with one using a power analysis to determine an adequate sample to mitigate the chance of a Type II error (Bullock et al., 2009). The larger sample size was a strength as inferences made from analysis of results are deemed more valid for generalization. In addition, all studies used screening instruments that have already been

established as valid and reliable; two used the Edinburgh Postnatal Depression Scale (EPDS) (Guest & Stamp, 2009; Ho-Yen et al., 2007), one used the Center for Epidemiologic Studies Depression scale (CES-D) (Simmons et al., 2007) and one used a Perceived Stress Scale along with a Prenatal Psychosocial Profile (Bullock et al., 2009).

Three of the studies were purely descriptive in nature (Guest & Stamp, 2009; Ho-Yen et al., 2007; Simmons et al., 2007). Although the low level design is a weakness, the studies do provide information pertinent in a topic area where there is little known regarding depression in the rural, pregnant smoker. Descriptive designs are most often used when there is limited literature specific to the target population. One study was an experimental design using randomization and investigated interventions aimed at smoking cessation among rural pregnant smokers along with measuring depression levels. Although the sample included those with and without depression, a good portion of the sample scored high (18.7%) on the Mental Health Index-5 (MHI-5) measure, indicating depression (Bullock et al., 2009).

Gaps

In regard to gaps in the body of literature, none of the analyzed articles used a theory, model, or conceptual framework to guide their research. Use of a theory would help drive the research process, giving it direction. In addition, while stating a rural focus, rurality was not defined in regard to population size, geography, or other factors in two of the articles (Bullock et al., 2009; Ho-Yen et al., 2007). While rural was defined specifically according to Butler and Beale's criteria of metropolitan vs. nonmetropolitan in one article (Simmons et al., 2007), it was not clearly defined in one article that was published in a rural nursing journal (Guest & Stamp, 2009). Working with the rural population poses unique challenges and approaches and rural research needs to take this uniqueness into consideration. Two of the studies were conducted

outside of the United States (Ho-Yen et al., 2007, Guest & Stamp, 2009), potentially introducing geographic location as a factor that should be addressed. A final gap noted in the overall body of literature is the lack of studies aimed at the presence of depression in the pregnant smoker living in a rural setting.

The studies reviewed spanned a large segment of rural populations with samples drawn from various countries around the world. This diversity in samples gives a broad picture of factors of depression among smoking rural women, however it does call into question the transferability of the studies to rural populations with variances in cultural norms.

Review

In their study, Ho-Yen et al. (2007) found that risk factors such as polygamy, husband's alcoholism, earlier onset of depression, depression present during the current pregnancy, and smoking were significantly related to development of depression, however, there was no significant difference between the rural and urban populations. Although polygamy is illegal in the US and thus not often a relevant risk factor, other risk factors noted in the Ho-Yen et al. study are relevant. In contrast, Guest and Stamp (2009) found that rural women had higher EPDS scores postpartum, indicating depression, than urban women and rural women had a decreased incidence of smoking. This study did have the smallest sample size n = 85, adding questions of the generalizability of results to other pregnant rural women with depression who smoke. Replication of the study would be beneficial. Guest and Stamp's premise that rural women have an increased incidence of reported depression was refuted by Simmons et al., (2007) who found that pregnant women living in areas defined as rural according to established criteria were less apt to identify themselves as depressed. In addition, they noted that women, who had been pregnant within the past three years, therefore having contact with a provider,

were less likely to identify themselves as depressed. Also, women identified as depressed had more illnesses and injuries resulting in contact with the health care system. They recommend increased provider awareness to the signs and symptoms of depression. Increased contact with providers may be a means by which women could be educated about the signs and symptoms of depression, potentially promoting appropriate self-identification. The Simmons et al. findings may explain the difficulty in comparing depression rates between rural and urban populations. That is, is a lower incidence of identified depression related to a lack of depression or to a failure to identify existing depression? In the study by Bullock et al (2009), high levels of stress and depression as well as few social supports were noted in pregnant women who smoked. Effective treatment focused upon social support combined with specific interventions. Women successfully abstaining from smoking utilized one of the offered interventions as well as had more social support (Bullock et al., 2009).

To summarize, the body of knowledge assessed in this review indicates: (a) risk factors are present in regard to depression in pregnancy, (b) smoking has been associated with depression in the rural pregnant population, (c) depression and limited supports promote continuance of smoking, and (d) rural women do not necessarily identify themselves as depressed, especially if recently pregnant. There remains an unanswered question as to the role of rurality in depression in the pregnant smoker.

Recommendations

Of the reviewed articles, three were descriptive and one was a randomized controlled trial. With a beginning level description of depression in rural women who are pregnant and smoke, the need to move toward investigating interventions is important. Increased numbers of randomized controlled studies and ultimately systematic reviews would add to the level of

evidence. More studies need to be done employing interventions specific to smoking cessation and depression diagnosis and treatment in the rural pregnant woman. In addition, a clearer definition of how rural is defined will promote analysis and comparisons of smoking and depression rates within this population. Interventions and variables should be tailored to this specific population. Use of an appropriate theory would also benefit future research. Theory driven research would give direction to the study as well as assist in interpretation/application of results.

There is a definite need to focus on rurality when studying pregnant women in regard to depression and smoking. None of the articles addressed concepts specific to the rural population. According to Brown and Schafft (2011) poverty rates are higher in inner cities and nonmetropolitan areas. In addition, women, especially women as the sole head of the household, have an even higher rate of poverty. Considering the population studied in the literature review, poverty is an important concept that should be included in any analysis. All of the prior studies collected sociodemographic information. The concept of poverty in the rural population could be studied in more detail to increase the body of knowledge about the co-existence of smoking and depression in a vulnerable patient.

Rural Concepts

Concepts such as resilience, hardiness, anonymity vs familiarity, isolation, and outsider/insider need to be addressed in any analysis of a rural population. Resilience, according to Leipert (2010) entails the ability to withstand difficulties and have perseverance. Hardiness entails "taking a positive attitude, following spiritual beliefs, developing fortitude, and establishing self-reliance." (Leipert, 2010, p. 110-111). Anonymity vs. familiarity impacts on health seeking behaviors as well as health care provision. Isolation impacts on the rural

population's access to healthcare and outsider/insider defines perceptions of healthcare providers (Findholt, 2010).

Future studies of depression in the rural pregnant smoking population would benefit from measurement and analysis of the above concepts. The presence, or absence, of resilience and hardiness has potential impact on any interventions aimed at smoking cessation or depression recognition and treatment. Associated self-efficacy can be studied as a cause of, or factor promoting, hardiness and resilience. Evaluating one's self-efficacy may lead to appropriate interventions. Smoking may also be seen as acceptable via multigenerational transmission (Nichols, 2011) and culturally acceptable in some rural areas. In addition, smoking may be seen as a means of self-medication for depression that allows women to feel more resilient. Incorporating an analysis of resilience, hardiness, and self-efficacy can evaluate associations with smoking status and depression.

Familiarity vs. anonymity and outsider/ insider concepts should be investigated to maximize research effectiveness. Lack of anonymity may hinder disclosure of depression due to the associated stigma (Simmons et al., 2007). The ability of these women to trust professionals not within their informal network is affected by their perception of outsider/insider. Future studies could investigate the role that these concepts have on acceptance of an assessment/treatment plan. An outsider may not be trusted, even if treatment would be beneficial. Investigators may be seen as outsiders, limiting future information gathering abilities. Analysis of rural women's attitudes toward insider/outsider status and anonymity vs. familiarity can play a role in research attempts, potentially impacting them, as well as intervention success. Collaboration between "local" care providers and researchers may be valuable to avoid inside/outside bias.

Women who are isolated due to geography may have limited access to condition-specific healthcare, such as depression and smoking cessation. Attention to the component of isolation via a clear definition of rural as well as assessing for feelings of isolation is important in order to develop access to care and promote continued provider competence specific to these needs.

Incorporation of a theory during the research process that reflects rural components is imperative as further research is developed in this area. In addition, use of assessment tools that reflect status of the aforementioned concepts, such as self-efficacy and poverty, will assist in analysis of depression in the rural pregnant smoker. Experimental studies incorporating use of tools that reflect rural concepts would be optimal and raise the level of evidence for future use in practice. As an example, use of a screening tool for self-efficacy along with the EPDS and sociodemographic factors, with a clear definition of rural, would address concepts of depression, smoking status, rurality, isolation, resilience, and hardiness. Attention to the concepts of insider/outsider and anonymity vs. familiarity could be addressed by inclusion of members of the informal network who are insiders in the research process as well as treatment regimen.

Conclusion

In conclusion, a literature search was conducted investigating depression in the rural smoking pregnant population. Multiple databases were searched yet only four articles were suitable according to established inclusion/exclusion criteria. Upon analysis of the four articles, strengths and gaps in the body of knowledge were identified as well as areas in which research could be improved. Suggestions as to ways to incorporate concepts into future research have been offered. There is a scarcity of research in the area of depression in the rural pregnant smoker. Of the research located, there is limited definition of rural, no use of a theory, and no incorporation of concepts inherent to the rural population. In order to conduct a comprehensive

study of this population, efforts must be made to address these concepts via information gathering, study design, and/or implementation processes. Research focusing on these areas will lend a truly holistic view of the topic.

Acknowledgements

I would like to acknowledge Pamela Stewart Fahs, RN, PhD, Associate Dean Professor & Dr. G. Clifford and Florence B. Decker Chair in Rural Nursing Decker School of Nursing; Binghamton University Editor In Chief Online Journal of Rural Nursing and Health Care for all of her assistance in development of this article.

Supporting Agencies

Binghamton University, Decker School of Nursing

References

Association of Women's Health, Obstetrics and Neonatal Nursing [AWHONN]. (2003). *Evidence-based clinical practice guideline: Cardiovascular health for women: Primary prevention. (2nd ed.).* Washington, DC: AWHONN.

Brown, D. L., & Schafft, K. A. (2011). *Rural people & communities in the 21st century: Resilience transformation.* Malden, MA: Polity.

Bullock, L., Everett, K. D., Mullen, P. D., Geden, E., Longo, D. R., & Madsen, R. (2009). Baby BEEP: A randomized controlled trial of nurses' individualized social support for poor rural pregnant smokers. *Maternal & Child Health Journal, 13*, 395-406. http://dx.doi.org/10.1007/s10995-008-0363-z

Findholt, N. (2010). The culture of rural communities: An examination of rural nursing concepts at the community level. In C.A. Winters & H.J. Lee (Eds.). *Rural nursing: Concepts, theory, and practice* (pp. 373-383). New York, N Y: Springer.

Guest, M. L., & Stamp, G. E. (2009). South Australian rural women's views of their pregnancy, birthing and postnatal care. *Rural and Remote Health, 9,* 1-9. [MEDLINE]

Harvey, S. T., & Pun, P. (2007). Analysis of positive Edinburgh depression scale referrals to a consultation liaison psychiatry service in a two-year period. *International Journal of Mental Health Nursing, 16, 161-167.* http://dx.doi.org/10.1111/j.1447-0349.2007.00463.x

Ho-Yen, S., Bondevik, G. T., Eberhard-Gran, M., & Bjorvatn, B. (2007). Factors associated with depressive symptoms among postnatal women in Nepal. *Acta Obstetricia Et Gynecologica Scandinavica, 86,* 291-297. http://dx.doi.org/10.1080/00016340601110812

Leipert, B. (2010) Rural and remote women and resilience: Grounded theory and photovoice variations on a theme. In C.A. Winters & H.J. Lee (Eds.). *Rural nursing: Concepts, theory, and practice* (pp. 105-129). New York, New York: Springer.

Logsdon, C. M., Birkimer, J. C., & Usui, W. M. (2000). The link of social support and postpartum depressive symptoms in African-American women with low incomes. *The American Journal of Maternal/Child Nursing, 25,* 262-266. http://dx.doi.org/10.1097/00005721-200009000-00009

Nichols, M. P. (2011). *The essentials of family therapy* (5th Ed.). Boston: Allyn & Bacon

Sears, S., Danda, C., & Evans, G. (1999). PRIME-MD and rural primary care: Detecting depression in a low income rural population. *Professional Psychology, Research and Practice, 30,* 357-360. http://dx.doi.org/10.1037/0735-7028.30.4.357

Simmons, L., Huddleston-Casas, C., & Berry, A., A. (2007). Low-income rural women and depression: Factors associated with self-reporting. *American Journal of Health Behavior, 31,* 657-666. http://dx.doi.org/10.5993/AJHB.31.6.10