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Differences Between Primigravidae and
Multigravidae Mothers in Sleep Disturbances,
Fatigue, and Functional Status

by

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THESIS

Submitted in partial satisfaction of the requirements for the degree of

MASTER OF SCIENCE

in

NURSING

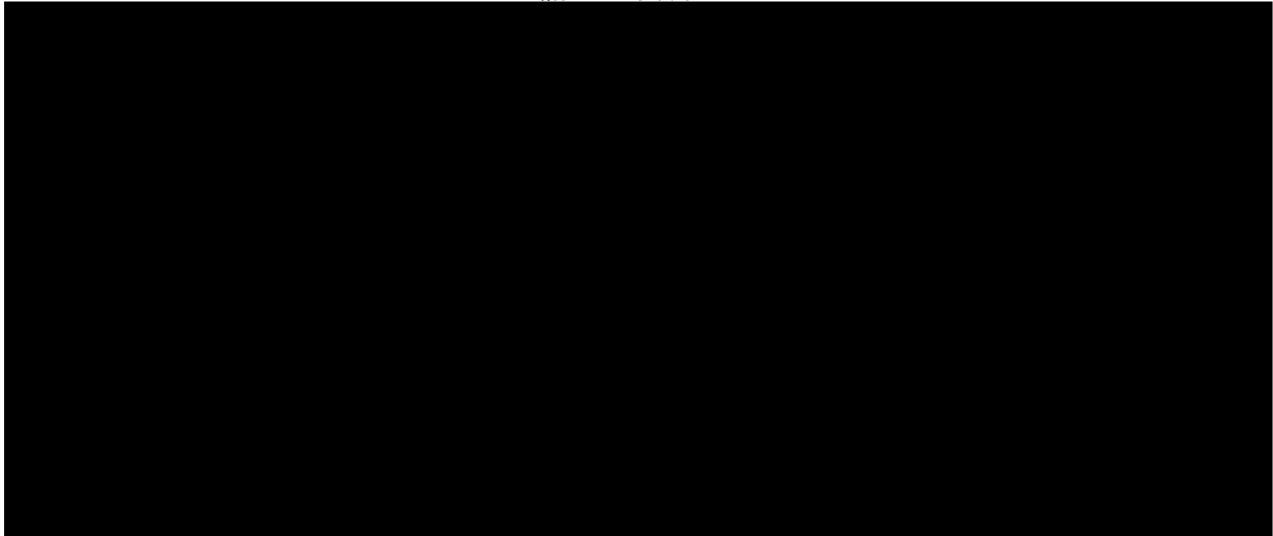
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Acknowledgements-

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Abstract

The purpose of this study was to describe the differences between primigravidae and multigravidae women in their experience of sleep efficiency, fatigue and vitality, and level of functioning in the third trimester of pregnancy and the first month postpartum. A secondary analysis of a descriptive, longitudinal study was done. A convenience sample of 31 pregnant women was used to test the hypothesis that multigravidae would have significantly higher levels of functioning in the household and increased fatigue and decreased sleep efficiency and vitality than primigravidae at both phases of the study. Results indicate, however, that primigravidae experienced significantly more disturbed sleep, with sleep efficiency falling from 89.79% in the third trimester to 77.25% postpartum. Multigravidae had only a minor reduction in sleep efficiency from 86.76% in the third trimester to 83.99% postpartum. Though there was no statistically significant difference in level of vitality, primigravidae experienced more fatigue (73.58 ± 15.22) than multigravidae (64.35 ± 18.96) at one month postpartum. These results suggest that maternal role "acquisition", experienced by primigravidae, results in more fatigue and sleep disruption than does maternal role "expansion". The significant decrease in sleep efficiency and increase in fatigue in primigravidae after delivery indicate that health care professionals need to provide anticipatory guidance to primigravidae to help smooth the transition from pregnancy to motherhood.

Table of Contents

Introduction	1
Purpose	2
Method	2
Results	5
Discussion	6
References	9

List of Tables

Table 1- Population Demographics	12
Table 2- Mean Scores and Standard Deviations	14

INTRODUCTION

Pregnancy and childbirth is a time of emotional, psychological, and physical change for most women. Many of the changes that are part of pregnancy can cause physical problems that also affect a woman's emotional and psychological outlook. It has been well documented that there are significant changes in the sleep stages of pregnant and postpartum women (1-6). Other studies have shown that sleep disturbance and fatigue are frequent complaints of women, especially in the last trimester of pregnancy and immediate postpartum period (7-14).

It is well known to health care providers that there are some significant differences in the pregnancy and childbirth experiences between primigravida women and multigravida women. For example, multigravidae usually feel fetal movement earlier than primigravidae (1%). Primigravidae will experience the phenomenon of lightening, where the fetus settles into the pelvis several weeks before delivery, where as multigravidae often do not experience this prior to labor (16). The course of labor tends to be shorter for a multigravida than for a primigravida (17). There are differences in the labor pain experienced by primiparae compared to multiparae (18). In the postpartum period multigravidae typically experience stronger uterine contractions with involution compared to primigravidae (15). When health care providers work with pregnant women, the educational information and anticipatory guidance they give will often be influenced by whether the woman is a primigravida or a

multigravida. One of the limitations of the various studies cited is that no differentiation has been made between primigravidae and multigravidae when describing sleep, fatigue, and vitality.

PURPOSE

The purpose of this study is to describe the differences in sleep efficiency, fatigue and vitality, and level of functioning within the household that exist for primigravidae and multigravidae during the last trimester of pregnancy and the first month postpartum. Sleep efficiency is defined as the amount of time spent asleep versus the time spent initiating sleep, mid-sleep awakenings and early awakening (10). Fatigue is defined as excessive sleepiness, lack of vitality, and perception of severity of fatigue (10). Vitality is defined as the absence of fatigue, feelings of energy and a sense of well being (10). It was hypothesized that multigravidae would have significantly higher levels of functioning in the household and increased fatigue and decreased sleep efficiency and vitality than would primigravidae. These hypotheses are based upon the assumption that, as the number of children in the family increases, the level of functioning and fatigue will increase and sleep efficiency and vitality will decrease.

METHOD

This study is a secondary analysis of data collected in a descriptive, longitudinal study of 31 women during preconception, pregnancy, and postpartum. Subjects were recruited prior to pregnancy from advertisements placed in consenting Obstetricians' offices and in newspapers. This

convenience sample consisted of 12 primigravida women and 19 multigravida women. The sample was limited to women between the ages of 20-40 having a low risk pregnancy and no history of infertility, miscarriage, chronic health, psychiatric or sleep problems, or substance abuse. To be included, multigravida women had to have a child who was sleeping through the night on a consistent basis. Analysis for this paper includes data gathered at 35-36 weeks of pregnancy and at 3-4 weeks postpartum. Subject demographics are displayed in Table 1. Approval for the original study was granted by the Committee on Human Subjects at University of California at San Francisco. Informed, written consent was obtained from all subjects.

Procedure

For purposes of this study, the theoretical definition of sleep disturbance includes difficulty initiating sleep, mid-sleep awakenings, and early awakening. Sleep disturbance is operationalized by a sleep efficiency index (SEI) quantified from electroencephalographic (EEG) determined total sleep time occurring during the time spent trying to sleep. Data on sleep characteristics were gathered by electro-encephalogram (EEG) and electrooculograph (EOG) using standardized techniques as outlined by Rechtschaffen and Kales (19). The Medilog 9000, a 9-channel ambulatory monitoring system, was used to record two channels each of the EEG and EOG parameters for 2 consecutive nights at each phase of the study. Interrater reliability of sleep stages scored was established at > 0.90 between the investigator and a sleep technician

blind to the subject's pregnancy status (20).

Fatigue and vitality were measured by self report, prior to sleep onset and upon awakening, using the VAS-Fatigue scale (VAS-F) which consists of 18 items along a 100 millimeter visual analog line. Thirteen items of the VAS-F relate to fatigue and five items relate to vitality. This scale has a Cronbach's alpha coefficient of 0.94 and a Pearson correlation of > 0.30 ($p < 0.01$) for concurrent validity with subscales of the Profile of Mood States (21).

Level of functioning within the household was operationalized as the extent that the women participated in various household chores during the past week. Level of participation in household chores was measured with the Inventory of Functional Status (IFS) (22), which was modified to 11 items for the original longitudinal study, where scores could be compared across time. Subjects rate their ability to do certain daily activities such as doing laundry, cooking, shopping, dishwashing, and running errands on a four point scale from "not at all" to "fully". The scale was internally consistent with a Cronbach's alpha coefficient of 0.84 -0.86.

Data were analyzed with the computer statistical program CRUNCH[®].

Statistical significance was set at $p < 0.05$. To look at differences between primigravidae and multigravidae in the third trimester of pregnancy as well as the first month postpartum, a two-way ANOVA was used to compare the sample by group and time for mean differences in sleep efficiency, fatigue, vitality, and level of household participation. Descriptive statistics of mean scores and

standard deviations for the measured variables are displayed in Table 2.

RESULTS

Sleep

The mean Sleep Efficiency Index (SEI) scores were compared for primigravidae and multigravidae between the third trimester and 1 month postpartum. The change in SEI between the two time points was significantly different when the primigravidae were compared to multigravidae. SEI decreased significantly from the third trimester to postpartum for primigravidae ($F_{1,27} = 25.15, p < .0001$). The decrease in SEI over time was not significant for multigravidae. While multigravidae had a slightly lower SEI than primigravidae in the third trimester, the difference between the two groups was not statistically significant. However, primigravidae had a significantly lower SEI than multigravidae at one month postpartum ($F_{1,58} = 8.72, p = 0.0047$).

Fatigue and Vitality

There was no statistically significant difference over time between primigravidae and multigravidae in the experience of vitality ($F_{1,29} = 0.027, p = 0.87$) nor a significant overall difference over time between the two groups in the experience of fatigue ($F_{1,29} = 1.47, p = 0.24$). Though there was no statistically significant differences in vitality over time, in this small sample, the group of primigravidae had a trend ($p = 0.06$) of increased fatigue from the third trimester to one month postpartum.

Level of Functioning

There was a statistically significant difference between primigravidae and multigravidae in the extent to which they participated in household chores. Primigravidae had less participation in household chores than multigravidae both in the third trimester and at one month postpartum ($F_{1, 28} = 10.2, p = 0.0035$).

DISCUSSION

Women with low risk pregnancies were studied to describe the differences that exist between women experiencing their first pregnancy and women experiencing a subsequent pregnancy. It was anticipated that multigravidae would have a higher level of functioning in household chores and increased fatigue and have less sleep efficiency and vitality during the last trimester and first month postpartum. Results indicate that multigravidae do have a significantly higher level of functioning in household chores compared to primigravidae, both in the third trimester and at one month postpartum. Despite the multigravidae's increased level of functioning in household chores, results indicate that the primigravidae experience more fatigue and less vitality and sleep efficiency than multigravidae in the postpartum period.

Adding additional members to the family will increase the work load of caring for that family but the results of this study suggest that there is not a significant increase in the work burden experienced by multigravidae. It is possible that the differences seen between primigravidae and multigravidae reflect the stress

and work involved with the challenges of maternal role acquisition that primigravidae face with their first pregnancy and birth of child. Maternal role acquisition is defined by Mercer (23) as "a process in which the mother achieves competence in the role and integrates the mothering behaviors into her established role set." Other studies have shown that maternal role attainment is a complex physiological and psychosocial process (24, 25) and that a mother's perception of her capability to be a mother is challenged by the reality of the care demands of a child (25). A primipara may have more work to do to integrate a new role into her life than a multipara would have in increasing a role she has already acquired. It is possible that the stress and work of role acquisition accounts for the increased sleep disturbance, increased fatigue, decreased vitality, and reduced functioning in household chores seen in the primigravidae in this study compared to multigravidae.

Because there are some significant differences between primigravidae and multigravidae women in their experiences of pregnancy, the educational information and anticipatory guidance that health care providers give to the woman should be tailored to the woman, taking into consideration the woman's primigravidae or multigravidae status. Health professionals working with pregnant patients should provide information and anticipatory guidance to both primigravidae and multigravidae regarding the changes they can expect during the course of pregnancy and postpartum. Additional preparation for the primigravidae should be considered by the health care professional in order to

help facilitate the transition to motherhood. Health care professionals can help primigravidae anticipate the decreased sleep efficiency and increased fatigue in the postpartum period and offer concrete suggestions utilizing partner, family, and/or friends for support and assistance during this time.

Generalizing results of this study to all pregnant women is limited by the small, mostly homogenous convenience sample that was used. The small sample size is also limited in its ability to show a statistical significance in the variables measured. Additionally, the study participants had a high average age, high level of education, and high level of employment. These factors could affect the levels of fatigue and vitality measured and possibly limit result significance. This study is also limited because it is a secondary analysis of data already gathered. Additional research in this area will benefit from larger sample sizes and studies designed specifically for measuring differences between primigravidae and multigravidae. Further research in the area of maternal role acquisition versus maternal role expansion would benefit health care professionals and the women with whom they work.

References

1. Brunner DP, Munch M, Biedermann K, Huch R, Huch A, Borbely A.
Changes in sleep and sleep electroencephalogram during pregnancy.
Sleep 1994;17(7): 576-582.
2. Coble PA, Reynolds III CF, Kupfer DJ, Houck PR, Day NL, Giles DE.
Childbearing in women with and without a history of affective disorder. II.
Electroencephalographic sleep. Comp Psychi 1994; 35(3): 215-224.
3. Driver HS, Shapiro C M. A longitudinal study of sleep stages in young
women during pregnancy and postpartum. Sleep 1992; 15(5): 449-
453.
4. Hertz G, Fast A, Feinsilver SH, Alberario CL, Schulman H, Fein A M. Sleep
in normal late pregnancy. Sleep 1992; 15(3): 246-251.
5. Karacan I, Heine W, Agnew H W, Williams RL, Webb WB, Ross JJ.
Characteristics of sleep patterns during late pregnancy and the
postpartum periods. Am J of Obstet Gynecol 1968; 101(5): 579-586.
6. Schweiger MS. Sleep disturbances in pregnancy. Am J of Obstet Gynecol
1972; 114: 879-882.
7. Auerbach K G. Employed breast feeding mothers: Problems they
encounter. Birth 1984; 11(1): 17-20.
8. Gruis M. Beyond maternity: Postpartum concerns of mothers.
Matern Child Nurs J 1977; 2: 182-186.
9. Harrison MJ, Hicks SA. Postpartum concerns of mothers and their sources

- of help. *Can J Pub Health* 1983; 74: 325-328.
10. Lee K A, DeJoseph JF. Sleep disturbances, vitality, and fatigue among a select group of employed childbearing women. *Birth* 1992; 19(4): 208-213.
 11. Mead-Bennett E. The relationship of primigravid sleep experience and select moods on the first postpartum day. *J Obstet Gynecol Neonatal Nurs* 1990; 19(2): 146-152.
 12. Morgan J. A study of mothers' breastfeeding concerns. *Birth* 1986;13(2): 104-108.
 13. Romito P, Saurel-Cubizolles MJ, Cuttini M. Mothers' health after the birth of the first child: The case of employed women in an Italian city. *Women Health* 1994, 21(2/3): 1-22.
 14. Wilkie G, Shapiro C M. Sleep deprivation and the postnatal blues. *J Psychosom Res* 1992; 36(4): 309-316.
 15. Samuels M, Samuels N. *The well pregnancy book*. New York: Summit Books, 1986.
 16. Reeder SR, Mastroianni L, Martin LL, Fitzpatrick E. *Maternity nursing*. 13th ed. Philadelphia: Lippincott Co, 1976.
 17. Friedman E. *Labor: Clinical evaluation and management*. 2nd ed. New York: Appleton, 1978.
 18. Gaston-Johansson F, Fridh G, Turner-Norvell K. Progression of labor pain in primiparas and multiparas. *Nursing Research* 1988; 37(2): 86-90.

19. Rechtschaffen A, Kales A. A manual of standardized terminology, techniques and scoring system for sleep stages of human subjects. Brain Information Service/Brain Research Institute. University of California, 1968.
20. Lee K A, Zaffke ME, McEnany G, Hoehler K. Sleep and fatigue: Before, during, and after pregnancy. *Sleep Res* 1994; 23: 416.
21. Lee KA, Hicks G, Nino-Murcia G. Validity and reliability of a scale to assess fatigue. *Psychiatry Res* 1991; 36: 291-298.
22. Tulman L, Fawcett J. Return of functional ability after childbirth. *Nursing Research* 1988; 37:77-81.
23. Mercer R. The process of maternal role attainment over the first year. *Nurs Res* 1985;34(4):198-204.
24. Walker LO, Crain H, Thompson E. Mothering behavior and maternal role attainment during the postpartum period. *Nurs Res* 1986;35(6):352-355.
25. Pridham KF, Lytton D, Chang AS, Rutledge D. Early postpartum transition: Progress in maternal identity and role attainment. *Res in Nursing & Health* 1991;14:21-31.

Table 1 - Population Demographics

	Primigravidae (n =12)	Multigravidae (n = 19)
<u>Ethnic group</u>		
Asian/Pacific Is.	8.3%	5.2%
Caucasian	91.7%	79.1%
Hispanic		10.5%
Other		5.2%
<u>Age (Mean ± S.D.)</u>	31.3 ± 3.25	32.4 ± 5.08
<u>Marital status</u>		
First marriage	75.0%	88.2%
Second marriage	16.7%	11.8%
Cohabiting	8.3%	
<u>Number of months married</u>		
(Mean ± S.D.)	46.2 ± 25.2	71.6 ± 36.

Table 1 - Population Demographics (Cont.)

	Primigravidae	Multigravidae
<u>Education</u>		
High School	0%	6.25%
Some College	8.33%	43.75%
College Degree	16.67%	18.75%
Some Graduate	16.67%	0%
Graduate Degree	58.33%	31.25%
<u>Employment</u>		
Employed	50.00%	37.50%
Self-employed	8.33%	18.75%
Unemployed	8.33%	31.25%
Part-time	33.33%	12.50%

Table 2- Mean Scores and Standard Deviations of the Study Variables

	Third Trimester		1st Month Postpartum	
	Mean	S.D.	Mean	S.D.
<u>Sleep Efficiency Index</u>				
Primigravidae	89.79%	± 4.11	77.25%	± 5.74
Multigravida	86.76%	± 7.04	83.99%	± 7.84
<u>Fatigue</u>				
Primigravidae	64.16	± 17.92	73.58	± 15.22
Multigravidae	64.79	± 19.27	64.35	± 18.96
<u>Vitality</u>				
Primigravidae	30.48	± 13.40	23.02	± 13.73
Multigravidae	26.24	± 16.85	25.76	± 15.00
<u>Functional Status</u>				
Primigravidae	2.79	± 0.33	2.68	± 0.41
Multigravidae	3.27	± 0.45	3.17	± 0.49

S.D. = Standard Deviation

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