

Feelings of guilt toward the baby and workplace commitment related to prenatal comfort in pregnant Japanese working women

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Abstract

Objectives: With an increase in the number of working women in Japan, it is predicted that the number of working pregnant women will also increase. Most previous research on working pregnant women has focused on effects of external factors related to working conditions on negative psychological state in pregnant women. This study attempts to clarify how positive psychological aspects, such as comfort, are influenced by internal as well as external factors. **Methods:** Two hundred working primigravidas participated in an online survey in May 2015. This survey contained the Prenatal Comfort Scale, a measure of working pregnant women's feelings of guilt, the Three-Dimensional Commitment Scale, a section asking about the proportion of attention devoted to three different roles (social, mother, and wife), and a section on demographic characteristics. **Results:** Responses of 198 (mean age=32.4±4.8 years) women were analyzed. Stepwise multivariate analysis revealed that a lower proportion of attention to one's social role ($\beta=-.295$, $p<.001$), discussing the division of labor ($\beta=-.172$, $p=.005$), higher normative commitment ($\beta=.179$, $p=.004$), more intense feelings of guilt toward the fetus ($\beta=.189$, $p=.003$), and less emotions related to controlling one's own behavior ($\beta=-.179$, $p=.005$) were significantly related to higher prenatal comfort (adj.R2=.300). Most external factors such as job type, employment status, working

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hours, job status, and job duration were not significantly related to prenatal comfort. Conclusions: To ensure that working women have a comfortable pregnancy, health care providers need to assess not only external work-related factors, but also internal characteristics such as feelings of guilt and workplace commitment.

Keywords: Japan, patient comfort, pregnant women, working women.

1 Introduction

It is predicted that the number of working pregnant women will increase in Japan in coming years [1]. In addition, improvements are being observed in characteristics of labor force participation rates by age group in women, which usually show an “M-shaped curve” indicating a decline in employment around the ages of childbirth [2]. The percentage of employed married women has also been increasing gradually [3]. Furthermore, the percentage of women aged 25–39 who were employed (60.2–64.6% in 2015) has increased about 10% in the past 10 years. [3].

Most previous research on employed pregnant women has addressed only the effects of the presence or absence of employment. Anan et al. [4] reviewed studies of working pregnant women, and reported that these women experienced pregnancy complications such as threatened abortion, threatened premature labor, and pregnancy-induced hypertension at a higher rate than unemployed women. However, Yubune et al. [5] explored the process and structure of stress during pregnancy and reported that employed pregnant women had significantly lower depression tendency and physical stress than unemployed pregnant women [5]. In addition, some studies investigated employment situations, for example, exposure to long periods of standing was related to lower growth rates for fetal head circumference [6], more than 40 hours of work per week was related to lower fetal head circumference [6] and lower birth weight [6, 7], and very active physical work was related to lower birth weight [7]. Onishi and Agatsuma [8] also reported that pregnant women who engaged in time-consuming work had more childcare anxiety than women who did not.

On the other hand, there is little research about the influence of internal characteristics on the physical and mental health of pregnant workers. Henrich et al. [9] reported that a low level of job satisfaction among working pregnant women was significantly associated with premature birth. Furthermore, Anan et al. [4] pointed out that relations between employment situations, such as work posture and work content, and physical symptoms during pregnancy are not currently being studied in Japanese research.

Looking at outcomes of research studying working pregnant women, despite pregnancy complications [4] and potentially negative outcomes for infants [6, 7], employed pregnant women experienced fewer minor symptoms [10], significantly less physical stress [11], and lower depressive symptoms [12, 13] than unemployed pregnant women. However, most studies of working pregnant women have addressed negative outcomes.

Lowered psychological symptoms such as stress and anxiety do not necessarily reflect a positive psychological state [14]. Positive affect during pregnancy protects against postpartum depression [15], is related to longer gestational periods [16], lowers risk for preterm delivery [16, 17], and is associated with maternal role attainment [18]. Therefore, it is important to assess positive psychological aspects of working pregnant women to provide them support. This study attempts to clarify how positive psychological aspects of working pregnant women are influenced by internal as well as external factors.

2 Subjects and Methods

2.1 Study Design and Participants

Participants of this cross-sectional study were pregnant women currently working or retired within one month of the study. “Working” was defined as employed more than 6 months, working more than 20 hours per week. Any employment status was included if this condition was satisfied, even for those not currently working. Sample size was estimated at 160–200 based on an effect size of 0.15, power (1-beta) of 0.8, alpha of 0.05, and considering the potential for invalid responses. Data collection was conducted through an online survey in May 2015. We assigned data collection to a research company certified in handling personal information and obtained the PrivacyMark® System by Nihon jouhou keizai shakai sushin kyokai [19]. The study was explained to participants online, including components such as an overview, that participation was voluntary, that there would be no disadvantage to discontinuing, and that data would remain anonymous. Only participants who agreed by clicking the consent button proceeded with the study. Ethical approval was obtained from the Tohoku University Graduate School of Medicine Ethics Committee (Approval number: 2014-1-860).

2.2 Instruments

2.2.1 Positive psychological aspects

To assess positive psychological aspects of working pregnant women, the Prenatal Comfort Scale (PCS) [20] was used. This scale measures subjective comfort experiences specific to pregnancy. It consists of 35 items rated on a 6-point Likert scale from no experiences (0) to always experiences (5); higher scores indicate women who have more comfort experiences. The PCS consists of five subscales

such as “deepening relationships with one’s husband who is growing into a father [HUS],” “interactions with the moving fetus [FET],” “support from communication with surrounding people [PPL],” “realizing that I am becoming a mother and attachment to my baby [MOM],” and “changing myself during my pregnancy [MYS],” and has an overall Cronbach’s alpha of .95 [20].

2.2.2 Internal characteristics

We used the following six scales and two items to measure internal characteristics of working pregnant women.

The Job Involvement scale [21] measures the degree of emotional involvement, enthusiasm, and interest in current work, and consists of seven items with a Cronbach’s alpha of .87 [21].

The Japanese version of the Three-dimensional Commitment scale [22] [23] measures the degree of organizational commitment. It is composed of affective, continuance, and normative dimensions, with Cronbach’s alpha values of .87, .68, and .76, respectively [23]. Higher scores on these two scales indicate high job involvement and commitment.

To measure perception of the workplace environment, we used the Japanese version of the Family-supportive Organizational Perceptions scale (FSOP ver. Japanese) [24, 25]. Higher scores on this scale indicate a more family-supportive workplace; Cronbach’s alpha=.89 [25].

To assess perception of role multiplicity, we used the short-form of the Scale of Egalitarian Sex Role Attitudes (SESRA-S) [26], developed by a Japanese researcher, which measures the level of egalitarian attitudes toward the roles of men and women. Higher scores indicate more egalitarian attitudes toward gender roles. Cronbach’s alpha for this scale was .91 [26].

We used items developed by Onodera [27] based on the idea of changing of role awareness when becoming a parent [28]. Participants were asked to indicate the proportions of their three aspects of self (social self, wife self, and maternal self) so that the total was 10.

The Scale of Working Pregnant Women’s Guilt Feelings [29] was used to assess another internal characteristics of working pregnant women; this scale was developed based on a concept analysis of working pregnant women’s feelings of guilt. It consists of two subscales: guilty feelings toward the baby and guilty feelings toward the workplace. Guilty feelings toward the baby was composed of one factor: “negative feelings toward the baby when acting opposite to one’s own norm because of employment,” and guilty feelings toward the workplace was composed of three factors: “negative feelings when acting opposite to one’s own

norm,” “emotions related to controlling one’s own behavior,” and “feelings because of receiving special treatment.” [30]. The two subscales’ Cronbach’s alpha were .78 and .89, respectively.

To assess adjustment to role multiplicity, two items used in a survey on attitudes towards work-life balance by the Cabinet Office in Japan [31] were asked. The first reflected attitudes toward working expectant mothers: “Do you think that your husband will be content with you continuing to work even after having a baby?” Participants chose from among the following options: yes (1), no (2), or I don’t know (3). The second assessed whether women had discussed sharing housework and child rearing roles after pregnancy with their husband, and was answered yes (1) or no (0).

2.2.3 External characteristics

In terms of external characteristics of working pregnant women, we asked about occupational category, employment status, access to the social system, working hours per week, employment position, annual income, and length of service. Furthermore, age, gestational weeks, living with a partner, and planning of pregnancy were provided as demographic data.

2.3 Statistical Analysis

First, all collected data were analyzed through descriptive statistics. Second, to clarify relevant factors of comfort during pregnancy, multiple regression analysis was performed. Correlation coefficients between all independent variables were calculated and it was confirmed that all $r < .80$. After that, a single regression analysis was performed with PCS total scores as dependent variables, and external and internal characteristics of working pregnant women as independent variables. Variable selection by stepwise method was carried out based on variables that were found to significantly correlate in the single regression analysis. Items with suspected multicollinearity were reconsidered and analyzed with selected variables. We used SPSS ver. 22 (IBM Corp., NY) for all analyses and the significance level was set at .05.

3 Results

Data from 198 working pregnant women were analyzed. The mean age was 32.4 (SD=7.8, range 22–43) years old, and mean gestational weeks was 27.4 (SD=7.5, range=10–40). The number of women living with a partner was 183 (92.4%), and with intended pregnancies was 175 (88.4%). The mean PCS score was 119.97 (SD=39.6, range; 39–173), [HUS] was 27.9 (SD=8.8), [FET] was 24.0 (SD=8.9), [PPL] was 27.6 (SD=7.2), [MOM] was 26.6 (SD=6.0), and [MYS] was 13.8 (SD=4.9). Table 1 shows internal characteristics of working pregnant women. The

mean proportions of the three aspects of self were as follows: social self (2.7) was the smallest, wife self was 3.2, and maternal self (4.1) was the largest. Regarding the partner's opinion on continuing to work after pregnancy, 122 (61.6%) responded that the partner agreed, while 76 (38.4%) responded that women did not know or the partner opposed. In total, 106 (53.5%) women indicated that they discussed sharing responsibilities (domestic roles such as housework and child-rearing) with their partner. Table 2 shows external characteristics of working pregnant women. Most did clerical work (89, 44.9%); sales jobs (14, 7.1%) was the smallest job category. More than two thirds of women had regular employment and half worked more than 40 hours per week. Most of their employment position was general office staff (175, 88.4%), and the mean length of service was 9.4 (SD=5.1) years.

Table 1: Internal characteristics of working pregnant women (N=198)

		Range
Job Involvement scale, mean (SD)	2.3 (0.92)	1–7
Three-dimensional Commitment scale, mean (SD)		
Total	53.4 (10.2)	28–81
Affective	17.8 (4.5)	8–32
Continuance	19.6 (4.5)	8–32
Normative	16.0 (4.0)	8–28
FSOP, mean (SD)	47.6 (9.6)	21–67
SESRA-S, mean (SD)	56.8 (9.2)	21–73
Proportions of three aspects of self, mean (SD)		
Social self	2.7 (1.7)	0–8
Wife self	3.2 (1.2)	0–6
Maternal self	4.1 (1.7)	1–10
Scale of Working Pregnant Women's Guilt Feelings, mean (SD)		
Guilty feelings toward the baby	9.7 (2.8)	4–11
Guilty feelings toward the workplace		
Negative feelings when acting opposite to one's own norm	9.2 (3.0)	4–16
Emotions related to controlling one's own behavior	4.4 (1.7)	2–8
Feelings because of receiving special treatment	6.8 (2.4)	3–12
Husband's attitude toward wife working, n (%)		
Agrees	122 (61.6)	
Does not agree, unknown	76 (38.4)	
Discussion with husband about sharing of housework and child rearing roles after pregnancy, n (%)		
Yes	106 (53.5)	
No	92 (46.5)	

FSOP: Family-supportive Organizational Perceptions Scale; SESRA-S: Scale of Egalitarian Sex Role Attitudes.

Table 2: External characteristics of working pregnant women

	n	(%)
Job category		
Public employee and association staff	24	(12.1)
Professional and technical job	31	(15.7)
Clerical job	89	(44.9)
Sales job	14	(7.1)
Service	20	(10.1)
Production process, transport, machinist job and others	20	(10.1)
Employment status		
Regular	139	(70.2)
Irregular	59	(29.8)
Access to social system		
Accessed	93	(47.0)
Not accessed	105	(53.0)
Working hours/week		
20–30 hours/week	42	(21.2)
30–40 hours/week	57	(28.8)
40–50 hours/week	86	(43.4)
>50 hours/week	13	(6.6)
Employment position		
Office staff (no position)	175	(88.4)
Foreman	13	(6.6)
Chief clerk and above	10	(5.1)
Annual income		
<2 million yen	44	(22.7)
2–3 million yen	56	(28.9)
3–4 million yen	47	(24.2)
4–5 million yen	29	(14.9)
>5 million yen	18	(9.3)
Length of service (mean, SD; range) (years)	9.4 (5.1; 1–23)	

Results of the simple linear regression analysis are shown in Table 3. Advanced gestational weeks ($\beta=.343$, $P<.001$), expectant pregnancy ($\beta=-.161$, $P=.024$), smaller proportion of social self ($\beta=-.354$, $P<.001$), larger proportions of wife self and maternal self ($\beta=.166$, $P=.019$ and $\beta=.251$, $P<.001$, respectively), higher scores for guilty feelings toward the baby ($\beta=.162$, $P=.022$), lower scores for emotions related to controlling one's own behavior ($\beta=-.184$, $P=.009$), having a discussion with one's husband about sharing of housework and child rearing roles after pregnancy ($\beta=-.229$, $P<.001$), and being assessed by the social system ($\beta=-.237$, $P<.001$) were significantly related to higher total PCS scores (Table 3). Living with their partner ($\beta=-.136$, $P=.056$), higher scores for normative commitment ($\beta=.132$, $P=.064$), and perception of a family-supportive workplace

($\beta=.118$, $P=.097$) were not significant but showed trends related to total PCS scores.

Table 3. Factors related to Prenatal Comfort Scale total scores
(simple linear regression analysis) (n=198)

	Total score of PCS	
	β	P
Demographic		
Age	-.093	.190
Gestational weeks	.343	<.000**
Cohabitation with a partner (yes=0, no=1)	-.136	.056†
Intended pregnancy (yes=0, no=1)	-.161	.024*
Internal characteristics		
Job Involvement scale	-.059	.407
Three-dimensional Commitment scale		
Total	.087	.221
Affective	.048	.503
Continuance	.035	.626
Normative	.132	.064†
FSOP	.118	.097†
SESRA-S	-.010	.887
Proportions of three aspects of self		
Social self	-.354	<.001**
Wife self	.166	.019*
Maternal self	.251	<.001**
Scale of working pregnant women's guilt feelings		
Guilt feelings toward the baby	.162	.022*
Guilt feelings toward the workplace		
Negative feelings when acting opposite to one's own norms	.083	.247
Emotions related to controlling one's own behavior	-.184	.009**
Feelings because of receiving special treatment	.016	.824
Husband's attitude toward wife working (agrees=0, does not agree/unknown=1)	.029	.689
Discussion with husband about sharing of housework and child rearing roles after pregnancy (yes=0, no=1)	-.229	<.001**

FSOP: Family-supportive Organizational Perceptions Scale; SESRA-S: Scale of Egalitarian Sex Role Attitudes.

† $P<.10$, * $P<.05$, ** $P<.01$ B: standardized partial regression

Table 3. Factors related to Prenatal Comfort Scale total scores (simple linear regression analysis) (n=198) cont.

	Total score of PCS	
	β	P
External characteristics		
Job category (Public employee and association staff=0, Professional and technical job=1, Clerical job=2, Sales job=3, Service=4, Production process, transport, machinist job and others=5)	-.060	.401
Employment status (Regular=0, Irregular=1)	-.094	.186
Access to social system (Accessed=0, Not accessed=1)	-.237	<.001**
Working hours/week (20–30=0, 30–40=1, 40–50=2, >50=3)	-1.371	.172
Employment position (office staff=0, foreman=1, chief clerk and above=2)	-1.036	.302
Annual income, million yen (2=0, 2–3=1, 3–4=2, 4–5=3, >5=4)	-.039	.594
Length of service	-.067	.350

†P<.10, *P<.05, **P<.01 B: standardized partial regression

Next, these 12 variables were included in multiple regression models using a stepwise method. Although we suspected multi-collinearity among the proportions of social self, wife self, and maternal self, the variance inflation factor (VFI) of each of the variables was calculated and it was confirmed that there was no collinearity. The results showed that six variables remained: smaller proportion of social self ($\beta=-.295$, $P<.001$), advanced gestational weeks ($\beta=.261$, $P<.001$), having a discussion with one's husband about sharing of housework and child rearing roles after pregnancy ($\beta=-.172$, $P=.005$), higher scores for normative commitment ($\beta=.179$, $P=.004$), higher scores for guilty feelings toward the baby ($\beta=.189$, $P=.003$), and lower scores for emotions related to controlling one's own behavior ($\beta=-.179$, $P=.005$). The coefficient of determination adjusted for the degrees of freedom (adj R^2) was .300.

Table 4. Stepwise multiple regression analysis of Prenatal Comfort Scale total scores (n=198)

	β	SE	95% CI	P
Social self	-.295	1.051	-7.11 to -2.96	<.001**
Gestational weeks	.261	.242	.556 to 1.51	<.001**
Discussion with husband about sharing of housework and child rearing roles after pregnancy (yes=0, no=1)	-.172	3.570	-17.24 to -3.16	.005**
Continuance commitment	.179	.454	.441 to 2.23	.004**
Guilt feelings toward the baby	.189	.655	.708 to 3.29	.003**
Emotions related to controlling one's own behavior	-.179	1.068	-5.13 to -.919	.005**
Coefficient of determination (R^2)				.321
Coefficient of determination adjusted for the degrees of freedom (adjusted R^2)				.300

*P<.05, **P<.01

B: standardized partial regression; SE: Standard Error; CI: confidence interval

4 Discussion

In this study, we explored internal characteristics of working pregnant women that related to their positive affect. It is important to support working pregnant women to have comfortable pregnancies, because comfort during pregnancy positively influences pregnancy acceptance, subsequent childbirth, and attitudes toward childrearing. The small proportion of social self indicated that either the wife self or maternal self, or both, represented larger proportions of these women's self perceptions. In the pregnancy period, one's role as a mother is added to the roles of worker and wife. Therefore, it can be said that the pregnancy period is a period when a new role is attained. The effects of multiple roles or role accumulation on well-being has been recognized as leading to rewards, lower levels of mental health, greater levels of subjective well-being, and enhanced emotional gratification [32-34]. This study's participants may also have experienced positive psychological aspects due to the new maternal role. In addition, higher scores for normative commitment also related to positive affect of working pregnant women. The characteristics of a smaller proportion of social self and higher normative commitment to the workplace seem contradictory; however, the following interpretation is possible. A smaller proportion of social self may reflect a large proportion of aspects other than work, such as private lifestyle. When combined with high normative commitment, defined as a commitment to organization based on an ideology or a sense of obligation, it may be reflective of good work-life balance. A person with good work-life balance, whether a father or mother, has

been shown to have positive affect toward their child and child-rearing [35]. Similarly, it was suggested that good work-life balance contributed to positive affect of working pregnant women in this study.

Guilty feelings toward the baby were related to a high degree of comfort during pregnancy in this study. We anticipated that lower feelings of guilt would be related to higher levels of prenatal comfort, due to feelings of guilt being a negative emotion. The result in this study, however, showed the opposite. It could be inferred that pregnant women's awareness of the baby lead to prenatal comfort, regardless of negative or positive emotions. Therefore, even if a pregnant woman has feelings of guilt toward a baby because of employment, this indicates that she pays attention to the pregnancy and has a connection to her baby. Health care providers could provide positive feedback to working pregnant women about how employment during pregnancy does not have to interfere with their connection to their baby.

Furthermore, the results of this study revealed that having a discussion with one's husband about sharing of housework and child rearing roles after pregnancy was related to positive psychological affect of working pregnant women. Having an opportunity to discuss the division of roles with their partner could also provide effective support for working pregnant women. Ogawa et al. [36] investigated changes in comfort accompanying pregnancy and reported that working pregnant women's scores on the Prenatal Comfort Scale, but not those of non-working pregnant women, significantly increased from the 1st trimester to the 3rd trimester and from the 2nd trimester to the 3rd trimester, for "deepening relationships with one's husband who is growing into a father." Thus, working pregnant women's husbands took on important roles to enhance women's comfort during pregnancy. Thus, health care providers need to provide support not only to working pregnant women, but also their husbands.

5 Limitation

There were some limitations to this study. First, the participants were women who registered with an online research company. We adopted an online survey since we wanted to target pregnant women of various occupations from all over Japan. In general, online surveys have the limitation that participants are biased in attributes, thinking, values, etc. [37]. There is the possibility that selection biases might have occurred in this research as well. Second, this study was limited in that it was a cross-sectional survey; therefore, we could not clarify causal relations among variables.

6 Conclusion

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In this study, the relation between positive psychological affect during pregnancy and internal and external characteristics of working pregnant women was clarified. Further longitudinal research could identify the causal relationship between internal and external characteristics of working pregnant women and pregnancy outcomes.

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