

ORIGINAL ARTICLE

Who considers termination of pregnancy? Approach based on the stress theory

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Background: Determinants that predict consideration of termination of pregnancy (TOP) among women with perceived stress during pregnancy are unclear.

Objective: To explore the determinants of consideration of TOP among women who perceive the current pregnancy as stressful in the framework of stress psychology.

Methods: A total of 696 pregnant women at gestational age 12–15 weeks participated in an online survey regarding TOP as assessed with an original scale, perceived stress of the current pregnancy, coping style, social support, and depressive mood.

Results: Multiple regression analyses revealed that depression, emotion-oriented coping style, satisfaction with instrumental support, and perceived stress during pregnancy predict consideration of TOP. These findings were supported by structural equation modelling; the constructed model explained 79% of the variance in consideration of TOP. The effect of poor satisfaction with instrumental support on consideration of TOP was mediated by depression.

Conclusions: Consideration of TOP can be predicted by depression, emotion-oriented coping style, and perceived stress during pregnancy.

Introduction

Termination of pregnancy (TOP) refers to the act of ending a pregnancy before the foetus can live independently.¹⁾ Roughly 56 million TOP cases worldwide,²⁾ and roughly 160,000 cases in Japan, are reported annually (Report on Public Health Administration and Services FY2019). As these cases are not without significant health impacts and consequences, concerns have been raised among perinatal health professionals. Although TOP is a woman's constitutional human right, perinatal health professionals should pay careful attention to the emotional and psychological states of women who choose TOP. Although major psychiatric consequences are not frequent,³⁾ some women feel ambivalent about

their decision to undergo TOP.^{4,5)} Moreover, a history of TOP is a risk factor for antenatal depression.^{6,7)} Thus, it is important to determine how pregnant women consider and choose TOP. The decision to opt for TOP may be influenced by several factors including, but not limited to, age,⁸⁾ low levels of education,^{9,10)} single marital status,¹¹⁾ age at first sexual intercourse and number of sexual partners,¹²⁾ low socioeconomic status,⁹⁾ poor family relationships,¹³⁾ and lack of social support.¹⁴⁾ While many studies have focused on socioeconomic aspects, few studies have reported on psychosocial issues, including the association between TOP and perceived stress during pregnancy.

Pregnancy is a psychological stressor for some women. One study reported a prevalence of antenatal depression

of 16% among pregnant women,⁶⁾ which is in line with the extensive literature regarding the relationship between negative life events and depression in general. Most events reported by individuals suffering from depression are part of everyday experiences rather than catastrophic ones.¹⁵⁾ Tennant and Andrews¹⁶⁾ emphasized that the perceived impact (distress) of events, but not the number or objectively scaled severity of occurring events, correlated significantly with neurotic impairment. There are surprisingly few reports on the effects of antenatal depression on the choice of TOP. Nevertheless, individuals with depression often have negative thoughts and make self-destructive decisions that they would not do otherwise. Therefore, it is quite likely that depression promotes the consideration of and decision for TOP.

Why such events lead to depression in some individuals but not others remains a question of debate (Figure 1). The effects of negative life events on neurotic impairment are reportedly mediated by specific coping styles (e.g., Kendler et al.).¹⁷⁾ Several categories of coping styles have been reported, including Endler and Parker's¹⁸⁾ three-factor model (emotion-, task-, and avoidance-oriented coping styles) that has gained a reputation as the most psychometrically robust instrument. Emotion-oriented coping pertains to emotional responses, self-preoccupation, and fantasising reactions. Task-oriented coping pertains to the conscious initiation of actively dealing with problems. Avoidance-oriented coping pertains to behaviours that avoid directly dealing with the problem and distracting attention from it. Emotion-oriented coping tends to lead to negative health variables such as depression, anxiety, and poor recovery from illnesses.¹⁸⁻²¹⁾

Another important issue regarding the relationship between negative life events and depression (as well as other psychological maladjustments) is social support. Perinatal women cope with negative life events by

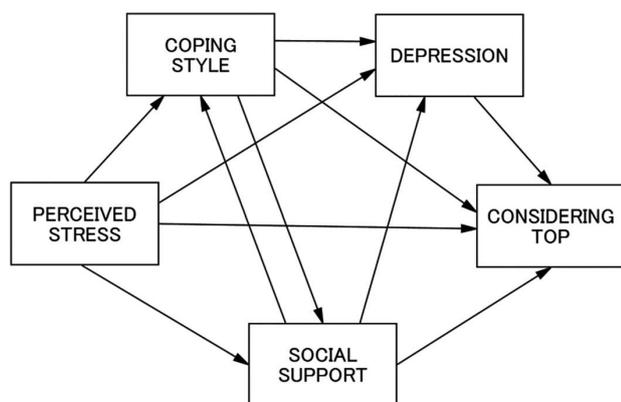


Figure 1. Correlation coefficients among all variables. CONSIDERING TOP, considering termination of pregnancy

seeking help from their husbands, relatives, or friends within the context of social support. In a Japanese study, over 90% of pregnant women nominated their husbands as the primary provider of support in various situations; support by husbands plays a pivotal role in preventing the onset of depression and, particularly, its cognitive symptoms.²²⁾

Social support should be viewed from a variety of perspectives.²³⁾ Social support can be divided into ‘availability’ and ‘enactedness’, and whether the effects of social support are additive or interactive (i.e., buffering) has long been debated.²⁴⁾ In the context of the present study, it is important to consider whether people who received support are satisfied with it. Zerkowitz et al. reported that the relationship between stressful life events and depression during pregnancy is mediated by dissatisfaction with received support.²⁵⁾

The content of support is another critical issue. Many researchers²⁶⁻²⁹⁾ distinguish among four types of support: emotional, instrumental, informational, and appraisal. Emotional support refers to the provision of trust, empathy, and love; it involves caring. For example, a warm comment from one’s partner is considered emotional support. Helping behaviours such as loaning money or giving one’s time and skill are examples of instrumental support. If a woman’s partner goes for shopping on behalf of her, this may be perceived as instrumental support. Informational support refers to advice (e.g., information about local babysitting services), whereas appraisal support refers to evaluative feedback (e.g., “you’re doing a good job!”). In most cases, emotional support is effective in cases of various stressful events.³⁰⁾ On the other hand, in an American sample of low-income pregnant women, instrumental rather than emotional support more consistently predicted perinatal maternal health and well-being.³¹⁾ Similarly, Ohara et al. reported that the number of social support providers predicted depression among Japanese women in the first trimester better than satisfaction with their relationships.³²⁾

A lack of support from and reduced intimacy with the spouse have been linked to the onset of perinatal depression.³³⁾ There has been ample evidence that social support plays an important role in preventing the onset of mental ill-health.³⁴⁾ This is particularly the case for perceived support that buffers the adverse effects of negative life events on the onset of psychopathology.³⁵⁻³⁷⁾

The decision to continue a pregnancy or induce an abortion may be promoted by antenatal depression as well as dysfunctional coping styles and poor perceived social support.^{38,39)} However, the mechanisms underlying decision-making regarding TOP have rarely been studied from the perspective of stress theory, including coping styles and social support. This study aimed to investigate,

in the framework of stress psychology, determinants that lead women who perceive their current pregnancy as stressful to consider whether to terminate a pregnancy or not. We hypothesized that (1) perceived stress during pregnancy is positively associated with consideration of TOP and (2) the association between perceived stress during pregnancy and consideration of TOP differs by coping style, social support, and depression (Figure 1).

Methods

Study procedures and participants

This study used data from a larger investigation on psychological adjustment of pregnant women during the third wave of the COVID-19 pandemic in Japan, which was conducted as part of a research project led by the Ministry of Health, Labour and Welfare. Briefly, a total of 696 pregnant women at a gestational age of 12 to 15 weeks were recruited for an internet survey conducted via an online application Luna Luna and Luna Luna Baby (MTI, Ltd., Tokyo) between December 7 and 21, 2020. All participants received a monetary incentive electronically. Twenty-four participants (3.4%) reported that they perceived their current pregnancy negatively (see below). Responses were anonymised and used in subsequent analyses.

Measurements

Consideration of TOP

A single question was asked in order to assess the attitudes of participants toward their current pregnancy: “Are you considering terminating your pregnancy?” Responses were rated on a 7-point Likert-type scale from “not at all” to “very much so”, with a higher score indicating a stronger desire for TOP.

Perceived stress of current pregnancy

A single item was used to measure the impact of the current pregnancy: “Consider and estimate the impact this pregnancy has had on you”. The best (most desirable) and worst (most undesirable) effects were rated as +100 and -100, respectively.

Coping style

An ad hoc measure of coping style related to the current pregnancy was constructed in this study. Similar to the model proposed by Endler and Parker,⁴⁰⁾ three items were created to investigate (1) emotion-oriented (“feel anxious and worried”), (2) avoidance-oriented (“avoid thinking about your pregnancy and distract yourself”), and (3) task-oriented (“frame your idea and plan to do it”) coping styles, each of which was assessed on a 7-point Likert-type scale. Higher scores indicated more frequent use of the corresponding coping style.

Social support

Ad hoc items were created to investigate levels of satisfaction with three types of social support received from the partner (emotional, instrumental, and informational), which were assessed on a 7-point Likert-type scale from “not satisfied” to “very much satisfied”. Higher scores indicated greater satisfaction.

Depressive mood

The first two items of Major Depressive Episode (MDE) criteria, depressed mood and lack of interest, were used. Each item was rated on a 4-point Likert-type scale (none=0, a few days a week=1, more than half a week=2, almost every day=3). Similar to the Whooley questions,⁴¹⁾ these items were selected on the basis of studies that had demonstrated that a set of these two questions predicted MDE reasonably well.^{42–49)} The depression score was calculated by adding the scores of these two items (range, 0 to 12).

Statistical analyses

To examine determinants that predict consideration of TOP, a total of four regression analyses were performed with consideration of TOP as the dependent variable. In all models, depression score was entered in the first step. In Model 1, three coping styles (task-, avoidance-, and emotion-oriented coping) were entered in the second step, and perceived stress was entered in the last step. In Model 2, “Availability” scores of the three types of social support and perceived stress during pregnancy were entered in the second and third steps, respectively. In Model 3, “Satisfaction” scores of the three types of social support and perceived stress during pregnancy were entered in the second and third steps, respectively. In Model 4, independent variables including a set of the three coping styles, “Satisfaction” scores of the three types of social support, and perceived stress during pregnancy were entered in the second, third, and fourth steps, respectively.

After identifying independent variables that significantly predicted consideration of TOP, a structural equation model (SEM) was constructed to clarify temporal relationships between these variables (Figure 2). Here we posited that (1) consideration of TOP would be predicted by depression, emotion-oriented coping, satisfaction with instrumental support, and perceived stress during pregnancy; (2) depression would be predicted by emotion-oriented coping, satisfaction with instrumental support, and perceived stress during pregnancy; (3) emotion-oriented coping and satisfaction with instrumental support would be predicted by perceived stress during pregnancy; and (4) emotion-oriented coping and satisfaction with instrumental support would correlate with each other. The fit of the models to the data was examined using

Table 1. Hierarchical multiple regression analyses of consideration of TOP by depression and other predictors

	Model 1		Model 2		Model 3		Model 4	
	R ² change	β	R ² change	β	R ² change	β	R ² change	β
Depression	.169*	.471*	.169*	.503*	.169*	.264	.169*	.602**
Coping styles	.118						.118	
Task-oriented		-.111						-.224
Avoidance-oriented		-.091						-.139
Emotion-oriented		.499**						.576**
Social support from spouse								
Availability			.088					
Instrumental				-.203				
Informational				.149				
Emotional				.186				
Satisfaction					.135		.070	
Instrumental						.935*		.379
Informational						-.650		-.117
Emotional						-.298		.005
Perceived stress	.433***	-.725***	.352**	-.602**	.338**	-.632**	.424***	-.800***
Adjusted R ²	.643		.500		.543		.664	

* $P < .05$; ** $P < .01$; *** $P < .001$

Table 2. Correlation coefficients among all variables

	Perceived stress of pregnancy	Emotion-oriented coping	Satisfaction with instrumental support	Depression
Perceived stress of pregnancy	—			
Emotion-oriented coping	.14	—		
Satisfaction with instrumental support	.11	-.02	—	
Depression	-.09	-.23	-.23	—
Consideration of TOP	-.65**	.21	-.11	.41*

* $P < .05$; ** $P < .01$; *** $P < .001$; TOP, termination of pregnancy. Correlation coefficients with $P < .01$ are in bold.

chi-square statistics (CMIN), comparative fit index (CFI), and root mean square error of approximation (RMSEA). According to conventional criteria, a good fit would be indicated by $CMIN/df < 2$, $CFI > 0.97$, and $RMSEA < 0.05$, and an acceptable fit by $CMIN/df < 3$, $CFI > 0.95$, and $RMSEA < 0.08$.⁵⁰⁾ Analyses were performed using IBM SPSS Statistics version 27.0 and IBM Amos version 27.0 (IBM Japan, Tokyo, Japan).

Ethical considerations

This study was approved by the Institutional Review Board (IRB) of the Kitamura Institute of Mental Health Tokyo (No. 2020101501).

Results

Depression and perceived stress during pregnancy were significant predictors of consideration of TOP in all four models (Table 1). In Model 1, a set of the three coping styles (task-, avoidance-, emotion-oriented coping) did not significantly predict consideration of TOP ($F(3) = 1.050$, ns). Only emotion-oriented coping was a

significant predictor of consideration of TOP. In Model 2, availability of the three types of support failed to predict consideration of TOP ($F(3) = .752$, ns). In Model 3, the three types of satisfaction with support failed to predict consideration of TOP ($F(3) = 1.228$, ns). However, satisfaction with instrumental support was a significant predictor of consideration of TOP. In Model 4, coping styles ($F(3) = 1.228$, ns) and an individual's degree of satisfaction with support ($F(3) = .579$, ns) failed to predict consideration of TOP.

The four regression analyses revealed that consideration of TOP can be predicted by depression, emotion-oriented coping style, satisfaction with instrumental support, and perceived stress during pregnancy. Accordingly, subsequent analyses were conducted using only these variables. Scores for consideration of TOP were positively correlated with depression scores ($r = .411$, $P < .05$) and negatively correlated with scores for perceived stress during pregnancy ($r = -.651$, $P < .01$) (Table 2).

SEM analysis

For theoretical consideration (Figure 1), an SEM model

was constructed using variables that significantly predicted consideration of TOP in the regression analyses (Figure 2). The fit of this model to the data was good (CMIN/df=.072, CFI=1.000, and RMSEA=.000), revealing (1) a determinant coefficient of 0.79 for consideration of TOP, (2) that depression, emotion-oriented coping style, and perceived stress during pregnancy significantly predict consideration of TOP, and (3) that scores for satisfaction with instrumental support positively and directly predict consideration of TOP (direct effect=.264). However, the total effect of satisfaction with instrumental support on consideration of TOP was negative (total effect=-.323).

Discussion

To the best of our knowledge, the present study is the first to investigate the determinants of consideration of TOP among women who perceive their current pregnancy as stressful. As hypothesized, consideration of TOP was predicted by depression, emotion-oriented coping style, and perceived stress during pregnancy. The model

explained roughly 80% of the variance in consideration of TOP.

Contrary to our expectations, consideration of TOP was positively predicted by satisfaction with instrumental support. However, depression mediated the effects of satisfaction with instrumental support in considering TOP. The total effect of satisfaction with instrumental support was negative. These results are consistent with a report by Gbagbo et al., in that decision-making about TOP was influenced by the support of partners.⁵¹⁾ Interestingly, compared with women who did not consider TOP, those who did scored higher in perceived stress but lower in received support during the perinatal period.⁵²⁾ Thus, actual support provided by the partner may be more important for women than their perception of supportiveness of the partner. In clinical settings, the partner's economic assistance, time, and skills may be particularly important for women suffering from perceived stress of pregnancy. These types of support may contribute to improvements in depressed mood.

At the same time, increased attention should be paid not only to social support from partners but also

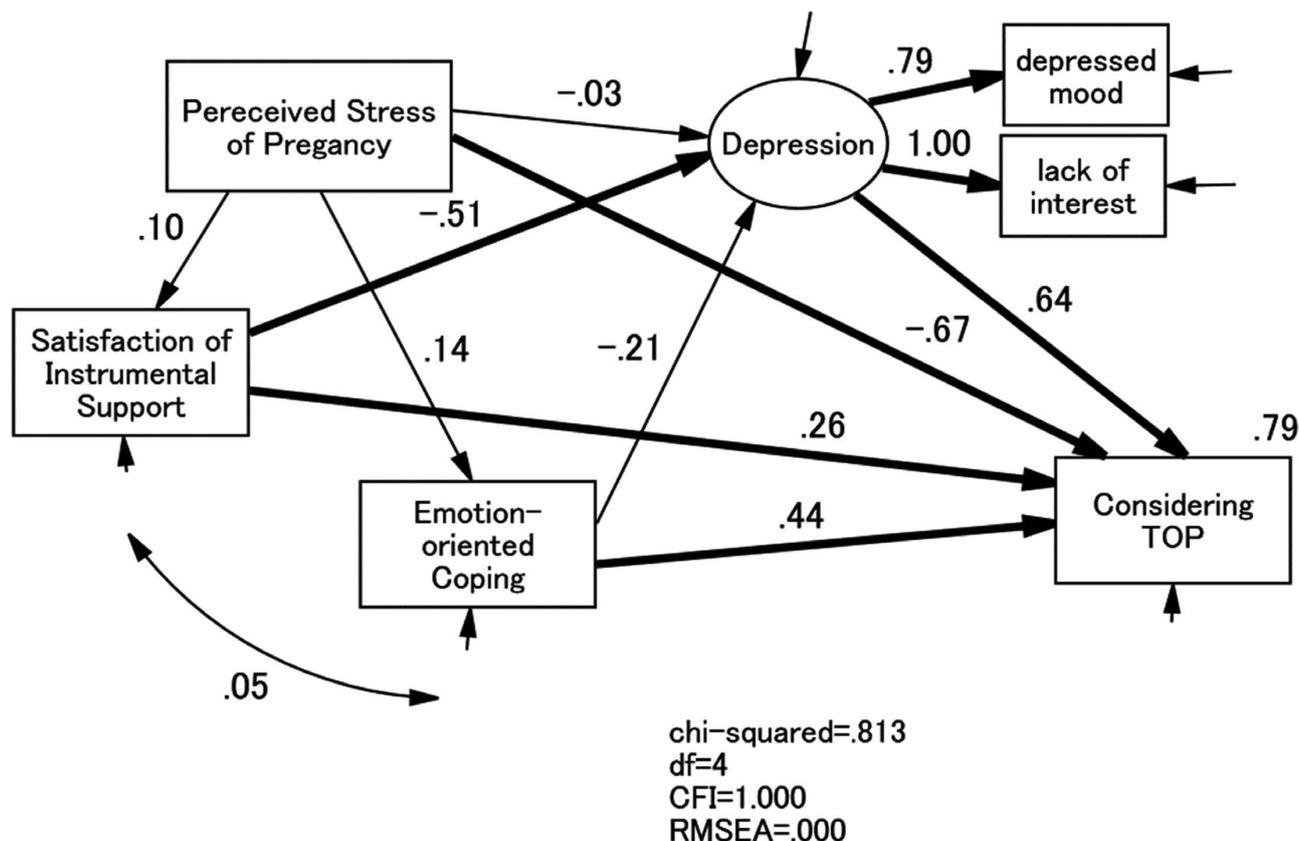


Figure 2. A structural equation model (SEM) to clarify relationships.

CFI, comparative fit index; RMSEA, root mean square error of approximation; DEP, depression; SATIS_INST, satisfaction with instrumental support; COPE_EMOT, emotional coping; CONSIDERING TOP, considering termination of pregnancy

to depression as risk factors for consideration of TOP. Appelbaum and Grisso⁵³⁾ pointed out that decision-making capacities may fluctuate with changes in a patient's underlying mental disorder. In other words, it is important to consider patient decision-making capacities. For example, a woman with depression may have diurnal variations (e.g., less depressed in the afternoon). Therefore, judgment of the patient's competency should not be viewed as enduring.⁵⁴⁾ Careful consideration should be given especially when providing invasive medical interventions, including artificial abortion, from an ethical perspective. Interventions that take into consideration temporal fluctuations in mood are needed for appropriate decision-making. Both a pregnant woman and her partner should be able to receive necessary support in order to make decisions about TOP.

There are several clinical approaches to providing psychological support for pregnant women who consider TOP. As noted, antenatal depression should be identified, and if present, effective psychotherapy should be started immediately. Psychotherapy may be more effective if it sheds light on coping styles, as it allows women to make use of more adaptive coping behaviours. Second, instrumental support, which was found to be key in a woman's desire for TOP, may be provided by perinatal nurses as well as welfare professionals. Care services for women considering TOP should be seriously considered. For example, provision of day-to-day practical support may be what they really need. Third, support for partners may also be provided by perinatal health professionals to improve the marital relationship.

There are some limitations to this study. First, the number of negative responders was small. Future studies should be conducted by recruiting a larger number of participants. Second, given the cross-sectional design, we could not draw causal conclusions between stress during pregnancy and depression. Caution should be exercised when interpreting the results of the present SEM analyses.

Despite these drawbacks, our study demonstrated that decision-making about consideration of TOP among women suffering from perceived stress during pregnancy could be explained in terms of the stress theory. Perinatal health professionals should routinely assess perceived stress during pregnancy and processes leading to consideration of TOP in the early pregnancy period. This may contribute to more informed intervention by perinatal professionals who are involved in supporting women's decisions and free decision-making.

Conflict of interests

The authors declare that they have no conflicts of interest.

Acknowledgments

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Authors' contributions

TK and ST prepared the research protocol. TK collected the data. TS and TK analysed the data. TS wrote the manuscript and TK revised it. All authors read and approved the final manuscript.

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Availability of data and material

The data set used and analysed in the present study are available from the corresponding author upon reasonable request.

Ethics approval and consent to participate

This study was approved by the Research Ethics Committee of the Kitamura Institute of Mental Health Tokyo, Tokyo, Japan (No. 2020101501). All participants gave informed consent after understanding the study rationale and procedure. The authors assert that all procedures contributing to this study comply with the ethical standards of the National and Institutional Committees on Human Experimentation and with the Helsinki Declaration of 1975 as revised in 2008. All participants taking part in the study provided written informed consent.

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Thoughts of TOP and stress theory

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