

## **History of Gestational Diabetes Mellitus, Self-efficacy and Coping in Postpartum Women: A Pilot Study**

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### **Abstract**

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The present study investigates whether the history of gestational diabetes mellitus (GDM) influences self-efficacy and coping among postpartum women. Purposive sampling technique was used to collect data from 100 postpartum women, 50 with a history of GDM and 50 without. The General Perceived Self-Efficacy Scale was used to measure the self-efficacy of the participants. The Brief COPE developed by Carver was used to measure coping. A Mann-Whitney U-test showed postpartum women with a history of GDM are higher in self-efficacy and coping than those without such a history. Even though self-efficacy showed a relationship to coping, the two groups differed in the use of coping strategies.

### **Key words**

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postpartum women, history of gestational diabetes, self-efficacy, coping

## **Introduction**

The postpartum period is a time of joy and satisfaction, as well as a time of vulnerability, or even crisis (Groer, Davis, & Hemphill, 2002). It is a time of mixed emotions for the mother. The arrival of a new member in the family elicits happiness, but new roles and responsibilities may add stress. Reports indicate that postpartum women face hormonal imbalances and issues of self-perception due to the changes in physique (Guitierrez-Zotes et al., 2016). The experiences may be overwhelming for certain mothers, resulting in feelings of insecurity, anxiety, stress, and depression (Smith, Cheung, Bauman, Zehle, & McLean, 2005). Such situations will de-

teriorate further if the mothers have a history of Gestational Diabetes Mellitus (GDM), as its consequences include various health-related complications. A history of GDM increases the risk of developing Type-2 Diabetes Mellitus (T2DM) (Bellamy, Casas, Hingorani, & Williams, 2009; Mahalakshmi et al., 2014; Seshiah et al., 2008; Veeraswamy, Vijayam, Gupta, & Kapur, 2012) and there is a high probability that the same disease will recur in the next pregnancy (Kim, Berger, & Chamany, 2007).

GDM is defined as glucose intolerance with onset during pregnancy (American Diabetes Association, 2007). Mothers with the history of GDM can bring the later health-related complications under control through lifestyle interventions (Cheung & Byth, 2003; Kaiser, Razurel, & Jeannot, 2013; Kim, 2013; Metzger et al., 2007). Health Action Process Approach (Schwarzer, 2001) recommends the importance of self-efficacy in motivating mothers to figure out whether the desired healthy behavior is attainable, and to plan in detail to carry out the required actions (Luszczynska & Schwarzer, 2003). Various studies have shown that self-efficacy enables the mothers to believe in their capabilities, and to organize and execute the courses of action required to manage GDM (Ferranti et al., 2014; Kaiser & Razurel, 2013; Kim, McEwen, Kieffer, Herman & Piette, 2008). High self-efficacy can contribute to confidence, and intrinsically motivate mothers to attain the desired healthy behavior (Bandura, 2009).

Apart from improving health, self-efficacy helps mothers with a history of GDM in coping with the new experiences (Koh, Miller, Marshall, Brown, & McIntyre, 2010; Lin, Tsai, Chan, Chou, & Lin, 2009; Pisanti, 2012). According to Snyder (1999), coping is an output of the strategies adopted by a person to minimize stress or discomfort. The greater the perception of risk, the more the intention to cope increases (Rosenstock, Strecher & Becker, 1988). Hence, women with a history of GDM will tend to adhere more to healthy behavior because they are aware of the associated risk (Feig, Chen & Nayler, 1998; Kaiser, Razurel & Jeannot, 2013; Rumbold & Crowther, 2002). Most postpartum women with a history of GDM are aware that they have a risk of developing T2DM (Hjelm, Bard, Nyberg, & Apelqvist, 2003; Jones, Roche & Appel, 2009). Consequently, they tend to engage in proper coping strategies (Bellamy et al., 2009; Ferrara et al., 2011). Postpartum women without a history of GDM stop adhering to the healthy lifestyle recommendations as they do not feel any major threat for the future (Fehler, Kennedy, McCargar, Bell, & Ryan,

2007).

Studies carried out against various cultural backgrounds indicate that knowledge due to a history of GDM enhances self-efficacy in mothers, which in turn enables them to cope faster with the overwhelming postpartum period (Smith et al., 2005), compared to mothers with no such history (Bellamy et al., 2009; Kaiser & Razurel, 2013; Rosenstock et al., 1988). However, before we generalize, it is important to investigate samples from different socio-demographic backgrounds. The present study aims to find out whether a history of GDM makes a difference in self-efficacy and coping in a sample of postpartum women from Hyderabad, India. The following are the objectives of the study: 1) To find out if a history of GDM makes a difference in the self-efficacy and coping of the postpartum women; 2) To find out if the relationship between self-efficacy and coping differs with respect to the history of GDM.

## **Method**

### **Participants**

The study adopted a criterion group ex-post facto design. A total of 100 participants were taken. Of these, 50 women had a history of GDM and 50 women did not. The inclusion criteria were postpartum women who were young adults (19 through 40 years) and had only one child. The sample did not include pregnant women and women with disabilities. Eighteen of the postpartum women had comorbid conditions such as hypertension, obesity, and depression.

### **Procedure**

We used the purposive sampling method to select the participants from three hospitals in and around Hyderabad over a period of a month. These hospitals were selected based on their high admissions of GDM cases. A total of 256 women were initially approached; however, based on the inclusion criteria, only 100 postpartum women were accepted for the study. Before beginning the data collection, a brief interaction with the participants facilitated introducing the study and its scope and developing a good rapport. One of the investigators explained the process of data collection.

We assured the confidentiality of their responses and gave suggestions regarding the honesty of their response choices. We informed them that there was no “right” or “wrong” response as there would be individual differences in the way people feel and behave in different situations. After receiving approval of the informed consent from the research committee board, adhering to the American Psychology Association ethical guidelines, we started taking responses from the participants on a checklist regarding their history of GDM. Based on the responses, we selected a total of 100 women, categorized into Group I [with a history of GDM] and Group II [without a history of GDM]. The selection was stopped when both the groups were equalized. Subsequently, we distributed a General Perceived Self-Efficacy Scale, Brief COPE, and a socio-demographic response sheet, and collected the data. The investigators clarified any doubts the participants had regarding the study, and following the data collection, we thanked them for their participation.

## Measurements

The General Perceived Self-Efficacy Scale developed by Schwarzer and Jerusalem (2010) was used to measure participant self-efficacy. The scale assesses a stable and broad sense of personal competence to deal with stressful situations effectively. It consists of 10 items with a 4-point scale ranging from not at all true (1) to exactly true (4). The total score is the sum of the values circled for each item and ranges from 10 to 40. The Cronbach’s alpha of the measurement varied from 0.75 to 0.91 (from 23 different nations), and the test-retest reliability coefficients varied from 0.60 to 0.70 (Scholz, Dona, Sud, & Schwarzer, 2002).

Brief COPE, developed by Carver (1997), was used to measure the coping. The questionnaire is an adaptation of the COPE inventory designed by Carver, Scheier, and Weintraub (1989), based on the theory of coping. The Brief COPE consists of 28 items, with two items on each of 14 coping strategies—positive reframing, self-distraction, using emotional support, active coping, planning, denial, behavioral disengagement, venting, acceptance, humor, religion, using instrumental support, substance use, and self-blame. The responses are in a four-point Likert scale where the options range from “I haven’t been doing this at all” (1) to “I’ve been doing this a lot” (4). The scores range from 28 to 100. The alpha reliabilities of the

COPE inventory ranged from 0.45 to 0.92, and test-retest ranged from 0.42 to 0.89 (Carver et al., 1989).

### Statistical Analysis

The Shapiro-Wilk test indicated a normal distribution for the Brief COPE scores ( $W = 0.956$ ,  $p > .05$  for Group I and  $W = 0.0983$ ,  $p > .05$  for Group II), but not in the self-efficacy scores ( $W = 0.917$ ,  $p < .01$  for Group I and  $W = 0.953$ ,  $p < .05$  for Group II). Levene's Test indicated a lack of homogeneity in the self-efficacy scores ( $F = 14.16$ ,  $p < .01$ ). Since the sample did not meet the assumptions of a parametric test, a Mann-Whitney U-test was used to assess the statistical difference between the two groups. Spearman's Rank Order Correlation was used to assess the relationship between self-efficacy and coping among the postpartum women.

### Results

The mean age and *SD* of postpartum women with a history of GDM were 27.12 and 4.75 respectively. For postpartum women without a history of GDM, the mean age and *SD* were 23.40 and 2.91 respectively (giving an overall mean age and *SD* of 25.26 and 4.33, respectively). Table 1 summarizes the socio-demographic characteristics of the participants in the sample.

**Table 1**  
***Socio-demographic Summary of the Sample***

Variables	Categories	Postpartum women with a history of GDM	Postpartum women without a history of GDM	Total
Occupation	housewife	40	48	88
	employed	10	2	12
Socio-economic Status	lower	2	21	23
	middle	38	26	64
	upper	10	3	13
Residence	urban	36	23	59
	rural	4	7	11
Education	semi-urban	10	20	30
	illiterate	21	12	33
	educated	29	38	67

Variables	Categories	Postpartum women with a history of GDM	Postpartum women without a history of GDM	Total
Type of Delivery	c-section	45	23	68
	normal	5	27	32
Any Comorbid Conditions	yes	16	2	18
	no	34	48	82

The final sample included 100 participants, of whom 12 (10 with a history of GDM and 2 without) were employed and 88 (40 with a history of GDM and 48 without) were homemakers. In terms of socio-economic status, 23 participants (2 with a history of GDM and 21 without) were of lower socio-economic status, 64 (38 with a history of GDM and 26 without) of middle economic status, and 13 (10 with a history of GDM and 3 without) of upper socioeconomic status; 59 (36 with a history of GDM and 23 without) came from urban locations, 30 (10 with a history of GDM and 20 without) semi-urban, and 11 (4 with a history of GDM and 7 without) rural. A total of 33 (21 with the history and 12 without the history of GDM) participants were illiterate; 67 (29 with a history of GDM and 38 without) participants were educated; 68 (45 with a history of GDM and 23 without) had had a caesarian delivery, and 32 (5 with a history of GDM and 27 without) a normal delivery. Totally, 18 (16 with a history of GDM and 2 without) had one or more comorbid conditions, whereas 82 (34 with a history of GDM and 48 without) did not have any comorbid conditions (Table 1).

Table 2 shows the mean ranks, Mann–Whitney U-test values, and Z values for self-efficacy, and coping and coping strategies among the two groups of postpartum women.

**Table 2**  
*Mean Ranks, Mann–Whitney U-test Values, and Z Values of Self-efficacy, and Coping Strategies of Postpartum Women, with and without a History of GDM*

Variables	Postpartum women with a History of GDM ( $n = 50$ )	Postpartum women without A history of GDM ( $n = 50$ )	U	Z
	<i>Mean rank</i>	<i>Mean rank</i>		
1. Self-efficacy	66.26	34.74	462	5.45**
2. Coping	70.17	30.83	266.5	6.78**

Variables	Postpartum women with a History of GDM ( $n = 50$ )	Postpartum women without A history of GDM ( $n = 50$ )	$U$	$Z$
	<i>Mean rank</i>	<i>Mean rank</i>		
a. Self-distraction	63.92	37.08	579	4.77**
b. Active coping	67.13	33.87	418.5	5.92**
c. Denial	70.33	30.67	258.5	7.00**
d. Substance use	66.15	34.85	467.5	5.66**
e. Emotional support	64.11	36.89	569.5	4.86**
f. Instrumental support	63.31	37.69	609.5	4.60**
g. Behavioral disengagement	63.13	37.87	618.5	4.48**
h. Venting	57.49	43.51	900.5	2.50*
i. Positive reframing	57.92	43.08	879	2.68**
j. Planning	62.08	38.92	671	4.15**
k. Humor	57.24	43.76	913	2.64**
l. Acceptance	58.77	42.23	836.5	2.93**
m. Religion	60.14	40.86	768	3.48**
n. Self-blame	60.42	40.58	754	6.79**

Note. \* $p < .05$ , \*\* $p < .01$

Postpartum women with and without a history of GDM differed significantly (Table 2) in terms of self-efficacy ( $U = 462$ ,  $z = 5.45$ ,  $p < .01$ ) and coping, ( $U = 266.5$ ,  $z = 6.78$ ,  $p < .01$ ). The postpartum women of the two groups differed significantly in coping strategies; self-distraction ( $U = 579$ ,  $z = 4.77$ ,  $p < .01$ ), active coping ( $U = 418.5$ ,  $z = 5.92$ ,  $p < .01$ ), denial ( $U = 258.5$ ,  $z = 7$ ,  $p < .01$ ), substance use ( $U = 467.5$ ,  $z = 5.66$ ,  $p < .01$ ), emotional support ( $U = 569.5$ ,  $z = 4.86$ ,  $p < .01$ ), instrumental support ( $U = 609.5$ ,  $z = 4.60$ ,  $p < .01$ ), behavioral disengagement ( $U = 618.5$ ,  $z = 4.48$ ,  $p < .01$ ), venting ( $U = 900.5$ ,  $z = 2.5$ ,  $p < .05$ ), positive reframing ( $U = 879$ ,  $z = 2.68$ ,  $p < .01$ ), planning ( $U = 671$ ,  $z = 4.15$ ,  $p < .01$ ), humor ( $U = 913$ ,  $z = 2.54$ ,  $p < .01$ ), acceptance ( $U = 836.5$ ,  $z = 2.93$ ,  $p < .01$ ), religion ( $U = 768$ ,  $z = 3.48$ ,  $p < .01$ ), and self-blame ( $U = 754$ ,  $z = 6.79$ ,  $p < .01$ ).

The postpartum women with a history of GDM were found to have higher self-efficacy (Mean rank = 66.26) compared to postpartum women without a history of GDM (Mean rank = 34.74). The postpartum women

with a history of GDM showed significantly higher levels of coping (Mean rank = 70.17) compared to those without such a history (Mean rank = 30.83). Postpartum women with a history of GDM ranked higher in all the coping strategies—self-distraction, active coping, denial, substance use, emotional support, instrumental support, behavioral disengagement, venting, positive reframing, planning, humor, acceptance, and self-blame—when compared to those with no history of GDM.

The second objective was to see if the relationship between self-efficacy and coping differ in relation to the history of GDM. Accordingly, Table 3 shows the result of Spearman rank order correlation between self-efficacy and coping in both the groups.

**Table 3**  
*Correlation between Self-efficacy, and Coping Strategies among Postpartum Women*

	Self-efficacy	
	Group I With a history of GDM	Group II No history of GDM
Coping	0.51**	0.77**
1. Self-distraction	0.34*	0.26
2. Active coping	0.42**	0.29*
3. Denial	0.34*	0.38**
4. Substance use	0.25	0.45**
5. Emotional support	0.28	0.08
6. Instrumental support	0.39**	0.41**
7. Behavioral disengagement	0.14	0.65**
8. Venting	0.04	0.67**
9. Positive reframing	-0.06	0.56**
10. Planning	0.23	0.71**
11. Humor	-0.15	0.40**
12. Acceptance	0.22	0.61**
13. Religion	0.40*	0.12
14. Self-blame	0.26	0.65**

*Note.* \* $p < .05$ , \*\* $p < .01$

Self-efficacy and coping showed a moderately positive correlation ( $r = .51, p < .01$ ) among the participants with a history of GDM, but a strong



positive correlation ( $r = .77, p < .01$ ) among those without the history. In the coping strategies, self-distraction ( $r = .34, p < .05$ ), active coping ( $r = .42, p < .01$ ), denial ( $r = .34, p < .05$ ), instrumental support ( $r = .39, p < .01$ ), and religion ( $r = .40, p < .05$ ) showed a moderate positive correlation between self-efficacy and coping among the participants with a history of GDM. On the other hand, for those without such a history, self-efficacy showed a strong positive correlation with planning ( $r = .71, p < .01$ ); a moderate positive correlation with denial ( $r = .38, p < .01$ ), substance use ( $r = .45, p < .01$ ), instrumental support ( $r = .41, p < .01$ ), behavioral disengagement ( $r = .65, p < .01$ ), venting ( $r = .67, p < .01$ ), positive reframing ( $r = .56, p < .01$ ), humor ( $r = .40, p < .01$ ), acceptance ( $r = .61, p < .01$ ), and self-blame ( $r = .65, p < .01$ ); and a low positive correlation with active coping. It has to be noted that self-efficacy did not show a significant relationship to emotional support in either group. Also, the self-efficacy of participants without a history of GDM did not show a significant relationship to religion.

## Discussion

Women without a history of GDM showed lesser self-efficacy than those with such a history. The guidance received during treatment by women with a history of GDM may have enabled them to be aware of the risk of T2DM (Kim et al., 2008). This perceived risk could have contributed to their maintaining the proper diet, further increasing their self-efficacy to engage in the health-seeking behavior. Rumbold and Crowther (2002) adhere to the notion that mothers with a history of GDM are careful in their diet and physical activity. Kaiser and Razurel (2013) reviewed 13 published articles on postpartum women, who engaged in healthy behaviors, finding self-efficacy to be one of the factors that influenced the adoption of healthy behaviors by postpartum women with a history of GDM. Postpartum women without a history of GDM stop adhering to the recommendations for a healthy lifestyle as they do not feel any major threat to their future (Fehler et al., 2007). This leads to decreased self-efficacy in following health-seeking behavior.

This study also showed that high self-efficacy leads to higher coping behavior among the postpartum women. Luszczynska and Schwarzer's (2003) study showed that postpartum women with a history of GDM pursue the

processes to attain a desired healthy behavior when they have high self-efficacy. Ferranti et al. (2014) observed the eating habits of 75 community-dwelling postpartum women with a history of GDM and found that high levels of education and self-efficacy contribute to alternative healthy eating. They also tended to be intrinsically motivated to maintain a healthy pattern of behavior. Furthermore, according to Kim et al. (2008), self-efficacy in postpartum GDM women showed a positive correlation with healthy behaviors for decreasing the risk of developing more complications like diabetes.

Postpartum women differed in coping when the history of GDM is considered. Postpartum women with a history of GDM got higher scores in coping than those without that history. Feig et al. (1998) reported on the difference between postpartum women with a history of GDM and those without. The former were more concerned about their health and well-being when compared to the other group, and therefore coping was seen to be higher in them. Due to the experience of a critical condition during gestation, mothers with the history would have a greater perception of risk. Their intention to cope increased with the help of the guidelines given by nurses, physicians, and counselors (Rosenstock et al., 1988). Mothers with a history of GDM thus would have developed strategies to minimize future stress and discomfort (Snyder, 1999). All these might have resulted in the engagement of proper coping strategies (Bellamy et al., 2009).

According to Lin and his colleagues, self-efficacy can facilitate coping with the new experiences among postpartum women with a history of GDM and can also contribute to coping during the process of child-rearing (Lin et al., 2009). The present findings show that self-efficacy in postpartum women with GDM has a moderate positive correlation with self-distraction, active coping, denial, instrumental support, and religion. When self-efficacy increases, the coping strategies also increase. However, self-efficacy shows a relationship to substance use (such as medication), instrumental support, behavioral disengagement, venting, positive reframing, humor, acceptance, self-blame, self-distraction, planning, and active coping among postpartum women without a history of GDM. In this study, coping is dependent on self-efficacy more in postpartum women without the history of GDM than those with such a history.

## Conclusion

The study shows that a history of GDM can make a difference in the self-efficacy and coping of postpartum women. Those with a history of GDM are higher in self-efficacy and coping than those without such a history. In both groups, there is a relationship between self-efficacy and coping. Coping strategies in postpartum women without a history of GDM seem to be more dependent on self-efficacy.

Based on these findings, we conclude that a history of GDM brings about a change in the self-efficacy and coping of postpartum women. Self-efficacy is also shown as having an influence on coping among the postpartum women but there are other factors that may be contributing to this coping. For instance, lifestyle factors may also act as a coping mechanism against future health risks (Cheung & Byth, 2003). Future studies shall explore more areas that may influence how postpartum women cope. It should also be acknowledged that the study did suffer from limiting factors, in that factors such as occupation, and socio-economic status, which could act as confounding variables, were not controlled in the analysis.

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