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Effect of a targeted health education program on nurses' awareness about postpartum depression

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Abstract

Background Postpartum depression (PPD) is a prevalent mental health disorder that affects women after giving birth. It seriously harms the mother–child bond. As nurses' expertise can have a significant impact on women after childbirth, this study aimed to compare the knowledge of nurses at the Maternity Hospital of Ain Shams University (ASU) before and after the implementation of an educational program regarding PPD.

Methods A pre-and post-quasi-experimental study was conducted among 63 nurses at ASU Maternity Hospital. A self-administered questionnaire was used to evaluate nurses' knowledge of PPD symptoms, diagnosis, risk factors, treatment, and consequences before and one month following an educational program that comprised PowerPoint, posters, and videos.

Results The mean age of nurses was 23.17 ± 1.45 . About 76% had previously heard of PPD, and the most frequent sources of their information were nursing studies followed by conferences. After the intervention, there was a significant improvement in the knowledge score regarding PPD symptoms and diagnosis, with a mean score of 7.23 ± 1.32 compared to 6.13 ± 1.97 before the intervention. The knowledge score of PPD risk factors showed a considerable improvement, with a mean score of 11.52 ± 1.49 as compared to 9.69 ± 1.94 previously. There was a significant improvement in the knowledge scores regarding PPD treatment and consequences. Overall, the PPD total knowledge score of nurses improved significantly after the intervention, from 19.56 ± 3.49 to 23.2 ± 2.5 (p -value < 0.001).

Conclusion This study demonstrates the positive impact of a targeted health education program on enhancing nurses' awareness about PPD. The program effectively increased knowledge levels among participating nurses, empowering them with essential skills to recognize, assess, and respond to PPD in their clinical practice. The improvement in awareness signifies the importance of implementing focused educational interventions to enhance nurses' ability to identify this critical maternal mental health issue.

Implications Beyond the direct effect of this study on nurses' awareness, it has wider implications for patient care, healthcare policies, professional development, interdisciplinary collaboration, and public health awareness related to PPD.

Trial registration It was registered on clinicaltrials.gov with identifier number NCT06424496.

Keywords Post-partum depression (PPD), Educational program, Mother–child bond, Knowledge score, Nurses

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Background

Postpartum depression (PPD) is a severe mental disease that affects a woman's behavior and physical health after childbirth [1]. It may occur up to a year after birth [2]. PPD can be influenced by a wide range of factors, including inadequate social support, negative interpersonal experiences, hormone withdrawal following childbirth, psychosocial stresses, personality traits, and poor adaptation [3].

While many women experience "baby blues," which are feelings of sadness, exhaustion, and irritability after giving birth, PPD is more severe and lasts longer [4]. Symptoms of PPD may include feeling agitated, depressed, crying a lot, thinking of harming the child or herself, not feeling attached to the child, lacking energy or drive, overeating or losing appetite, feeling guilty and worthless, losing interest in activities, and withdrawing from friends and family [2].

Furthermore, some women with very severe PPD may develop psychotic thoughts (hallucinations or delusions) that could harm their children or even lead to suicide [4, 5].

There are common types of treatment for PPD, including counseling with a mental health professional that can help women with PPD understand and cope with their feelings and challenges, social support with people who can offer advice, and medications that can help relieve symptoms of depression [6, 7].

According to the CDC, almost one in eight women exhibits PPD symptoms [2]. It seriously harms the mother-child bond. PPD has a long-term psychological and socioeconomic impact, as well as effects on the health of mothers and their newborns [8, 9].

Since knowledge influences people's attitudes and behaviors, nurses' expertise can have a significant impact on women after childbirth, particularly regarding PPD [10]. In the United States, perinatal nurses' self-efficacy in giving new mothers crucial care and proper understanding of PPD were both improved by a web-based educational program [11].

In Malaysia, around 55% of nurses had above-median total knowledge score about PPD. Even though a significant number of nurses 72% thought they were responsible for PPD screening and 87% thought they should refer mothers for additional treatment, only 25.9% had already conducted PPD screening [10]. In a Ghana, 91% of nurses were knowledgeable about PPD and can recognize its symptoms. However, most of them were unaware of the different standardized screening instruments that are available for PPD patients, and many more were also unsure of how to use these tools [12].

Moreover, nurses in Saudi Arabia and Turkey lacked knowledge about definition, prevalence, symptoms,

risk factors, screening methods, and treatment of PPD [13, 14]. Only one third of them were confident in their capacity to educate women about PPD [13].

Evaluating the knowledge of nurses in maternity hospitals is crucial since they will be key players in the early detection and prompt treatment of PPD [15]. To the best of our knowledge, no prior study had evaluated nurses' knowledge of PPD and how it affected their practice in Egypt; therefore, the present study was conducted to compare the knowledge of nurses at Maternity Hospital of Ain Shams University (ASU) regarding PPD before and after the implementation of an educational program toward PPD.

Methods

Study type and setting

Quasi-Experimental study (pre/post design) was conducted at Ain Shams University Hospitals.

Study population

Nurses at ASU Maternity Hospital.

Sample size and method

Using G*power 3.1 software for sample size calculation; setting α error at 5%, a sample size of 54 nurses from ASU Maternity Hospital can detect a statistically significant difference between before and after the health education program as regard knowledge score toward PPD, assuming a medium effect size difference ($d_z = 0.5$), using a two-sided t-test (difference between two dependent means) [3], and this sample size achieved a power of 95%. Assuming that dropout was of 10%, a sample size of at least 60 nurses from ASU Maternity Hospital was needed. A total of 70 nurses agreed to participate in the study, and only 63 of them were reachable and completed a one-month follow up survey. Regarding the sample method, a convenience non-random sample was conducted.

Data collection tools

Phase 1

After reviewing the literature [10, 16], a self-administered questionnaire was developed, consisting of two parts:

- Socio-demographic data which included age, qualifications, and years of experience.
- Questions to assess the knowledge of the nurses through 28 items covered four domains regarding PPD, including:
 - First domain (knowledge about the symptoms and diagnosis of PPD, including 10 questions)

- Second domain (knowledge about risk factors for PPD included 13 questions)
- Third domain (knowledge about treatment of PPD included 3 questions)
- Fourth domain (knowledge about the consequences of PPD included 2 questions)

Phase 2

An educational program was tailored based on the previously mentioned domains, with stress on the points that showed weak knowledge in phase I (baseline survey) then, the educational sessions were implemented [1, 6]. Four educational sessions were conducted at the hospital (about 15 nurses in each session). Each session lasted for about 45 min. The educational sessions are provided by the same doctor for all groups using the same material, which includes PowerPoint, posters, and videos.

Phase 3

The evaluation of the training sessions was conducted using the same knowledge questionnaire after one month of the educational program. During this month, educational materials were sent to the participants through WhatsApp groups. Pre- and post-questionnaire responses for each participant were linked through the participants' ID numbers. Incomplete and missing responses were excluded from the analysis. This evaluation is considered at level 2 of Kirkpatrick's model for measuring the effects of training as it checks the transfer of knowledge to nurses [17].

Pilot study

To assess the questionnaire's clarity and feasibility, a pilot study involving 10% of the sample was carried out. Based on the pilot study's findings, some questions were modified, and the findings were not included in the study results.

Tool validity and reliability

- The questionnaire was constructed in English and translated into Arabic, then back translated into English by an external reviewer (back-to-back translation). A comparison of the two-language versions was done to confirm the accuracy of the translation process and the validity of the scale.
- Validity evaluation is done by an expert panel, which consists of three experts: two public health experts and one psychiatry expert, to evaluate the relevance, feasibility, and comprehensiveness of the tool.

- A good internal consistency between terms of different domains was shown with a Cronbach's alpha ranging from 0.75 to 0.94.

Statistical analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS version 27). Descriptive analyses were performed to obtain the means, deviations, and frequencies. Bivariate analyses were performed using paired sample t-test for continuous variables and McNemar for categorical variables. P -value < 0.05 was considered statistically significant.

A knowledge score was calculated by summing the number of correct answers for all knowledge items answered by all nurses (28 items). The total knowledge score for each of them ranged from 0 to 28, depending on the number of correct answers. For each item, a correct answer was given a value of 1, and an "incorrect" answer was given a 0 value.

Results

A total of 63 female nurses were included in the present study. The mean age of participants was 23.17 ± 1.45 , and their mean years of experience was 2.87 ± 1.16 . Seventy-six percent of them had previously heard of PPD. The most frequent sources of their information were nursing studies, followed by conferences. Two-thirds of them had completed secondary education. The most common form of management for PPD cases reported by the nurses was reassurance to the family (63.5%), which was followed by referral to a psychiatrist (28.6%) (Table 1).

Regarding nurses' knowledge about risk factors for PPD, 5 out of 10 questions didn't reveal improvement in the answers after the educational program. In the following 3 questions: Do symptoms of depression continue for two weeks or more until diagnosed? Can women be expected to be more susceptible to PPD during pregnancy? And must doctors from different specialties be able to diagnose PPD? Most nurses answered them correctly before and after the educational program. And for the other two questions, Is PPD a pathological phenomenon? The correct answer would be "yes," as (30.6%) of nurses answered yes before the intervention versus (32.3%) after it. Does PPD rarely occur? The correct answer would be "no," as (25.4%) of nurses answered no before the intervention versus (22.2%) after it. The total knowledge score about symptoms and diagnosis of PPD improved significantly after the intervention, with a mean score of 7.23 ± 1.32 compared to 6.13 ± 1.97 before it (p -value < 0.001) (Table 2).

Regarding nurses' knowledge about risk factors for PPD, 4 out of 13 questions didn't reveal improvement in

Table 1 Socio-demographics characteristics of the Nurses (N= 63)

Item		Mean (SD), Min–Max
Age		23.17(1.45), 20–27
Years of experience		2.87 (1.16), 1–5
Item		N (%)
Education	Secondary school	42(66.7)
	Bachelor	21(33.3)
Ever heard of postpartum depression (PPD)		48 (76.21)
Source of information	Study	34 (54)
	Work	13 (20.6)
	Workshops / training courses	13 (20.6)
	Conferences	20 (31.7)
The best PPD management	Reassure the family	40 (63.5)
	Description of an antidepressant	5 (7.9)
	Referral to a psychiatrist	18 (28.6)

Table 2 Nurses' knowledge about PPD symptoms and diagnosis before and after the educational program

Items (correct answer)	Pre N (%)	Post N (%)	P value
PPD is a normal phenomenon (no)	11 (17.5)	29 (47.5)	< 0.001*
PPD is a pathological phenomenon (yes)	19 (30.6)	20 (32.3)	0.991
PPD is a pathological phenomenon that affects the mother and the newborn (yes)	46 (73)	61 (96.8)	< 0.001*
PPD often occurs within 6 weeks of giving birth (yes)	42 (66.7)	55 (85.7)	0.004*
Symptoms of depression continue for two weeks or more until diagnosed (yes)	46 (73)	50 (79.4)	0.503
Symptoms of PPD may be accompanied by delusions and hallucinations (no)	52 (83.9)	63 (100)	0.004*
There is a scale to accurately and objectively diagnose PPD (yes)	49 (77.8)	58 (92.1)	0.022*
Women can be expected to be more susceptible to PPD during pregnancy (yes)	44 (69.8)	52 (82.5)	0.096
PPD rarely occurs (no)	16 (25.4)	14 (22.2)	0.804
Doctors from different specialties must be able to diagnose PPD (yes)	49 (77.8)	54 (85.7)	0.302
Total knowledge score	6.13 (1.97),	7.23 (1.32),	< 0.001*
Mean (SD), Min–Max#	3–16	3–10	

* Sig p value, test of sig Mc Nemar test, # test of sig paired t test

the answers after the educational program, as most of the nurses answered them correctly before and after the educational program. The four questions are: Do maternal chronic and organic diseases are risk factors for PPD? Is advanced maternal age linked to PPD? Does an unwanted pregnancy increase PPD? And does the poor financial condition of the family increase the risk of PPD? The total knowledge score significantly improved after the intervention, with a mean score of 11.52 ± 1.49 compared to 9.69 ± 1.94 before (p -value < 0.001) (Table 3).

Out of 3 questions asking about nurses' knowledge about the treatment of PPD, one question didn't reveal improvement in the answers after the educational program. The question was whether PPD requires psychological and social support; most nurses answered it correctly before and after the educational program: (98.4%) before and (93.7%) after it. The total knowledge

score about treatment of PPD significantly improved after the intervention, with a mean score of 2.68 ± 0.59 compared to 2.14 ± 0.8 before (p -value < 0.001). And regarding nurses' knowledge about complications of PPD, one of its two questions didn't improve: "Does PPD affect the mother's ability to care for the newborn and herself?" as most of the nurses answered it correctly before and after the educational program: (81%) before and (90.5%) after it. Furthermore, the total knowledge score improved in understanding PPD complications, with a mean score of 1.81 ± 0.4 after the intervention compared to 1.54 ± 0.59 before (p -value = 0.006) (Table 4).

The overall knowledge score about PPD significantly improved after the intervention, with a mean score of 23.2 ± 2.5 compared to 19.56 ± 3.49 before (p -value < 0.001) (Fig. 1).

Table 3 Nurses' knowledge about PPD risk factors before and after the educational program (N=63)

Item (correct answer = yes)	Pre N (%)	Post N (%)	P value
Genetic factors are linked to PPD	29 (46)	43 (68.3)	0.014*
The mother's previous history of depression increases the risk of PPD	35 (55.6)	53 (84.1)	0.004*
Hormonal change after birth increases the risk of PPD	50 (79.4)	60 (95.2)	0.013*
Suffering from premenstrual syndrome increases the risk of PPD	52 (83.9)	59 (93.7)	0.031*
Maternal chronic and organic diseases are risk factors for PPD	54 (85.7)	54 (85.7)	---
Advanced maternal age is linked to PPD	42 (66.7)	50 (79.4)	0.096
Smoking is linked to PPD	42 (66.7)	52 (82.5)	0.041*
Dystocia and its complications increase the risk of PPD	42 (66.7)	54 (85.7)	0.002*
The weakness of the newborn and the deterioration of his health increases the risk of PPD	50 (80.6)	58 (92.1)	0.039*
An unwanted pregnancy increases PPD	50 (79.4)	58 (92.1)	0.06
An unstable marital relationship is a risk factor for PPD	51 (81)	60 (95.2)	0.012*
The lack of psychological support for the mother increases the risk of PPD	57 (90.5)	63 (100)	0.031*
The poor financial condition of the family increases the risk of PPD	60 (95.2)	62 (98.4)	0.625
Total knowledge score	9.69 (1.94),	11.52(1.49),	<0.001*
Mean (SD), Min–Max#	4–13	7–13	

* Sig p value, test of sig Mc Nemar test, # test of sig paired t test

Table 4 Nurses' knowledge about PPD treatment and consequences before and after the educational program (N=63)

Items (correct answer)	Pre N (%)	Post N (%)	P value
Knowledge about PPD treatment			
PPD treated by medications only (no)	30 (47.6)	53 (84.1)	<0.001*
PPD requires psychological and social support (yes)	62(98.4)	59 (93.7)	0.37
PPD sometimes requires hospitalization to a psychiatric facility (yes)	43(68.3)	57 (90.5)	0.003*
Total knowledge score	2.14(0.8)	2.68 (0.59)	<0.001*
Mean (SD), Min–Max#	1–3	0–3	
Knowledge about PPD consequences			
PPD affect the mother's ability to care for the newborn and herself (yes)	51 (81)	57(90.5)	0.18
PPD may lead the mother to commit suicide or hurt the newborn (yes)	46 (73)	57 (90.5)	0.027*
Total knowledge score	1.54 (0.59)	1.81 (0.4)	0.006*
Mean (SD), Min–Max#	0–2	0–2	

* Sig p value, test of sig Mc Nemar test, # test of sig paired t test

Discussion

Postpartum depression (PPD) is a mental health disorder that has received little attention in maternal healthcare services [18]. The rate of PPD diagnoses is increasing, so each woman deserves support [2]. The nurses are considered in the best position to care for postpartum women and assess their psychological status [18]; therefore, this study aimed to compare the knowledge of nurses at ASU Maternity Hospital before and after the implementation of an educational program regarding PPD.

The present study revealed that around three-fourths of nurses had previously heard of PPD, and the most frequent sources of their information were nursing studies followed by conferences. The results of a Ghanian

study revealed that a higher proportion of nurses had heard about PPD (91.2%), and the most reported source of information was also during their study (87%) [12]. Conversely, most nurses in Ankara reported that most of them do not know the definition of PPD (84.4%) [14].

The current study showed that the most common form of PPD management reported by nurses was reassurance to the family (63.5%), followed by referral to a psychiatrist (28.6%). This may be attributed to many nurses who agreed that PPD is predisposed to a lack of social or familial support [12]. While nurses are not directly involved in PPD treatment, a few (7.9%) have knowledge regarding the use of antidepressants in women with PPD [10].

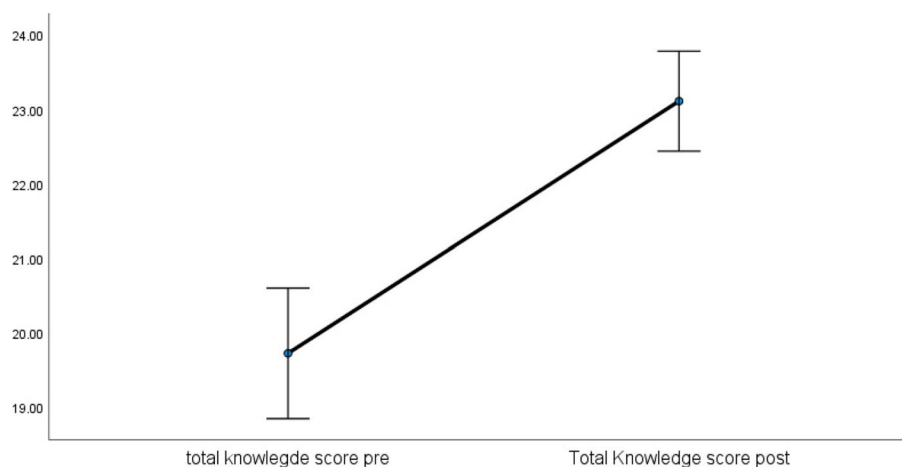


Fig. 1 Comparison between total knowledge score before and after the educational program

The knowledge score of PPD symptoms and diagnosis improved significantly after the intervention, with a mean score of 7.23 ± 1.32 compared to 6.13 ± 1.97 before it. These findings highlight the effect of health education and intervention in enhancing awareness and understanding of nurses toward PPD [19, 20]. Therefore, nurses should begin educating new mothers and their families about the clinical manifestations of PPD, and how to detect PPD symptoms [21]. This knowledge will empower the woman to take care of herself and her child, determine the normal course of the mother's journey, and distinguish between normal and abnormal physical and mental symptoms during the postpartum period [21]. Besides, educating a postpartum woman at each clinic visit from the beginning of her pregnancy would help her maintain her mental health following delivery [18]. It is worth noting that the mood disorder can affect women during pregnancy or after childbirth, which is called perinatal depression [5]. Furthermore, the Saudi Arabian nurses highlighted the significance of PPD screening, which should be carried out to identify any mental health problems and enable early intervention before postpartum women reach the chronic stage and become more difficult to treat [18].

Regarding nurses' knowledge about risk factors for PPD, the knowledge score significantly improved after the intervention, with a mean score of 11.52 ± 1.49 compared to 9.69 ± 1.94 before. Many studies have focused on the different risk factors for PPD. A woman with personal or family history of depression or other mental health disorders is more likely to develop PPD, suggesting a genetic predisposition [22, 23]. PPD may start because of the major hormonal changes that take place during the postpartum period, especially the sharp drop in progesterone and estrogen levels [24]. Lack of social support

can exacerbate new mothers' feelings of stress, exhaustion, and loneliness, increasing the risk of developing PPD [12, 23, 25]. High-stress levels, such as financial difficulties, relationship problems, or significant life events, can contribute to developing PPD [26]. During the postpartum period, perceived stress was strongly correlated with anxiety and depressive symptoms [27]. Pregnancy or birth complications such as preterm birth, dystocia, and pregnancy loss, medical complications, or difficulties with the baby's health increase the risk for PPD [22]. An unplanned or unwanted pregnancy may lead to PPD [23]. In addition, PPD is associated with smoking during pregnancy [28] and advanced maternal age [29].

The knowledge score about PPD treatment was significantly improved after the intervention, with a mean score of 2.68 ± 0.59 compared to 2.14 ± 0.8 before. Effective depression treatment can include a combination of counseling, medication therapy, referrals, or even hospitalization, and the first step to treatment is talking to a health care provider [2, 6, 7]. Educational programs enable nurses to identify PPD and provide appropriate care based on women's needs [18]. In addition, nurses' confidence and capacity have been demonstrated to be positively impacted by training programs like nurse-delivered counseling [30].

Concerning the knowledge score of PPD consequences, it improved with a mean score of 1.81 ± 0.4 after the intervention compared to 1.54 ± 0.59 before. PPD seriously harms the mother-child bond [8, 9]. It can greatly affect a mother's capacity to give her child the best care possible, which could have negative effects on both. PPD mothers may find it difficult to provide their children with the necessary maternal care, which can lead to maternal behaviors, weakened maternal-infant attachment, and difficulties with breastfeeding and infant

feeding practices. These implications may have a lasting effect on the emotional, cognitive, and behavioral development of infants, in addition to their general health and wellbeing [22]. Furthermore, PPD may predispose to suicide, which is a leading cause of maternal mortality [31] and accounts for about 20% of postpartum deaths [32]. So, detecting and understanding these consequences is crucial for healthcare providers [22].

Overall, the total knowledge score of PPD significantly improved after the intervention, with a mean score of 23.2 ± 2.5 compared to 19.56 ± 3.49 before. It is crucial to provide ongoing education to nurses so they can evaluate the mental health of women, identify PPD, use screening instruments, and deliver the best nursing interventions based on the requirements of the women [18]. Enhancing nurses' mental health knowledge could make a major difference in supporting maternal mental health [33]. Moreover, the nurses in Saudi Arabia suggested integrating mental healthcare with maternity services and establishing clinics for maternal mental health [18].

Strengths and limitations

The study addressed a significant issue in healthcare: PPD, which affects mothers and families. The study aimed at improving awareness through education, which is potentially effective in changing nurses' knowledge and practices. The quasi-experimental design is ethical and applicable to real-life situations. Regarding limitations, the study was conducted within a single institution, which limits the generalizability of the findings to a broader population of nurses and the lack of random assignment.

Conclusion and recommendations

This study demonstrates the positive impact of a targeted health education program on enhancing nurses' awareness about PPD. The program effectively increased knowledge levels among participating nurses, empowering them with essential skills to recognize, assess, and respond to PPD in their clinical practice. The improvement in awareness signifies the importance of implementing focused educational interventions to enhance nurses' ability to identify this critical maternal mental health issue. So, healthcare institutions should conduct regular education programs focused on PPD awareness in the nursing curriculum that will ensure that nurses remain informed and up to date. Moreover, emphasizing the importance of implementing screening and referral protocols for PPD within healthcare facilities is crucial to improving maternal mental health outcomes and the overall quality of care for women during PPD.

Abbreviations

ASU Ain Shams University
PPD Post partum depression
SD Standard deviation

Acknowledgements

The authors would like to thank all nurses who have participated in completing the educational program.

Authors' contributions

R.S.: conceptualization, methodology, and statistical analysis; S.H.: constructing the questionnaire, writing introduction; A.F.: data collection, health education; and S.S.: writing original manuscript and editing, ethical approval. All authors have read and agreed to the published version of the manuscript.

Funding

This work did not receive any funding.

Availability of data and materials

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study was conducted after approval of the Ethical Committee of Ain Shams University Hospitals under acceptance number FMASU R41/2024 and was registered on clinicaltrials.gov with identifier number NCT06424496. Hospital administration approval and informed consent from the participants, ensuring the confidentiality of data, were obtained. All procedures performed were in accordance with the ethical standards of the institutional research committee in accordance with the Helsinki Declaration, 2013.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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Received: 24 June 2024 Accepted: 30 August 2024

Published online: 27 September 2024

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