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Original Research

High-Risk Factors for Depression in Women before Performing an Elective Termination of Pregnancy: A Prospective Study

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Abstract

Background: As the phenomenon becomes increasingly prominent, the medical community is paying more and more attention to the health of women with elective termination of pregnancy. This study investigated the incidence of preoperative pre-abortion and its high-risk factors in elective termination of pregnancy women. Health interventions were used to reduce the incidence of such pre-abortion, and targeted to the post-abortion care. **Methods**: Using a convenient sampling method, 170 women who elected to terminate pregnancy in the gynecological clinic of Beijing Ditan Hospital from 1 June 2019 to 1 June 2020 were selected. A questionnaire in two parts was used as a research tool. General information collected mainly included the presence or absence of sexually transmitted diseases, age, address, education, economic level, occupation, etc., as well as the self-measurement Self-rating Depression Scale (SDS) for pre-abortion. **Results**: The average SDS score of 170 women who have elective termination of pregnancy was 51.2 $\pm$ 11.7. With a SDS score $\geq$53 points in 75 patients, the incidence of depression was 44.1% (75/170). Factors associated with depression were patient age (p = 0.002), education level (p = 0.040), and the man's refusal for use of contraception during sexual intercourse (p = 0.000). **Conclusions**: Our research suggests that younger age, lower education, and inactive use of male contraception during sex are risk factors for pre-abortion in women with abortion. Physicians should consider these findings for early detection of pre-abortion and timely intervention for such women.

Keywords: elective termination of pregnancy; depression; sexually transmitted diseases

1. Introduction

According to statistics, approximately 48 million women in the world have elective termination of pregnancy every year, while the incidence of induced elective termination of pregnancy among Chinese women is 7.85 million per year [1,2]. Studies have shown that abortion can cause varying degrees of physical and mental harm to women, and in some cases, may lead to death [3]. The mental state of women with induced elective termination of pregnancy is often related to various postoperative diseases, especially postoperative depression [4]. Depression, a mental disorder characterized by persistently depressed mood, is a common disease that endangers human physical and mental health. As the problem becomes increasingly prominent, the medical community is paying more and more attention to the health of women with abortion [5]. However, to date, China has paid scant attention to the psychological aspects such as preoperative negative emotions of elective termination of pregnancy, and has not explored better preoperative intervention methods to affect the outcome of this population. This study explores the incidence and influencing factors of preoperative depression in women with elective termination of pregnancy, and provides evidence for implementing early mental health intervention, reducing the occurrence of such pre-abortion, and improving post-abortion targeted care [6].

2. Materials and Methods

2.1 Research Subjects

This is a prospective study. Women who planned to undergo elective termination of pregnancy in the gynecological ward and outpatient clinic of Beijing Ditan Hospital from 1 June 2019 to 1 June 2020 were selected. Inclusion criteria were: ① Patients within 12 weeks of gestation. Meet the indications for elective termination of pregnancy; ② Age $\geq$18 years old; ③ Have adequate understanding and expressive ability; ④ Patients agree to voluntarily participate in the survey. Exclusion criteria: ① Serious complications during pregnancy; ② Patients who did not cooperate or quit midway; ③ Patients with family history of genetic mental disorders; ④ Recent major family accidents.

The study was reviewed and approved by the Ethics Committee of Beijing Ditan Hospital Affiliated to Capital Medical University (Ditan Hospital of Capital Medical University, Jing Di Lun Ke Zi 56 (2019) No. (076)-01).

2.2 Sample Size Calculation

The sample size was calculated according to the formula: n = (Z1-α/2/d)2p(1-p), α = 0.05, and the allowable error d was set to 8.0%. According to previous survey results, the incidence of pre-abortion in women with elective termination of pregnancy was 30.0% [6]. Considering the questionnaire data may be missing or incomplete, the sample size was increased by 20.0%, and the final sample size was n = 180.

2.3 Research Tools

A questionnaire in two parts was used as a research tool.

2.4 General Information

The following data were obtained from all participants: information on sexually transmitted diseases (STD), age, address, education, economic level, occupation; whether the patient was accompanied by a male partner; whether contraception was used; whether the patient had regular sex; whether Repeat abortion; whether the husband actively uses contraception; whether contraceptives are easily available and whether the cost of contraceptives is a major concern; whether there is theoretical knowledge of family planning and acceptable educational methods about family planning.

2.5 Self-rating Depression Scale (SDS)

The Self-rating Depression Scale (SDS) [7], developed by William W. K. Zung in 1971, is simple to use and can intuitively reflect the subjective feelings of patients with depression. The scale includes a total of 20 items. Forward scoring is 1, 2, 3, and 4 points; reverse scoring is 4, 3, 2, and 1. Reverse scoring questions include questions 2, 5, 6, 11, 80, 12, 14, 16, 17, 18, and 20.

The cumulative score of each item is taken as the rough score in total, and then multiplied by 1.25 to generate the standard score in total, classified as follows: SDS $<$53 points indicated no depression; SDS $\geq$53 points indicated depression (53–63 points are mild depression, 64–74 are medium depression, $\geq$75 is severe depression). The higher the score, the more severe the depression. The scale's Cronbach's alpha coefficient was 0.874, and its content validity was 0.853, with good internal consistency [8]. The advantage of SDS is that it is easy to use, can guide the self-assessor to carry out more effective evaluation without special training, and its analysis is more convenient. It could adequately convey the recent psychological state of the respondents, which could then be applied to rough screening, emotional state assessment and investigation, scientific research, etc.

2.6 Investigation Method

All psychometric measurements were conducted one-on-one in an independent, quiet psychiatric clinic, and the questionnaires were distributed on-site by three trained investigators (qualified paramedics trained on relevant scale questionnaires). The purpose of the research was told to the women participating in the survey and the survey was conducted with informed consent. The questionnaires were performed anonymously, filled out in the clinical setting and withdrawn directly after completion.

The investigators were from the Gynecology Clinic of Beijing Ditan Hospital, qualified as a nurse in charge, with training in "Standards for Contraceptive Services After Induced Abortion (2018 Edition)" and "2018 WHO Guidelines: Medical Management of Induced Abortion". Investigators were trained on correct use the depression scale; at the end of the assessment, they carefully checked results and reminded self-assessors not to overlook or repeat any items.

2.7 Statistical Analysis

Two persons entered the data, and Statistical Program for Social Sciences 2.0 software (SPSS, Inc., Chicago, IL, USA) was used for statistical description and inference. Data were presented as mean $\pm$ standard deviation (SD). Measurement data is expressed as a percentage (%). Two independent samples *t*-test and analysis of variance were used respectively according to whether the data conformed to the normal distribution. A p value of $<$0.05 was considered statistically significant for the difference.

3. Results

3.1 Overview

A total of 180 questionnaires were distributed; 170 valid questionnaires were collected with an effective recovery rate of 94.4%. The study surveyed 170 cases of routine elective termination of pregnancy. 97 (57.1%) women had STDs, 99 (58.2%) women were married, and 91 (53.5%) women were college-educated and above. The age group of 26–35 included 93 women (54.7%); 147 (86.5%) women were employed; 143 (84.1%) women were accompanied by a male; and 135 (79.4%) women used contraception.

3.2 Depression Rates among Women who have Elective Termination of Pregnancy

The average SDS score of 170 women who have elective termination of pregnancy was 51.2 $\pm$ 11.7. By the normality test, the population satisfied a normal distribution. With a SDS score $\geq$53 points in 75 patients, the incidence of depression was 44.1% (75/170). Of these women, 56 (32.9%) had mild depression, 15 (8.8%) had medium depression, and 4 (2.4%) had severe depression according to classification.

Table 1. Comparative analysis results of depression status of elective termination of pregnancy in different groups.

Variable	Number of cases (n (%))	Number of cases with depression (n (%))	Depression ($\bar{x} \pm S$)	p
STD				0.468
Yes	97 (57.1)	40 (41.2)	51.8 ± 11.9	
No	73 (42.9)	35 (45.0)	50.3 ± 11.4	
Territorial				0.465
Urban area	96 (56.5)	47 (49.0)	51.7 ± 11.5	
Suburbs	74 (43.5)	28 (37.8)	50.4 ± 12.0	
Marital status				0.336
Unmarried	71 (41.8)	34 (48.0)	52.2 ± 12.6	
Married	99 (58.2)	41 (41.4)	50.4 ± 11.0	
Education				0.002
Junior high school and below	29 (17.1)	18 (62.1)	56.9 ± 9.7	
High schools	50 (29.4)	23 (46.0)	52.4 ± 10.3	
Tertiary universities and above	91 (53.5)	34 (37.4)	48.6 ± 12.3	
Age				0.040
16–25 years old	45 (26.5)	23 (51.1)	56.9 ± 9.7	
26–35 years old	93 (54.7)	41 (44.1)	50.9 ± 11.0	
36 years old and above	32 (18.8)	11 (34.4)	47.5 ± 12.6	
Economic degree				0.649
Poor	19 (11.2)	11 (57.9)	53.4 ± 13.9	
Average	135 (79.4)	58 (43.0)	50.9 ± 11.5	
Good	16 (9.4)	6 (37.5)	50.3 ± 11.4	
Occupation				0.603
No	23 (13.5)	9 (39.1)	52.3 ± 13.5	
Yes	147 (86.5)	66 (44.9)	50.9 ± 11.4	
The man accompanied				0.435
Yes	143 (84.1)	61 (42.7)	50.8 ± 11.6	
No	27 (15.9)	14 (51.9)	52.9 ± 12.5	
Contraceptive measures are taken				0.117
Yes	135 (79.4)	58 (43.0)	50.5 ± 11.8	
No	35 (20.6)	17 (48.6)	52.9 ± 12.5	
Regular sex life				0.524
Yes	123 (72.4)	56 (45.5)	51.5 ± 11.6	
No	47 (27.6)	19 (40.4)	50.2 ± 11.9	
Underwent abortion				0.294
Yes	81 (47.6)	38 (46.9)	52.1 ± 11.7	
No	89 (58.2)	37 (41.6)	50.3 ± 11.7	
The man actively uses contraceptives				0.000
Often	87 (51.2)	32 (36.8)	47.9 ± 11.5	
Occasionally	55 (32.4)	24 (43.6)	52.5 ± 10.2	
Less	28 (16.5)	19 (67.9)	56.3 ± 12.9	
Easy access to contraceptive methods				0.370
Yes	121 (71.2)	52 (43.0)	50.7 ± 12.5	
No	49 (28.8)	23 (47.0)	52.3 ± 9.7	
Contraceptive price				0.552
Important	62 (36.5)	30 (48.4)	50.4 ± 11.9	
Not important	108 (63.5)	45 (41.7)	51.7 ± 11.6	
Theoretical knowledge				0.083
Not good	6 (3.5)	5 (83.3)	57.9 ± 10.4	
Average	39 (22.9)	18 (46.2)	53.7 ± 9.5	
Good	125 (73.5)	52 (41.6)	50.0 ± 12.2	
Method of promotion				0.0571
Face-to-face consultation	57 (33.5)	30 (52.6)	53.5 ± 11.2	
Promotional brochure	85 (50.0)	31 (36.5)	48.78 ± 11.1	
Media video	13 (7.6)	8 (61.5)	55.2 ± 14.3	
Group promotion	15 (8.8)	6 (4.0)	52.2 ± 12.9	

3.3 The Influencing Factors of Depression in Elective Termination of Pregnancy

The statistical results showed that 13 factors, such as region, marital status, economic level, occupation, age, educational level, sexually transmitted diseases, and whether the man accompanied the abortion, had no effect on the depression of women with elective termination of pregnancy ($p > 0.05$). However, the incidence of depression differed significantly by in different groups across age, education level, and men's active use of contraceptives during sex ($p < 0.05$, Table 1).

4. Discussion

Women with elective termination of pregnancy are considered a high-risk group. The results of our study showed that the incidence of depression in women with elective termination of pregnancy was 33.3%, and the average total score of depression was 51.2 $\pm$ 11.7 points. Our study is consistent with those reported by Xie *et al.* [9], yet differed from other studies [10]. Recurrent miscarriages often cause depression, anxiety, pessimism, hostility, and stigma; they can seriously affect women's physical and mental health [11] and may lead to post-traumatic stress disorder [12].

Depression also affects the postoperative outcome of patients. Our studies have found that severe psychological stress can reduce the CD4/CDS ratio, resulting in decreased cellular immune function. Before miscarriage, during the perinatal period, fluctuations in hormone levels in the first trimester increase the susceptibility to depression [13].

Our findings suggest that women's age, educational background, and active contraceptive use during sex are factors that influence depression in women with elective termination of pregnancy. ① In terms of age, unmarried women under 25 demonstrated the highest SDS score, which is consistent with other domestic studies [14]. Abortion poses a significant threat to the physical and mental health of young women who fear surgical complications, social discrimination, and confusion about future relationships and marital life [15]. ② In terms of educational background, women in junior high school and below showed the highest SDS score, primarily related to the group's low knowledge of reproductive health, poor self-health awareness of sexual life, and low income. As a negative life event, elective termination of pregnancy may also cause economic damage to women and psychological burden [16,17]. For such women, painless abortion can be selected for unintended pregnancy, which can increase the comfort of the operation, reduce the physical trauma caused by stress, and avoid the negative mental state [18,19]. ③ Males' inactive contraception easily leads to higher SDS scores of females. In certain cultures or societal milieus, men's dominance in sex life not only affects women's willingness to use contraception, but also directly affects the success rate of contraception. Improving male reproductive health-related knowledge and active participation in contraceptive behavior can thereby reduce the incidence of unintended pregnancy [20]. The development of reproductive health strategies should consider the needs of men [21], promote male participation in contraception, and reduce the psychological burden of women who have miscarried [22,23].

Women who elect to terminate pregnancy, regardless of whether they have STDs, have a disproportionately high degree of depression compared to the general population; this is especially so for vulnerable groups of young age and low education level. These women require increased attention and care as well as access to professional psychotherapists who can provide perioperative psychological support.

Limitations of this study include its limited sample size and lack of multi-center prospective studies. The results of this study are short of analogy, but due to the limited scope of research on elective termination of pregnancy with sexually transmitted diseases, this study can be used as a reference for basic research data.

5. Conclusions

Our research suggests that younger age, lower education, and inactive use of male contraception during sex are risk factors for pre-abortion in women with abortion. In the future, we would expand the scope of research and develop an intervention model in line with specialized hospitals. In post-abortion care, various interventions such as the Omaha Intervention System [24] could be applied. We would subsequently popularize contraceptive knowledge, promote correct sexual attitudes, implement effective contraception methods, guide women's reproductive health-related behaviors, reduce miscarriage risk, improve reproductive health, serve patients with post-abortion depression, and improve their mental health.

Author Contributions

JL, YHZ, ZYZ conducted research, participated in data collection, and drafted the manuscript; HXZ and MLX conducted statistical analysis and participated in the design; LL, WY, MLC participated in the acquisition, analysis or interpretation of the data and drafted the manuscript; Final manuscript read and approved by all authors.

Ethics Approval and Consent to Participate

All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of Beijing Ditan Hospital Affiliated to Capital Medical University (approval number: Jing Di Lun Ke Zi (2019) No. (076)-01).

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Conflict of Interest

The authors declare no conflict of interest.

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