

This is a provisional PDF only. Copyedited and fully formatted version will be made available soon.



P O L I S H G Y N E C O L O G Y

GINEKOLOGIA

POLSKA

ORGAN POLSKIEGO TOWARZYSTWA GINEKOLOGICZNEGO
THE OFFICIAL JOURNAL OF THE POLISH GYNECOLOGICAL SOCIETY

ISSN: 0017-0011

e-ISSN: 2543-6767

Basic hope, level of stress and strategies used to cope with stress after miscarriage during hospitalization and 3 months after its completion

Authors: Katarzyna Bialek, Marcin Sadowski, Olga Adamczyk-Gruszka, Jakub Młodawski, Grzegorz Swiercz

DOI: 10.5603/gpl.96215

Article type: Research paper

Submitted: 2023-06-27

Accepted: 2023-09-10

Published online: 2023-11-14

This article has been peer reviewed and published immediately upon acceptance. It is an open access article, which means that it can be downloaded, printed, and distributed freely, provided the work is properly cited.

Articles in "Ginekologia Polska" are listed in PubMed.

Basic hope, level of stress and strategies used to cope with stress after miscarriage during hospitalization and 3 months after its completion

Katarzyna Bialek^{1,2}, Marcin Sadowski¹, Olga Adamczyk-Gruszka^{1,2}, Jakub Młodawski^{1,2}, Grzegorz Swiercz²

¹*Collegium Medicum Jan Kochanowski University, Kielce, Poland*

²*Clinic of Obstetrics and Gynaecology, Provincial Combined Hospital, Kielce, Poland*

Corresponding author:

Katarzyna Bialek

Collegium Medicum Jan Kochanowski University, Kielce, Poland

e-mail: katarzynabialek@vp.pl

ABSTRACT

Objectives: Basic hope is important for successfully coping with, and adapting to, difficult situations. The aim of the study was to determine the level of stress and basic hope and identify the associated coping processes in women after miscarriage during hospitalization and three months after discharge.

Material and methods: A total of 161 women hospitalized due to miscarriage were included. To evaluate the level of stress, basic hope and coping strategies, the following standardized questionnaires were used: the Perceived Stress Scale (PSS-10), the Inventory to Measure Coping Strategies with Stress (Mini-COPE) and the Basic Hope Inventory (BHI-12).

Results: 110 patients declared high levels of stress during hospitalization and 80 claimed the same three months after discharge. The level of stress decreased after three months ($p < 0.001$). Adaptive stress-coping strategies were employed more frequently than maladaptive stress-coping strategies. During hospitalization, the most frequently used strategies were acceptance and seeking emotional support; with planning, acceptance, seeking emotional and instrumental support being used three months after discharge. The sense of basic hope increased after three months ($p < 0.001$). The level of the sense of basic hope correlates

significantly ($p < 0.001$) and negatively ($r < 0$) with the severity of stress symptoms during and after the hospital stay.

Conclusions: The sense of basic hope increased significantly after three months in relation to the level experienced during the hospitalization period, and the intensity of stress decreased. Preventive women-oriented interventions are needed to minimize the risk of post-traumatic stress disorder.

Keywords: miscarriage; stress; coping strategies; basic hope; hospitalization

INTRODUCTION

Miscarriage is the most encountered failure of procreation [1]. In Poland, miscarriage is defined as the loss of pregnancy before the 22nd week of pregnancy or when the weight of the dead foetus does not exceed 500 g. As many as 80% of miscarriages occur in the first trimester of pregnancy. Recurrent miscarriages account for 1–2% of cases [2].

Pregnancy loss may cause considerable psychological stress in women [3-5]. It has been demonstrated that the stress rates after miscarriage range from 28% to 45% both immediately after the event and even six months afterwards [6]. The women who have experienced a miscarriage have a seven-fold higher risk of developing post-traumatic stress disorder (PTSD) symptoms compared to the women who have not been pregnant before [4], and the prevalence of PTSD in this group reaches up to 39% [5]. Women who had experienced miscarriages for the second and third time showed a significant degree of severity of PTSD symptoms, while a moderate degree was noted by 64.29% of women for whom it was the first reproductive failure [7].

Understanding the nature of pregnancy loss is therefore extremely important in order to provide appropriate support, thereby minimizing mental health morbidity and long-term health care costs. One form of work in this area might be to inspire hope. Hope is important for dealing effectively with difficult situations, making decisions, adapting psychosocially, or improving the quality of life. It is also considered to be an important factor in the recovery process [8]. Higher levels of hope have been associated with reduced anxiety and depression and improved quality of life in patients treated for chronic somatic illnesses, including oncological ones [9, 10]. Hope is therefore defined as a positive phenomenon, which is crucial for the development of adaptive and constructive coping strategies.

There also exists a stance whereby hope is a specific disposition of the individual. This is related to the paradigm of basic hope by Erikson [11], who defined basic hope as a psychological structure which is formed in early childhood and plays a key motivational role

in regulating an individual's behaviour. Its development is the result of an appropriate relationship between the caregiver and the child, which provides a sense of security, satisfies the need for closeness, love and bonding. Therefore, the basic hope is the inner conviction that the world is well organised and benevolent to people. It is, then, associated with a belief in orderliness, meaningfulness and the purposefulness of events in the surrounding world. Thus, the function of basic hope is to be convinced that it is possible to re-establish order when it is disrupted, despite confusion, chaos or doubts about the meaning of life and objective justice. In this sense, the level and meaning of basic hope is a key component for the functioning of a person, acting as a buffer protecting them from fear, confusion, a sense of loneliness and at the same time fulfilling the function of integration, regulation in addition to facilitating the course and process of growth. As a result, basic hope triggers efforts to improve circumstances, solve a problem, or seek constructive remedial strategies. It is understood as a person's generalized and complex conviction that the surrounding world is well ordered and is generally favourable to people. This particular concept was used in this work.

The aim of the study was to determine the level of stress intensity, basic hope and analysis of coping strategies in difficult situations amongst women who had experienced a miscarriage both during and three months after hospitalization.

MATERIAL AND METHODS

The study was approved by the Bioethics Committee of the Jan Kochanowski University (25/2020). The study was divided into two stages. The first stage of the study took place on day 2 or 3 of hospitalization, and the second one, three months after its completion. The study included 161 patients who were admitted to the Department of Obstetrics and Gynaecology of the Provincial Combined Hospital in Kielce due to miscarriage between September 2019 and August 2021. The rate of returned and completed questionnaires was 77.8%.

The qualification of the respondents included the following inclusion and exclusion criteria:

— inclusion criteria:

- patients hospitalized due to miscarriage,
- the absence of traumatic events within one month before hospitalization following the miscarriage,

- returning completed questionnaires three months after the end of hospitalization,
- being over 18 years of age,
- a consent to participate in the study;

— exclusion criteria:

- patients hospitalized for reason other than miscarriage;
- the experience of a traumatic event within one month before hospitalization following the miscarriage;
- the lack of completed questionnaires three months after the end of hospitalization;
- a history of a psychological dysfunction that prevents the examination or diagnosis of a mental illness (*e.g.*, depression, anxiety disorder, content — thought disorder);
- intellectual disability;
- being under 18 years of age;
- a lack of consent to participate in the study.

The study assumed that the level of stress intensity of the women surveyed was not related to any other traumatic factor (*e.g.*, death of a loved one, catastrophic event), which the respondent may have experienced during the month prior to hospitalization. For this reason, the sociometric survey included a question about whether such a situation had occurred in the previous month, and upon receiving a positive answer, such patients were excluded from the study. The period of one month was adopted for the following reason. According to The American Psychiatric Association Classification of Mental Disorders (Edition 5; DSM-5) [12], exposure to a stressor may result in acute stress disorder (ASD) or PTSD. The symptoms defining ASD and PTSD basically overlap. The most important difference, however, is that the acute stress disorder is characterised by acute stress responses which can occur in the first month after a person's exposure to a traumatic event. These events are, *e.g.*, the death of a loved one, a serious life and health threat, or the experience of physical violence). Post-traumatic stress disorder, on the other hand, refers to the long-term consequences of the injury.

An original survey was used to collect sociometric data. The assessment of the severity of stress levels, coping strategies, and the level of basic hope was performed through standardized questionnaires.

The Perceived Stress Scale (PSS-10) by Cohen et al. [13] in the Polish adaptation of Juczyński and Ogińska-Bulik [14] was employed to assess the level of perceived stress. The scale assesses the intensity of stress related to the respondent's own life situation over the last month. According to the adopted assumption, the intensity of stress is determined not by the

number of stressful events, but by their subjective assessment. The scale consists of 10 questions, of which six have a negative construction (1, 2, 3, 6, 9 and 10), and four have a positive construction (4, 5, 7 and 8). Each question begins with the phrase, "How often in the last month ...", where 0 means never, 1 — almost never, 2 — sometimes, 3 — quite often, 4 — very often. The score for each question ranges from 0 to 4 points, and the overall score reaches from 0 to 40 points. The higher the score, the higher the stress level.

The strategy of coping with difficult situations was analysed thanks to the application of the Inventory to Measure Coping Strategies with Stress (Mini-COPE) questionnaire — Stress Management Inventory by Carver [15] in the Polish adaptation of Juczyński and Ogińska-Bulik [14]. The structure of the questionnaire is based on a theoretical model according to which the remedial actions taken by a person in stressful situations are the result of the interaction between the coping style characteristic of a given person and the characteristics of the situation. Mini-COPE contains 28 sentences specific to a given way of coping with stress. The strategies are divided into four categories: active coping (including: active coping, planning, positive reappraisal), helplessness (including: taking psychoactive substances, cessation of activities, blaming oneself), seeking support (including: seeking emotional support and instrumental support), avoidance behaviours (including: keeping oneself occupied with something else, denial, venting feelings). Three of these strategies create independent factors (turning towards religion, acceptance, sense of humour). The surveyed women evaluate the statements regarding their behaviour in a stressful situation scaling them from 0 to 3, where 0 means: I almost never do so, 1 — I rarely do so, 2 — I often do so, 3 — I almost always do so.

The Basic Hope Inventory (BHI-12) Questionnaire by Trzebiński and Zięba [16] was used to assess the sense of basic hope. According to the authors, hope is understood as the belief of an individual in the order and meaningfulness of the world and its favour towards people. This belief is the determining factor in the human being's constructive response to changes and disruptive events. The questionnaire is intended to assess the way a person responds to stress and trauma, as well as the speed and constructiveness of adaptation to new situations. It consists of 12 statements. A participant determines the extent to which they agree with each statement, using the scale from 1 ("strongly disagree") to 5 ("strongly agree"). The total score is the result of the overall level of basic hope. The maximum score on the scale is 45 points. The higher it is, the greater basic hope is.

Statistical analysis

Quantitative variables were analysed by calculating the mean, standard deviation, median and quartiles. The analysis of the qualitative variables was conducted by calculating the number and percentage of the occurrences of each value. A comparison of the values of quantitative variables in two repeated surveys was made using the Wilcoxon test for bound pairs.

The correlations between quantitative variables were analysed using the Spearman rank correlation coefficient.

A comparison of the values of quantitative variables in two groups was made using the Mann-Whitney test. A comparison of the values of quantitative variables in three or more groups was made using the Kruskal-Wallis test. Once statistically significant differences were detected, a post-hoc Dunn's test analysis was conducted in order to identify groups that differ with statistical significance.

A multivariate analysis of the impact of many variables on the quantitative variable was performed using the linear regression method. The results are presented as regression model parameter values with a 95 percent confidence interval.

The analysis of the returned questionnaires in the second stage of the study was carried out in accordance with the standards proposed by the American Association for Public Opinion Research (AAPOR) [17].

In the statistical analysis, a significance level of 0.05 was adopted. The analysis was performed in the program R, version 4.1.2 [18].

RESULTS

The study involved the participation of 161 women hospitalized due to miscarriage. Most of them were women aged 31 to 35 (36.02%), married (82.61%), living with the husband and/or partner (96.27%), in a provincial city (47.20%), with higher education (64.60%), employed (73.91%) and planning their lost pregnancy (72.67%). The shortest duration of procreative efforts was one month, and the longest one 180 months. The average duration of procreative efforts was $\pm 14.62 \pm 25.02$. Most of the women had one child (42.86%) and had miscarried for the first time (59.01%). The week of pregnancy loss ranged from 6th to 21st. Of all the women surveyed, most of them lost their pregnancy between the 9th and 10th (36.65%) and 6th and 8th week of pregnancy (35.40%). Most of them did not undergo any treatment at a Procreative Health Centre (83.85%). The characteristics of the study group are presented in Table 1.

In the first stage of the study, the patients were also asked to indicate what was subjectively the most important to them during hospitalization because of miscarriage. In the group of women surveyed, it was found that the most important thing during the hospital stay due to a miscarriage is to be informed about each procedure, drug administration and other activities, to give informed consent to each intervention (78.26%) and to provide information about the miscarriage with respect and without third parties (77.64%) and/or available psychological help (70.81%). According to the women surveyed, the least important thing turned out to be a conversation with a chaplain or another clergyman representing their denomination (1.86%).

During the hospital stay, the patients were also asked to select the most subjectively stressful factors concerning their hospitalization. It was demonstrated that the most stressful factors include: the sudden occurrence of miscarriage (62.73%), fear of another pregnancy (62.73%) and the lack of knowledge about the cause of miscarriage (50.31%). Excessive bureaucracy during hospital admission turned out to be the least stressful (3.73%). The above results are presented in Table 2.

Of the 161 women surveyed, 110 (68.32%) declared high levels of stress, 33 (20.50%) average levels, and 18 (11.18%) low levels of stress. After the completion of hospitalization, 80 respondents (49.69%) faced high levels of stress, 45 (27.95%) low, and 36 respondents (22.36%) experienced average levels of stress. Stress levels significantly decreased after three months compared to the levels reached during the hospital stay (Tab. 3).

When assessing coping strategies during the hospitalization, the ones which were the most frequently used were Acceptance and Search for Emotional Support, and the least often used were strategies such as: Denial, Cessation of Activities, Sense of Humour and Taking Psychoactive Substances. three months after the hospitalization ended, the most used strategies were: Planning, Acceptance, Search for Emotional Support and Search for Instrumental Support; and the least frequently used strategies were: Cessation of Activities, Taking Psychoactive Substances and Sense of Humour. The frequency of the Denial strategy decreased significantly after three months as compared to the level reached during the stay ($p = 0.002$), and the frequency of the Planning strategy ($p = 0.023$), Acceptance ($p = 0.019$) and Seeking Instrumental Support ($p < 0.001$) increased significantly after 3 months as compared to the level reached during the hospital stay (Tab. 4).

When assessing the level of basic hope during the hospitalization, 69 (42.86%) women had a low level, 58 (36.02%) had a high level, and 34 (21.12%) reached an average level of basic hope. In turn, three months after the hospitalization ended, 65 respondents (40.37%) had

a high level of basic hope, 53 (32.92%) had a low level, and 43 (26.71%) reached an average level. The level of hope increased significantly after 3 months as compared to the level reached during the hospitalization (Tab. 5).

During the hospital stay, BHI-12 correlated significantly ($p < 0.05$) and positively ($r < 0$) with the frequency of using the Positive revaluation strategy ($r = 0.219$; $p = 0.005$), and significantly ($p < 0.05$) and negatively ($r < 0$) with the level of stress intensity ($r = -0.364$, $p < 0.001$), the frequency of using the Denial strategy ($r = -0.267$; $p = 0.001$), Venting emotions ($r = -0.193$; $p = 0.014$), Cessation of activities ($r = -0.318$, $p < 0.001$) and Blaming oneself strategy ($r = -0.374$, $p < 0.001$). On the other hand, three months after the end of hospitalization, BHI-12 correlates significantly ($p < 0.05$) and positively ($r < 0$) with the frequency of using the Positive revaluation strategy ($r = 0.207$, $p = 0.008$); significantly ($p < 0.05$) and negatively ($r < 0$) with the level of stress intensity ($r = -0.652$, $p < 0.001$), the frequency of using the Denial strategy ($r = -0.308$, $p < 0.001$), Venting feelings ($r = -0.167$, $p = 0.035$), Taking psychoactive substances ($r = -0.175$, $p = 0.026$), Cessation of activities ($r = -0.286$, $p < 0.001$) and Blaming oneself ($r = -0.385$, $p < 0.001$).

The multivariate linear regression model demonstrated that the following strategies are important ($p < 0.05$) independent predictors of the level of a sense of basic hope: Return to religion (the regression parameter is 0.972); Search for instrumental support (the regression parameter is -2.466); Cessation of activities (the regression parameter is -1.927).

The increase in the level of a sense of basic hope correlates significantly ($p < 0.05$) and positively ($r < 0$) with the level of stress intensity ($r = 0.226$, $p = 0.004$) and with the use of coping strategies such as Denial ($r = 0.245$, $p = 0.002$), Cessation of activities ($r = 0.169$, $p = 0.032$) and blaming oneself ($r = 0.218$, $p = 0.005$). Thus, the higher the level of stress intensity and the more frequent the use of these strategies during the hospital stay, the more positive the change in the level of a sense of basic hope. The increase in the level of a sense of basic hope correlates significantly ($p < 0.05$) and negatively ($r < 0$) with the use of the Sense of humour strategy ($r = -0.21$, $p = 0.008$).

The multivariate linear regression model demonstrated that the following independent predictors of the increase in the level of a sense of basic hope are significant ($p < 0.05$): a decrease in the intensity of stress (the regression parameter is 0.175, so a decrease in the intensity of stress by each additional point boosts the rise in the level of hope by an average of 0.175 points).

DISCUSSION

In the literature on the subject related to the process of recovery, the concept of hope is becoming increasingly important in the context of treating patients. Hope is important for coping effectively with difficult situations, making decisions or adaptation [8]. It contributes to greater therapeutic effectiveness, and its loss increases the feeling of loneliness and lack of adaptation to a new situation [19]. It was also found that the level of hope was associated with personal immunity or variability in symptomatology after traumatization [20]. Studies have shown that a level of hope is associated with lower stress, anxiety, and depression [9]. This is consistent with the results obtained in this work. However, the research on basic hope is very limited and so far, has been left without corresponding studies in the context of miscarriage. Despite numerous analyses in foreign literature assessing the psychological reactions of women after miscarriage, the small number of Polish publications makes it extremely difficult to refer to the results presented in our own work, as well as to draw broader conclusions in this context. There is also something left to be desired regarding the inability to compare the results on the level of basic hope after miscarriage with the results of other centres.

The level of hope is related to the preferred style of coping. People with high levels of hope may be more likely to see stressors as a challenge and use more constructive strategies [21]. Therefore, how well a woman can adapt to the emotionally demanding situation of pregnancy loss depends to a large extent on her personal resources, precisely including the level of basic hope, defined as the belief in two traits of the world: a higher order and a general positive attitude towards human beings [22].

Although women experienced high levels of stress, they adopted constructive strategies such as active counselling, planning, positive reappraisal, acceptance, and seeking emotional and instrumental support. This is consistent with the research of other authors [22, 23]. The women who adopt more constructive coping strategies were shown to be more socially active, have a greater tendency to share their feelings about pregnancy loss, and set more realistic goals for the future. On the other hand, those who do not do well often develop unhealthy convictions (for example, that their only hope is a miracle) and behaviours (inability to share feelings, avoiding mothers with children). This assumption agrees with the results of the work. The analysis of regression demonstrated that the using the strategy of the cessation of activities lowers the level of a sense of basic hope.

This issue is worth discussing more broadly. It is interesting that immediately after the miscarriage, while still in the hospital, active coping, planning and seeking instrumental support were of particular importance for the women surveyed, and three months after this

event, women were more inclined to accept, seek support not only instrumental, but also emotional. Moreover, after three months, the frequency of using denial strategies also decreased significantly compared to their level during the hospital stay.

Another observed strategy of coping with the situation of miscarriage was to turn to religion. It was noted that in people looking for some meaning in difficult experiences, as well as among women after experiencing the loss of pregnancy and infertility treatment, the return to religion turned out to be a factor reducing despair [22, 24, 25]. This is also consistent with the results obtained in this work. The analysis of the regression showed that the use of this strategy raised the level of basic hope.

An equally important factor in coping with the experience of miscarriage is to overcome a sense of guilt. It is a condition in which one believes or finds out how they contributed to the loss of pregnancy through something they could have done, or vice versa - something they did not do to prevent it. A study by Barr and Cacciatore [26] on the issue of grief after experiencing a miscarriage found that guilt is one of the four important factors contributing to the intensity of its course. This data is basically consistent with the results obtained by the authors of this work. It was noted that the more often the blaming strategy is used, the lower the level of basic hope is. Conversely, the lower one's level of hope is, the more often they blame themselves. An explanation of the cause of foetal death may be helpful in coping with a sense of guilt [27]. Moreover, the certainty that it was independent of the measures undertaken by the mother increased her psychological well-being [28]. Receiving information about the cause of the miscarriage in the light of the results obtained in this work also turned out to be one of the most important factors during hospitalization.

However, the strategies for coping with infertility treatment derived from the literature worldwide are different from those determined in this study [29, 30]. Withdrawal from social life and the use of avoidance turned out to be among the most widespread strategies in other studies. Women in particular avoided interacting with those who were expecting or already had children. Indeed, from a psychological point of view, a treatment for infertility may cause isolation. After all, such actions intensify a sense of loneliness and exclusion, and above all, increase the instances of not sharing emotions and, as a consequence, not taking actions aimed at seeking support. In addition, it has been noted that isolation as a coping strategy may lead to the onset and/or worsening of the symptoms of depression [31].

Therefore, emotional support proved to be an important factor in the process of coping with miscarriage. This strategy was chosen by the respondents as the most preferred one. This is confirmed by the results of Taşçı et al. [32], which demonstrated that almost 50% of women

needed support in connection with pregnancy loss. Most often, the supporters turned out to be partners/husbands and closest relatives [29, 33]. The analysis of women treated for infertility also showed that the support they received had a positive effect on them [33]. This observation was also supported by the results obtained in this work. It was noted that a conversation with a psychologist was declared as one of the most important needs of women during the hospitalisation caused by miscarriage, as was the chance to express their emotions, not suppress their own feelings and being allowed to experience grief. Moreover, sharing one's emotions was a healing factor in the process of grief after miscarriage [34].

This may correspond to the next issue. It was demonstrated that using the strategy of seeking instrumental support was a factor lowering the level of a sense of basic hope during hospitalisation. However, it can be assumed that seeking information about miscarriage, and at the same time the lack of a clear cause thereof, may intensify the feeling of sadness, frustration and misunderstanding of the situation. This is probably also because three months after the end of hospitalisation, the women ceased to deny the occurrence of miscarriage (the frequency of denial significantly decreased after three months compared to the level during the hospital stay) and began to accept this experience (acceptance strategies were at that time used between often and almost always). This may mean that the women adopted the stance of acknowledging the loss and recognised the fact that statistically about 25% of early pregnancies end in spontaneous miscarriage, most of which remain without an understood aetiology [1]. Therefore, seeking instrumental support and sharing one's emotions might no longer be a healing factor and may lead to experiencing a corrective emotional experience, thus offering an opportunity to distance oneself, gradually release oneself from experiences and thoughts about the miscarriage, which until then had disrupted or prevented optimal functioning.

Some note that the emotional impact of pregnancy loss is underestimated by health care professionals [28, 35]. The women reported dissatisfaction especially when an early stage miscarriage was considered an insignificant or minor medical event [36], when they did not receive adequate information on the course of the miscarriage [37] and an explanation for why it had occurred (although it should be admitted that an explanation is not always possible) [36–38], and the curettage of the uterine cavity was treated as a routine procedure ignoring the aspect of the woman's experience [36]. It was also important for the women not to be separated from the ones who gave birth to a healthy child [37–39]. It was also noted that the women who had experienced miscarriage were less satisfied with the provided care than those who gave birth to a stillborn [40]. They thought that their experience in the face of loss

in the third trimester was marginalised, diminished and lacked information support. This kind of patient treatment after losing a child seemed to suggest that the miscarriage was a trivial event, inconsistent with the woman's own interpretation of the experience. These observations are in line with the women's opinions obtained in this work. Being informed about each procedure, administration of a drug and other activities undertaken, as well as being able to freely and consciously agree to each medical intervention, receiving information from the doctor about the cause of the miscarriage and instructions on how to proceed and return to sexual activity after leaving the hospital proved to be the most important aspects during hospitalisation. Importance was also attached to the fact that doctors used a language that was understandable and provided information about miscarriage with respect and without bystanders, to the availability of a separate room during hospitalisation and the medical staff's empathy expressed in the tone of voice, eye contact or a handshake.

CONCLUSIONS {?}

The conducted study has several limitations. First, the sample of the surveyed women was collected in only one clinical unit and in one time perspective. The unquestionable strength of this study lies in its objective. There are few studies in Poland assessing the level of stress intensity in women after experiencing a miscarriage, and the conclusions from international studies cannot be fully extrapolated due to cultural differences. Neither are there any studies in the available literature that assess the level of perceived basic hope in the studied group. Understanding the functioning of women in this situation should therefore become a valuable guide in therapeutic proceedings.

Article information and declarations

Data availability statement

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

Ethics statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (The Bioethics Committee of the Jan Kochanowski University of Kielce (25/2020) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Author contributions

BK: study design, analyzed the research material, wrote the paper, data collection, interpreted the data.

SM: analyzed the research material, prepared the manuscript, performed the manuscript review.

AGO: analyzed the research material, prepared the manuscript, wrote the paper.

MJ: statistical analysis, interpreted the data.

SG: study design, performed the manuscript review.

All authors read and approved the final manuscript.

Funding

This research received no external funding

Acknowledgments

We would like to express our deepest gratitude to the heads of health care services that hosted the study, and to all the women who agreed to participate.

Conflict of interest

The authors declare that they have no competing interests.

Supplementary material

None.

REFERENCES

1. Szkodziak P, Paszkowski T, Paszkowski M, Radomański T. Poronienie. In: Bręborowicz GH. ed. Położnictwo, vol. 2. Medycyna matczyno-płodowa. Wydawnictwo Lekarskie PZWL, Warszawa 2012.
2. Dębski R. Ginekologia Kliniczna. Elsevier Urban & Partner, Wrocław 2009.
3. Horsch A. Posttraumatic stress disorder following childbirth and pregnancy loss. In: Beinart H, Kennedy P, Llewelyn S. ed. Clinical Psychology in Practice. Blackwells, London 2009: London.
4. Gold KJ, Leon I, Boggs ME, et al. Depression and Posttraumatic Stress Symptoms After Perinatal Loss in a Population-Based Sample. *J Womens Health (Larchmt)*. 2016; 25(3): 263–269, doi: [10.1089/jwh.2015.5284](https://doi.org/10.1089/jwh.2015.5284), indexed in Pubmed: [26258870](https://pubmed.ncbi.nlm.nih.gov/26258870/).

5. Farren J, Jalmbrant M, Ameye L, et al. Post-traumatic stress, anxiety and depression following miscarriage or ectopic pregnancy: a prospective cohort study. *BMJ Open*. 2016; 6(11): e011864, doi: [10.1136/bmjopen-2016-011864](https://doi.org/10.1136/bmjopen-2016-011864), indexed in Pubmed: [27807081](https://pubmed.ncbi.nlm.nih.gov/27807081/).
6. Tavoli Z, Mohammadi M, Tavoli A, et al. Quality of life and psychological distress in women with recurrent miscarriage: a comparative study. *Health Qual Life Outcomes*. 2018; 16(1): 150, doi: [10.1186/s12955-018-0982-z](https://doi.org/10.1186/s12955-018-0982-z), indexed in Pubmed: [30055644](https://pubmed.ncbi.nlm.nih.gov/30055644/).
7. Murlikiewicz M, Sieroszewski P. Poziom depresji, lęku i objawów zaburzenia po stresie pourazowym w następstwie poronienia samoistnego. *Perinatol Neonatol Ginekol*. 2013; 6: 93–98.
8. Duggleby W, Wright K, Duggleby W, et al. Transforming hope: how elderly palliative patients live with hope. *Can J Nurs Res*. 2005; 37(2): 70–84, indexed in Pubmed: [16092779](https://pubmed.ncbi.nlm.nih.gov/16092779/).
9. Peh CXu, Liu J, Bishop GD, et al. Emotion regulation and emotional distress: The mediating role of hope on reappraisal and anxiety/depression in newly diagnosed cancer patients. *Psychooncology*. 2017; 26(8): 1191–1197, doi: [10.1002/pon.4297](https://doi.org/10.1002/pon.4297), indexed in Pubmed: [27723939](https://pubmed.ncbi.nlm.nih.gov/27723939/).
10. Billington E, Simpson J, Unwin J, et al. Does hope predict adjustment to end-stage renal failure and consequent dialysis? *Br J Health Psychol*. 2008; 13(Pt 4): 683–699, doi: [10.1348/135910707X248959](https://doi.org/10.1348/135910707X248959), indexed in Pubmed: [17958929](https://pubmed.ncbi.nlm.nih.gov/17958929/).
11. Erikson E. *Dopełniony cykl życia*. Wydawnictwo Rebis, Poznan 2002.
12. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5)*. American Psychiatric Association, Arlington, VA 2013.
13. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *J Health Soc Behav*. 1983; 24(4): 385–396, indexed in Pubmed: [6668417](https://pubmed.ncbi.nlm.nih.gov/6668417/).
14. Juczyński Z, Ogińska-Bulik N. *Narzędzia pomiaru stresu i radzenia sobie ze stresem (Tools for Measuring Stress and for Coping with Stress)*. Psychological Test Laboratory, Warsaw 2009.
15. Carver CS, Scheier MF, Weintraub JK. Assessing coping strategies: a theoretically based approach. *J Pers Soc Psychol*. 1989; 56(2): 267–283, doi: [10.1037//0022-3514.56.2.267](https://doi.org/10.1037//0022-3514.56.2.267), indexed in Pubmed: [2926629](https://pubmed.ncbi.nlm.nih.gov/2926629/).
16. Trzebiński J, Zięba M. *Kwestionariusz Nadziei Podstawowej - BHI-12*. Podręcznik. Pracownia Testów Psychologicznych PTP, Warszawa 2003.
17. [https://www.aapor.org/Standards-Ethics/Standard-Definitions-\(1\).aspx](https://www.aapor.org/Standards-Ethics/Standard-Definitions-(1).aspx).
18. R Core Team (2021). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. <https://www.R-project.org/>.

19. Schrank B, Stanghellini G, Slade M. Hope in psychiatry: a review of the literature. *Acta Psychiatr Scand.* 2008; 118(6): 421–433, doi: [10.1111/j.1600-0447.2008.01271.x](https://doi.org/10.1111/j.1600-0447.2008.01271.x), indexed in Pubmed: 18851720.
20. Kim DS, Kim HS, Schwartz-Barcott D, et al. The nature of hope in hospitalized chronically ill patients. *Int J Nurs Stud.* 2006; 43(5): 547–556, doi: [10.1016/j.ijnurstu.2005.07.010](https://doi.org/10.1016/j.ijnurstu.2005.07.010), indexed in Pubmed: 16140301.
21. Snyder CR. TARGET ARTICLE: Hope Theory: Rainbows in the Mind. *Psychological Inquiry.* 2002; 13(4): 249–275, doi: [10.1207/s15327965pli1304_01](https://doi.org/10.1207/s15327965pli1304_01).
22. Karaca A, Yavuzcan A, Batmaz S, et al. The Effect of Cognitive Behavioral Group Therapy on Infertility Stress, General Health, and Negative Cognitions: A Randomized Controlled Trial. *J Ration Emot Cogn Behav Ther.* 2019; 37(4): 375–394, doi: [10.1007/s10942-019-00317-3](https://doi.org/10.1007/s10942-019-00317-3).
23. Lee SH, Wang SC, Kuo CP, et al. Grief responses and coping strategies among infertile women after failed in vitro fertilization treatment. *Scand J Caring Sci.* 2010; 24(3): 507–513, doi: [10.1111/j.1471-6712.2009.00742.x](https://doi.org/10.1111/j.1471-6712.2009.00742.x), indexed in Pubmed: 20070595.
24. GÜNERİ SER, KAVLAK O, GÖKER ET. İnfertil Kadınlarda Umut ve Umutsuzluk: Fenomenolojik Bir Çalışma. *Psikiyatride Güncel Yaklaşımlar.* 2019; 11: 24–36, doi: [10.18863/pgy.530714](https://doi.org/10.18863/pgy.530714).
25. Mosalanejad L, Parandavar N, Gholami M, et al. Increasing and decreasing factors of hope in infertile women with failure in infertility treatment: A phenomenology study. *Iran J Reprod Med.* 2014; 12(2): 117–124, indexed in Pubmed: 24799869.
26. Barr P, Cacciatore J. Problematic emotions and maternal grief. *Omega (Westport).* 2007; 56(4): 331–348, doi: [10.2190/om.56.4.b](https://doi.org/10.2190/om.56.4.b), indexed in Pubmed: 18435325.
27. Nikcević AV, Kuczmierczyk AR, Nicolaidis KH. The influence of medical and psychological interventions on women's distress after miscarriage. *J Psychosom Res.* 2007; 63(3): 283–290, doi: [10.1016/j.jpsychores.2007.04.004](https://doi.org/10.1016/j.jpsychores.2007.04.004), indexed in Pubmed: 17719366.
28. Bacidore V, Warren N, Chaput C, et al. A collaborative framework for managing pregnancy loss in the emergency department. *J Obstet Gynecol Neonatal Nurs.* 2009; 38(6): 730–738, doi: [10.1111/j.1552-6909.2009.01075.x](https://doi.org/10.1111/j.1552-6909.2009.01075.x), indexed in Pubmed: 19930289.
29. Ozan YD, Okumuş H. Experiences of Turkish women about infertility treatment: A qualitative study. *International Journal of Basic and Clinical Studies.* 2013; 2: 56–64.
30. Pedro A. Coping with Infertility: An Explorative Study of South African Women's Experiences. *Open J Obstet Gynecol.* 2015; 05(01): 49–59, doi: [10.4236/ojog.2015.51008](https://doi.org/10.4236/ojog.2015.51008).
31. Ramazanzadeh F, Noorbala AA, Abedinia N, et al. Emotional adjustment in infertile couples. *Iran J Reprod Med.* 2009; 7: 97e103.

32. Taşçı E, Bolsoy N, Kavlak O, et al. İnfertil kadınlarda evlilik uyumu. Türk Jinekoloji ve Obstetrik Derneği Dergisi. 2008; 5: 105–110.
33. ŞEN S, SEVİL Ü. STIGMA EXPERIENCES OF INFERTILE WOMEN: A QUALITATIVE STUDY IN TURKEY. INTERNATIONAL REFEREED JOURNAL OF GYNAECOLOGICAL DISEASES AND MATERNAL AND CHILD HEALTH. 2016(6): 63–63, doi: [10.17367/jacsd.2016619469](https://doi.org/10.17367/jacsd.2016619469).
34. Cacciatore J, Bushfield S. Stillbirth: the mother's experience and implications for improving care. J Soc Work End Life Palliat Care. 2007; 3(3): 59–79, doi: [10.1300/J457v03n03_06](https://doi.org/10.1300/J457v03n03_06), indexed in Pubmed: [18077296](https://pubmed.ncbi.nlm.nih.gov/18077296/).
35. Lok IH, Neugebauer R. Psychological morbidity following miscarriage. Best Pract Res Clin Obstet Gynaecol. 2007; 21(2): 229–247, doi: [10.1016/j.bpobgyn.2006.11.007](https://doi.org/10.1016/j.bpobgyn.2006.11.007), indexed in Pubmed: [17317322](https://pubmed.ncbi.nlm.nih.gov/17317322/).
36. Thorstensen KA. Midwifery management of first trimester bleeding and early pregnancy loss. J Midwifery Womens Health. 2000; 45(6): 481–497, doi: [10.1016/s1526-9523\(00\)00071-4](https://doi.org/10.1016/s1526-9523(00)00071-4), indexed in Pubmed: [11151462](https://pubmed.ncbi.nlm.nih.gov/11151462/).
37. Corbet-Owen C, Kruger LM. The health system and emotional care: Validating the many meanings of spontaneous pregnancy loss. Fam Syst Health. 2001; 19(4): 411–427, doi: [10.1037/h0089469](https://doi.org/10.1037/h0089469).
38. Conway K, Russell G. Couples' grief and experience of support in the aftermath of miscarriage. Br J Med Psychol. 2000; 73 Pt 4: 531–545, doi: [10.1348/000711200160714](https://doi.org/10.1348/000711200160714), indexed in Pubmed: [11140793](https://pubmed.ncbi.nlm.nih.gov/11140793/).
39. Cullen S, Coughlan B, McMahon A, et al. Parents' experiences of clinical care during second trimester miscarriage. British Journal of Midwifery. 2018; 26(5): 309–315, doi: [10.12968/bjom.2018.26.5.309](https://doi.org/10.12968/bjom.2018.26.5.309).
40. Cuisinier MC, Kuijpers JC, Hoogduin CA, et al. Miscarriage and stillbirth: time since the loss, grief intensity and satisfaction with care. Eur J Obstet Gynecol Reprod Biol. 1993; 52(3): 163–168, doi: [10.1016/0028-2243\(93\)90066-l](https://doi.org/10.1016/0028-2243(93)90066-l), indexed in Pubmed: [8163030](https://pubmed.ncbi.nlm.nih.gov/8163030/).

Table 1. Participants' characteristics

Participants' characteristics	n	[%]
Age [years]		
15–25	12	7.45
26–30	45	27.95
31–35	58	36.02
36–40	30	18.63
41–50	16	9.94
Marital status		
Married	133	82.61

In relationship	26	16.15
Not in relationship	2	1.24
Education		
College	29	18.01
University	104	64.60
Other	28	17.4
Employment		
Employed	119	73.91
Self-employed	6	3.73
Annuitant	1	0.62
Unemployed	35	21.74
Residence		
Urban-province capital	76	47.20
Urban-other	32	19.88
Rural	53	32.92
Way of residence		
With husband/partner	155	96.27
By oneself	6	3.73
History of pregnancy loss		
First pregnancy loss	95	59.01
1 previous pregnancy loss	34	21.12
≥ 2 previous pregnancy losses	32	19.87
Week of pregnancy loss		
6–8	57	35.40
9–10	59	36.65
11–12	22	13.66
≥ 13	23	14.30
Having children		
No children	63	39.13
One child	69	42.86
Two and more children	29	18.01
Pregnancy planning		
Yes	117	72.67
No	44	27.33
Length of procreation for a lost pregnancy [months]		
0–50	110	94.02
≥ 50	7	4.34
Infertility treatment		
Yes	26	16.15
No	135	83.35

Table 2. Subjectively most stressful factors during hospitalization due to miscarriage

What is the most stressful thing for you about miscarriage?	n	[%]*
a) The suddenness of the miscarriage	101	62.73
b) Fear of getting pregnant again	101	62.73
c) Lack of knowledge about the possible cause of the miscarriage	81	50.31

What is the most stressful thing for you about miscarriage?	n	[%]*
d) Uterine curettage treatment	70	43.48
e) Pharmacological induction of abortion	64	39.75
f) Fear of engaging in sexual activity in the future	63	39.13
g) Physical pain	56	34.78
h) The sight of a miscarried child	39	24.22
i) Decision of the possible burial of the child	31	19.25
j) Providing information about miscarriage to the relatives	23	14.29
k) The method providing information about the miscarriage by the physician	19	11.80
l) Lack of support from loved ones	8	4.97
ł) Bureaucracy in the hospital	6	3.73
m) Other	6	3.73

***what mean?**

Table 3. Level of stress during hospitalization and 3 months after — analysis of changes

PSS-10 [points]	During hospitalization	After 3 months	p
Śr {whats meaning?} ± SD	21.82 ± 6.54	18.17 ± 6.29	< 0.001
Median	23	19	
Quartiles	18–27	13–23	

PSS-10 — Perceived Stress Scale; SD — standard deviation

Table 4. Coping strategies during hospitalization and 3 months after its completion — analysis of changes

Mini-COPE		During hospitalization	After 3 months	p
Acting coping	Śr {whats meaning?} ± SD	2.22 ± 0.72	2.25 ± 0.72	0.332
	Median	2	2.5	
	Quartiles	2–3	2–3	
Planning	Śr ± SD	2.21 ± 0.73	2.27 ± 0.7	0.023
	Median	2	2.5	
	Quartiles	2–3	2–3	
Positive reappraisal	Śr ± SD	1.77 ± 0.7	1.82 ± 0.74	0.096
	Median	2	2	
	Quartiles	1.5–2	1.5–2.5	
Acceptance	Śr ± SD	2.32 ± 0.54	2.36 ± 0.58	0.019
	Median	2.5	2.5	
	Quartiles	2–2.5	2–3	
Sense of humor	Śr ± SD	0.26 ± 0.49	0.24 ± 0.45	0.511
	Median	0	0	
	Quartiles	0–0.5	0–0.5	
Turning to religion	Śr ± SD	1.81 ± 1.16	1.81 ± 1.14	0.875
	Median	2	2	
	Quartiles	0.5–3	1–3	

Mini-COPE		During hospitalization	After 3 months	p
Seeking emotional support	Śr ± SD	2.27 ± 0.68	2.31 ± 0.69	0.109
	Median	2.5	2.5	
	Quartiles	2–3	2–3	
Seeking instrumental support	Śr ± SD	2.2 ± 0.64	2.31 ± 0.62	P<0.001
	Median	2	2.5	
	Quartiles	2–2.5	2–3	
Dealing with something else	Śr ± SD	2.19 ± 0.78	2.21 ± 0.75	0.344
	Median	2.5	2.5	
	Quartiles	2–3	2–3	
Denial	Śr ± SD	1.62 ± 1.13	1.48 ± 1.07	0.002
	Median	1.5	1.5	
	Quartiles	0.5–3	0.5–2.5	
Venting of emotions	Śr ± SD	1.94 ± 0.78	1.97 ± 0.75	0.289
	Median	2	2	
	Quartiles	1.5–2.5	1.5–2.5	
Use of psychoactive substances	Śr ± SD	0.25 ± 0.48	0.29 ± 0.52	0.193
	Median	0	0	
	Quartiles	0–0.5	0–0.5	
Supression of activites	Śr ± SD	0.91 ± 0.64	0.9 ± 0.64	0.425
	Median	1	1	
	Quartiles	0.5–1.5	0.5–1.5	
Self-blamr	Śr ± SD	1.88 ± 1.03	1.82 ± 1	0.174
	Median	2	2	
	Quartiles	1–3	1–3	

Mini-COPE — Inventory to Measure Coping Strategies with Stress; SD — standard deviation

Table 5. Basic hope during hospitalization and 3 months after its completion — analysis of changes

BHI-12 [points]	During hospitalization	After 3 months	p
Śr {whats meaning?} ± SD	27.79 ± 7	29.17 ± 6.37	0.001
Median	28	29	
Quartiles	23–33	25–35	

BHI-12 — Basic Hope Inventory; SD — standard deviation