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Psychological aspects among women with miscarriage associated viral infection

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***Abstract*---**Background: There is some evidence of a link between viral infection and miscarriage. Women who have miscarriages on a regular basis encounter a variety of issues, including negative psychological impacts such as anxiety, stress, and sadness. Study these women and make greater efforts to improve their social support in order to reduce their anxiety and depression symptoms. Therefore, the study aimed to assess psychological aspects of miscarriage by viral infection and determine the associated socio-demographic factors. Methods: A descriptive analytic was carried out on a group of 118 women who had miscarriages due to viral infection. The questionnaire's dependability was established through a pilot research, and it was subsequently presented to experts for validation. The questionnaire consisted of 42 items in total. The information was gathered through a semi-structured interview and evaluated using descriptive and inferential statistical data analysis methods. Results: Out of 118 women (79.9%) were suffers of Cytomegalovirus infection and (63.6%) of them exhibited a high level of psychological aspects. The analysis of variance confirmed that there were differences in psychological aspects depending the women age, social status, number of pregnancies, miscarriage and living children ($p< 0.05$). Conclusions: Miscarriage women had considerably greater psychological features, which were influenced by the woman's age, social position, number of pregnancies, miscarriage, and live children. Health-care professionals

should devote more time and resources to improving these women's psychosocial support in order to reduce their anxiety and depressive symptoms, as well as increasing interest in the issue of miscarriage in order to find appropriate solutions through workshops, seminars, intellectual meetings, and conferences.

***Keywords*---**Psychological Aspects, Miscarriage Associated Infection.

Highlights

1. Cytomegalovirus a major infection associated miscarriage among Babylon women.
2. Women who suffer from repeated miscarriages face many problems in their lives, including negative psychological effects such as anxiety, stress and depression.
3. Psychological aspects among miscarriage women differenced according to socio-demographic variables such as age, social status, number of pregnancies, miscarriage and living children.

Introduction

While pregnancy and birth are often considered happy events, pregnancy loss is often an unexpected and stressful experience for women and their families [1]. Over the last few decades, researchers have looked at the epidemiology and pathogenesis of viral infection in pregnancy. During pregnancy, primary infection or reactivation of a previously acquired viral can cause congenital infection, which is the most common cause of congenital viral infections. If the child survives, up to 90% of instances will result in hearing loss, vision impairment, and varied degrees of mental retardation [2, 3]. Most women will go through a period of extreme emotional suffering following a miscarriage, which will manifest as grieving symptoms such as sadness, yearning, social isolation, and guilt. Pregnancy loss is a significant source of psychiatric morbidity and a risk factor for mental disease [4]. Its importance in a woman's life is often misunderstood. Untreated anxiety following a miscarriage has been linked to an increased risk of depression [5]. A miscarriage occurs when an embryo or fetus is removed or expelled from the uterus, resulting in or causing its death. This can happen naturally as a miscarriage, or it can be generated purposefully through chemicals, surgery, viral infection, or other methods [6]. Miscarriage is a term used to describe a procedure that is performed at any moment during pregnancy. When the fetus is declared nonviable, it is medically described as a miscarriage or induced termination of pregnancy before twenty weeks of gestation [7]. A high number of women die worldwide as a result of birth and pregnancy-related problems, with roughly 99.0% of maternal deaths occurring in low- and middle-income countries [8]. One of the most common causes of maternal death is miscarriage. According to a recent study based on 115 nations from 2003 to 2009, 7.9% of maternal deaths were attributed to miscarriage [9]. The number of miscarriage-related deaths could be significantly greater, although there's a potential of underreporting. One of the most prominent contributing reasons to

maternal mortality in low- and middle-income countries is unsafe miscarriage, which is caused by a variety of factors [10].

It is critical to assess women's mental health after miscarriage in order to provide information to physicians who may encounter women in this cohort who are experiencing negative mental health outcomes as a result of their miscarriage. On order to provide an exact estimate of the true impact of miscarriage in women's life, it is also necessary to determine how many of these psychological mental health problems may be linked to miscarriage alone [11]. For decades, the psychological impacts of miscarriage have been the topic of scientific research as well as public discourse around the world, and they have sparked a lot of debate and controversy. Given the significance of this issue for women and the enormous public health consequences that it has, it is an important subject to focus emphasis on from a health policy standpoint [12]. Thus, the psychological effects appear between the behavior of the aborted woman, her psychological state, her relationship with others, her feeling of guilt and her beautification of the responsibility of miscarriage by others, which leads to the emergence of psychological disorders, including depression, anxiety and stress. Therefore, the psychological state of the woman after the miscarriage requires psychological follow-up, and it requires support from the family as a whole and the unification of support and guarantee. This research can only be achieved by searching for direct and real sources of psychological effects, and this research comes to shed light on the phenomenon of miscarriage caused by infection and the extent of its impact on women in the emergence of psychological effects on them.

Methods

A descriptive analytical investigation was conducted on a sample of 118 women who are diagnosed with viral infection and had miscarried as a result of it. These samples are being sent to two hospitals in Babylon, Iraq.

Study instrument: The questionnaire is one of the means to help collect data that contribute to achieving the results expected by the study, so the researcher designed this questionnaire, which aims to clarify the study objectives and significance by obtaining answers to the study’s questions.

This questionnaire consists of two for parts which includes the following:
Part I: This section composed of socio-demographic information which include women age, education level, occupation, social status, income/month, residents, number of pregnancies, number of miscarriage, duration of last miscarriage and number of living children.
Part II: Psychological aspects deals with depression, anxiety and stress (DAS-42) adopted and developed by Antony et al. (1998) [13].

Validity was assigned to each of the study questionnaire's components based on linguistic appropriateness, correlation with the dimension of study variables to which it was assigned, and fit for the study population. Data was obtained from nurses to assess the questionnaire's reliability, and the test was delivered to 20 people from the study population who were not part of the initial sample. The Cronbach's alpha was found to be 0.81.

In order to test the types of viral infection after evaluation of the inclusion criteria and interviewing with participants and gathering demographic data, blood samples were obtained from patients and controls. The characteristics of laboratory tests include:

Positive to cytomegalovirus (CMV+) = 94 women
Positive to Rubella IgG+ = 17 women
Positive to Hepatitis C Virus (HCV+) = 7 women

After blood tests, the results showed that the majority of women miscarry by Cytomegalovirus infection as shown below

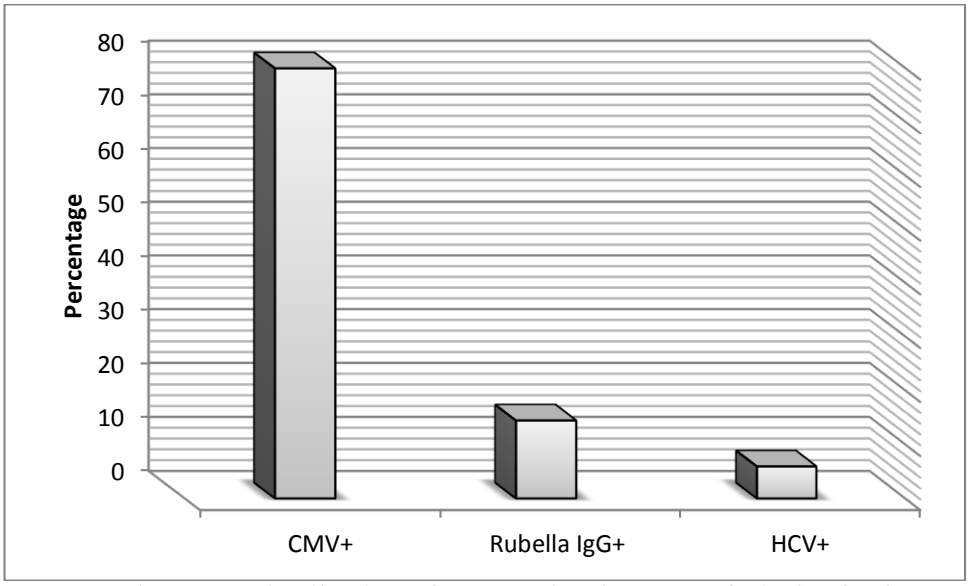

Figure 1: Distribution of Women by the Type of Viral Infection

The SPSS-20.0 software application was used to conduct statistical analysis. The information was evenly distributed. One-way analysis of variance and independent sample *t test* were used to examine variations in variables based on socio-demographic characteristics. For continuous variables, descriptive data is reported as mean standard deviation, and for categorical variables, it is shown as number (percent). Statistical significance was defined as a *p 0.05*.

The overall responses according to total mean of score which follow:
Mean=42-84refers to High Psychological Aspects
Mean=85-126refers to Moderate Psychological Aspects
Mean=127-168refers to Low Psychological Aspects

Results

Findings show that participants' average age is 28, with those aged 20-29 years old accounting for the highest percentage (n=58; 49.2%), followed by those aged 30-39 years old (n=23; 19.5 percent), and those aged 20 years and older (n=19;

16.1 percent) and those aged 40 years and older (n=18; 15.3 percent). Secondary school students predominated (n=48; 40.7 percent), followed by elementary school students (n=33; 28 percent), intermediate school students (n=21; 17,8 percent), and illiterate students (n=16; 13.6%). In regard with occupation, more than half of participants were housewife (*n=75*; 63.6%), followed by those who are employment (*n=37*; 31.4%) and those who are students (*n=6*; 5.1%). Concerning social status, most of studied sample were live with their husband (*n=96*; 81.4%), followed by those who are separated (*n=18*; 15.3%) and those who are divorced (*n=4*; 163.4%). Financial status related findings, women exhibit a sufficient financial (*n=52*; 44.1%), followed by those who are a certain limit (*n=34*; 28.8%) and those who are insufficient (*n=32*; 27.1%). In deals with residents, the urban residents were highly (*n=81*; 68.6%) as compared those who are rural (*n=37*; 31.4%). In terms of number of pregnancies, women expressed 3-5 pregnancy time (*n=66*; 55.9%), followed by those who are <3 (*n=36*; 30.5%) and those who are >5 (*n=16*; 13.6%). Number of miscarriage related findings, most of women had 3-5 miscarriage (*n=66*; 55.9%), followed by those who are <3 (*n=39*; 33.1%) and those who are >5 (*n=13*; 11%). The duration of last miscarriage, more than half of participants they had miscarriage for less than 6 month (*n=66*; 55.9%) as compared with those who are more than 6 month (*n=52*; 44.1%). In terms of number of living children, women exhibit no had living children (*n=66*; 55.9%), followed by those who had one child's (*n=40*; 33.9%) and those who had more than one child's (*n=11*; 9.3).

Table (1)
Sample Characteristics

Demographic Variables	Class	n=118	%
Age/years (*M± SD=28.19±7.582*)	<20years old	19	16.1
	20-29years old	58	49.2
	30-39years old	23	19.5
	≥40years old	18	15.3
Education level	Illiterate	16	13.6
	Elementary school	33	28.0
	Intermediate school	21	17.8
	Secondary school	48	40.7
Occupation	Employment	37	31.4
	Housewife	75	63.6
	Students	6	5.1
Social status	With husband	96	81.4
	Separated	18	15.3
	Divorced	4	3.4
Income/ month	Sufficient	52	44.1
	Certain limit	34	28.8
	Insufficient	32	27.1
Residents	Urban	81	68.6
	Rural	37	31.4
Number of pregnancies	<3time	36	30.5
	3-5time	66	55.9
	>5time	16	13.6
Number of miscarriage	<3time	39	33.1

	3-5time	66	55.9
	>5time	13	11.0
Duration of last miscarriage	<6month	66	55.9
	>6month	52	44.1
Number of Living Children	No	67	56.8
	1Child's	40	33.9
	>1Child's	11	9.3

The total study of psychological aspects revealed that women have a psychological aspect with an average of 81.320.306; miscarriage women had a high degree of psychological aspects (n=75; 63.6 percent) (table 2).

Table (2)
Psychological Aspects

Psychological Aspects	Freq.	%	M ± SD
High (M=42-84)	75	63.6	*81.32±30.306*
Moderate (M=85-126)	35	29.7	
Low (M=127-168)	8	6.8	
Total	118	100.0	

M: Mean for total score, SD=Standard Deviation for total score

Table (3)
Significant Differences in Psychological Aspects with regard Women Age Groups

Women Age	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	5.206	3	1.735	3.551	.017
	Within Groups	55.712	114	.489		
	Total	60.918	117			

Findings demonstrated there were significant differences in psychological aspects with regards women age (p<0.05).

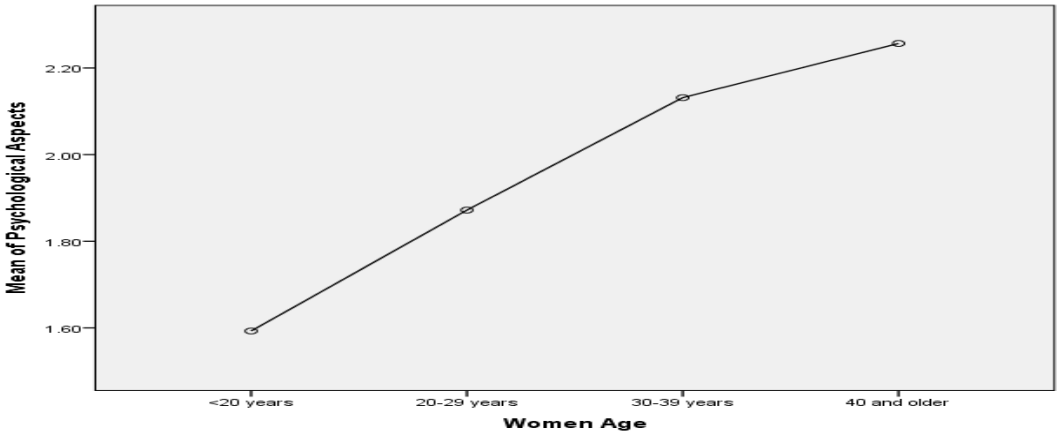

Figure 2.Distribution of Psychological Aspects according to Age Groups

Table (4)
Significant Differences in Psychological Aspects with regard Women Education

Education	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	.497	3	.166	.312	.816
	Within Groups	60.422	114	.530		
	Total	60.918	117			

Findings demonstrated there were no-significant differences in psychological aspects with regards women education level (p>0.05).

Table (5)
Significant Differences in Psychological Aspects with regard Women Occupation

Occupation	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	.938	2	.469	.899	.410
	Within Groups	59.981	115	.522		
	Total	60.918	117			

Findings demonstrated there were no-significant differences in psychological aspects with regards women occupation (p>0.05).

Table (6)
Significant Differences in Psychological Aspects with regard Women Social Status

Social Status	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	7.806	2	3.903	8.451	.000
	Within Groups	53.112	115	.462		
	Total	60.918	117			

Findings demonstrated there were highly-significant differences in psychological aspects with regards women social status (p<0.01).

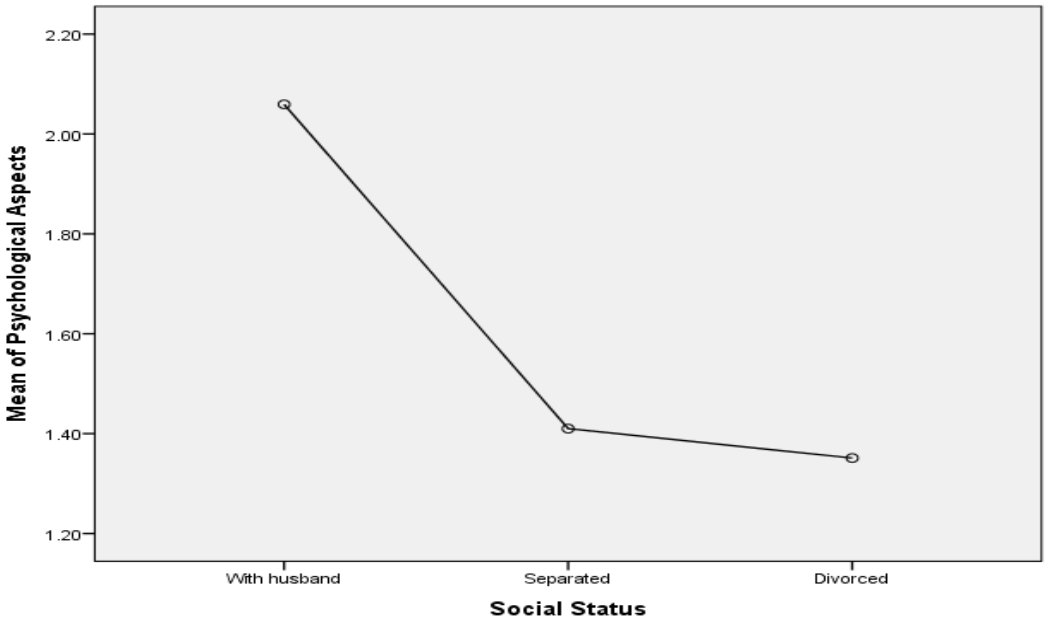

Figure 3.Distribution of Psychological Aspects according to Social Status

Table (7)
Significant Differences in Psychological Aspects with regard Women Financial Status

Financial Status	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	.824	2	.412	.788	.457
	Within Groups	60.094	115	.523		
	Total	60.918	117			

Findings demonstrated there were no-significant differences in psychological aspects with regards women financial status (p>0.05).

Table (8)
Significant Differences in Psychological Aspects with regard Residents

Variables	Residents	Mean	SD	t-value	d.f	*p≤ 0.05*
Psychological Aspects	Urban	1.9794	.76601	.962	116	*.338*
	Rural	1.8417	.61225			

Findings demonstrated there were no-significant differences in psychological aspects with regards those who are urban and rural (p>0.05).

Table (9
Significant Differences in Psychological Aspects with regard Women Number of Pregnancies

No. Pregnancies	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	10.695	2	5.347	12.244	.000
	Within Groups	50.224	115	.437		
	Total	60.918	117			

Findings demonstrated there were high-significant differences in psychological aspects with regards number of pregnancies (p<0.00).

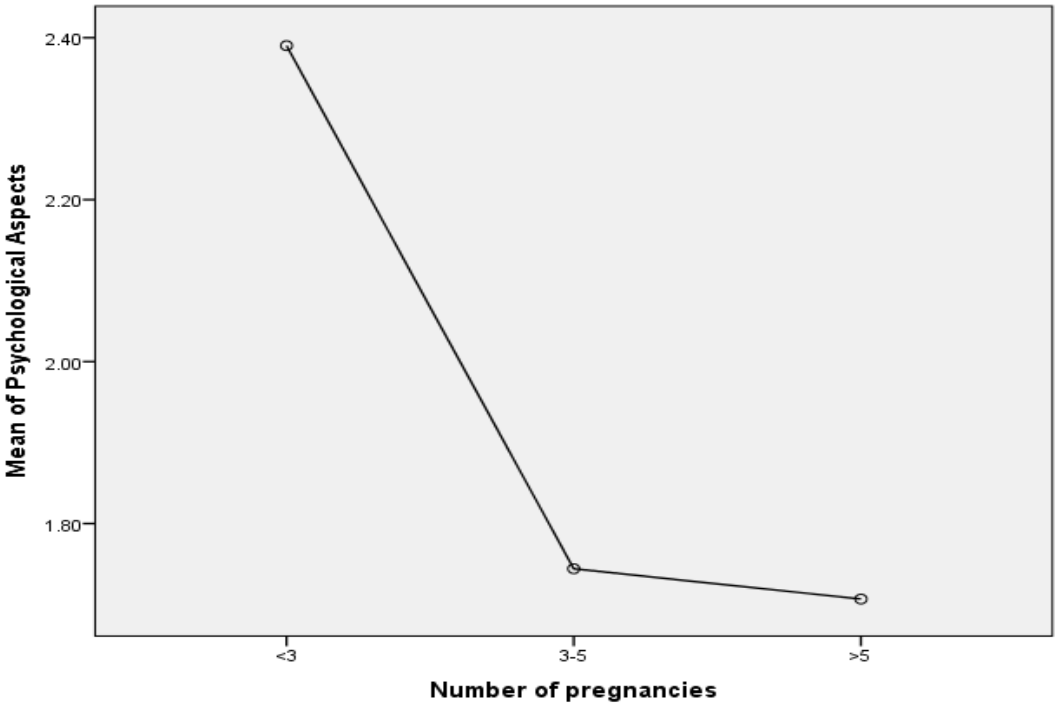

Figure 4.Distribution of Psychological Aspects according to Number of Pregnancies

Table (10)
Significant Differences in Psychological Aspects with regard Women Number of Miscarriage

No. Miscarriage	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	12.923	2	6.462	15.483	.000
	Within Groups	47.995	115	.417		
	Total	60.918	117			

Findings demonstrated there were high-significant differences in psychological aspects with regards number of miscarriages (p<0.00).

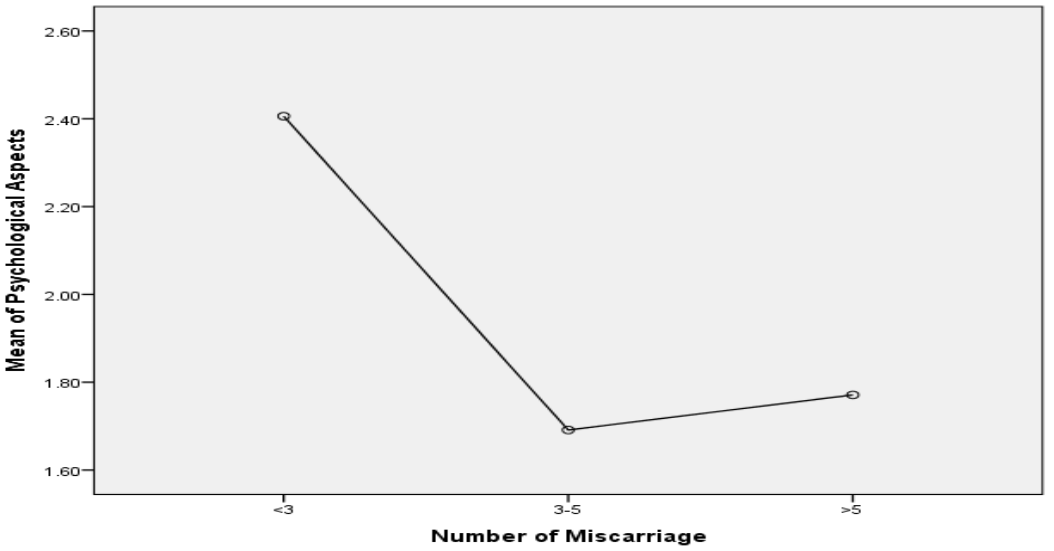

Figure 5. Distribution of Psychological Aspects according to Number of Pregnancies

Table (11)
Significant Differences in Psychological Aspects with regard Women Duration of Last Miscarriage

Variables	Duration	Mean	SD	t-value	d.f	*p≤ 0.05*
Psychological Aspects	<6 month	1.9722	.80925	.609	116	*.544*
	>6 month	1.8906	.59667			

Findings demonstrated there were no-significant differences in psychological aspects with regards duration of last miscarriages (p>0.05).

Table (12)
Significant Differences in Psychological Aspects with regard Women Number of Living Children

No. Living Children	Source of variance	Sum of Squares	d.f	Mean Square	F	*p≤ 0.05*
Psychological Aspects	Between Groups	13.239	2	6.620	15.966	.000
	Within Groups	47.679	115	.415		
	Total	60.918	117			

Findings demonstrated there were high-significant differences in psychological aspects with regards number of living children (p<0.01).

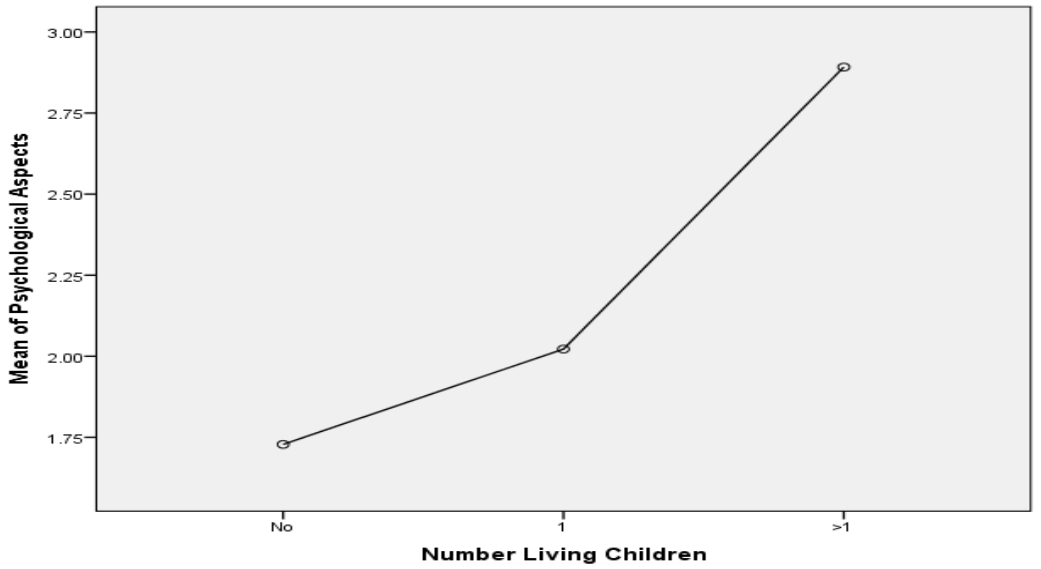

Figure 6. Distribution of Psychological Aspects according to Number of Living Children

Discussion

Infection's function has been extensively studied in recent decades, with viruses, particularly CMV, receiving increased attention due to their ability to cause chronic/recurrent intrauterine infections. Production of toxic metabolites, fetal, placental, or chronic endometrial infection, and chorioamnionitis are all possible explanations [14, 15]. We assess the women for viral infection and found that (79.9%) was Cytomegalovirus infection out of 118 women participated in current study. That is, this injury is considered the most common loss of pregnancy, which makes psychological aspects a major role in the health decline of women, and this findings come in line with previous studies [16, 17]. The main objectives of current study is to assess psychological aspects of miscarriage associated viral infection.

Psychological aspects differ according to the sensitivity of each woman, her beliefs, her culture, and the extent to which the pregnancy has progressed when it stops. It is shattered hope, disappointment, motherhood and femininity at stake, and anxiety about the future. All these feelings hit a woman hard. The study aimed to assess the psychological aspects among miscarriage women by viral infection and investigate the associated socio-demographic variables.

The overall study of psychological aspects revealed that women have a psychological aspect with an average of 81.320.306; miscarriage women had a high level of psychological aspects (Table 2), which is concerning for women. About 12–15 percent of acknowledged pregnancies end in miscarriage in this way. According to studies, 30–50 percent of women have anxiety and 10–15 percent develop depression after a miscarriage, which can continue up to four months[18]. The research suggests that women experience severe melancholy and

anxiety in the first month after miscarriage. There is also evidence that miscarriage women experience post-traumatic stress symptoms [19]. Grief after a miscarriage, according to the National Institute of Health and Care Excellence (NICE) in the United Kingdom, is "similar in origin, intensity, and duration" to grief reactions after other types of catastrophic loss [20]. A 2016 study highlights the devastating nature of a miscarriage or ectopic pregnancy, finding that four out of ten women exhibited PTSD symptoms within three months of the miscarriage or ectopic pregnancy. Nightmares, flashbacks, and re-experiencing sensations related with the loss were among the PTSD symptoms described by the study's participants. Some women said they tried to stay away from situations that reminded them of their loss, such as pregnant friends or relatives [21].

Although a World Health Organization (WHO) review concluded that there is insufficient evidence to recommend psychological support as a standard after miscarriage, it does suggest that follow-up appointments could help identify women who are at risk of developing mental health problems or provide support to those who are already in distress[22]. Miscarriage may have a negative impact on maternal mental health in subsequent pregnancies. According to a 2010 study, women who had previously had a miscarriage, even if they also had a living child, experienced more anxiety and pregnancy-specific suffering than women who had never had a miscarriage [23].

The impact of poor maternal mental health on women's well-being is immediate and long-term. It restricts social and economic engagement, as well as self-care and care-giving capacity, negatively harming children's health and development. Miscarriage is a painful and non-traumatic occurrence that affects every woman differently, but it can result in grief, anxiety, melancholy, and even PTSD symptoms. Miscarriage can contribute significantly to the overall burden of psychopathology in a population due to its high frequency. It's critical to recognize this influence so that seriously impacted people can be checked and treated accordingly. More research is needed to discover risk factors so that these people can be identified and treated quickly, as well as to improve their treatment.

In the current study, there were substantial disparities in psychological characteristics across women of various ages (p0.017). According to the data, the degrees of psychological aspects varied by age, with women aged 20 displaying more psychological aspects (having a lower mean of psychological aspects), followed by women aged 20-29, women aged 30-39, and women aged 40. Miscarriage had a negative impact on the younger women's quality of life [24]. The younger women were more depressed and anxious than the older age groups [25, 26]. Age is an influential factor in psychological aspects, as the more advanced the age, the psychological aspect of the miscarriage woman improves. Because she loses hope of pregnancy and childbearing, and then gives up the attempt, unlike young women, she tries and exerts herself more.

There were extremely significant disparities in psychological features with reference to women's socioeconomic standing among the current study women (p=0.000). The mean of psychological features fell considerably among women who were divorced because of a miscarriage [27]. The social status significantly associated with marital status (mothers who are divorced and separated

negatively correlated with psychological aspects) [28]. The significant differences gradually were that the divorced woman expressed a higher level of psychological aspects than the separated woman, and the separated woman expressed a higher level than the woman living with her husband. That is, the social situation to be a very influential factor in psychological aspects, as divorce and separation significantly increase the psychological aspects. Men must be made aware of this disease and that divorce and separation are not a solution to this problem.

Findings demonstrated there were high-significant differences in psychological aspects with regards number of pregnancies (*p=0.00*). This in line with findings who exhibited in their findings that number of pregnancies were significantly associated with mental health in regard with abortion [29]. The results confirmed that there is a significant difference in the psychological aspects regarding the number of pregnancies, the women who had 5 and 3-5 time of pregnancies were more expressed psychological aspects than those who are less than 3 time. As women who had more than 5 pregnancies significantly increased level of psychological aspects (as described by low level of mean). Coleman, expressed a high level of psychological stress were significantly influenced by number of pregnancies [30].

There were highly significant differences in psychological elements when it came to the frequency of miscarriages (p=0.000), according to the findings. This conclusion is backed up by research that show the number of abortions has an impact on psychological health [31, 32]. Women who experienced 3-5 previous miscarriages had higher psychological features than others, according to the findings. That is, the bigger the number of miscarriages, the more psychological issues arise.

The findings revealed that there were highly significant psychological changes in relation to the number of live children (p=0.000). If a woman does not have a kid, she suffers from psychological problems, and if she is the reason for not having a child, she suffers from serious psychological problems [32]. Women's psychological health is deteriorating due to their inability to have children or recurrent abortions [26]. Those who have more than one child have a considerable advantage since they record less psychological elements than those who do not have children.

Study Limitation

The difficulty of obtaining the sample was one of the main difficulties we faced, and lack of national studied.

Conclusion

Miscarriage women's psychological characteristics are influenced by their age groupings (younger age were considered risk factors of psychological aspects). Compared to women who lived with their husbands, divorced and separated women were more prone to have psychiatric difficulties. Frequent pregnancies and losses were found to be strongly linked to psychological issues, with women who had more than five pregnancies and miscarriages developing the most psychological issues. The number of living children had a substantial impact on

psychological elements, with women who had one or more children having less psychological issues than those who did not have live children.

Study Suggestion

Women with a history of recurrent miscarriage should be screened for anxiety and depression symptoms early in their pregnancy. To reduce these women's anxiety and depressed symptoms, health-care practitioners should make a greater effort to improve their psychosocial support. Increasing interest in the subject of miscarriage, with workshops, seminars, intellectual gatherings, and conferences being held to identify acceptable remedies. Conducting a comparable study on a group of women who have had many miscarriages, including both genders (men and women). Studies on the role of health and psychological education in clinics and hospitals in the treatment of recurrent miscarriages are being conducted.

Financial disclosure: There is no financial disclosure.
Conflict of interest: None to declare.
Ethical Clearance: "All experimental protocols were approved by the Babylon Health Directorate in Iraq, and all experiments followed the permitted procedures".

References

1. Nynas J, Narang P, Kolikonda MK, Lippmann S. Depression and anxiety following early pregnancy loss: recommendations for primary care providers. The primary care companion for CNS disorders. 2015 Jan 29;17(1):26225.
2. Lazzarotto T, Guerra B, Gabrielli L, Lanari M, Landini MP. Update on the prevention, diagnosis and management of cytomegalovirus infection during pregnancy. Clinical Microbiology and Infection. 2011 Sep 1;17(9):1285-93.
3. Sherkat R, Meidani M, Zarabian H, Rezaei A, Gholamrezaei A. Seropositivity of cytomegalovirus in patients with recurrent pregnancy loss. Journal of research in medical sciences: the official journal of Isfahan University of Medical Sciences. 2014 Mar;19(Suppl 1):S22.
4. Kulathilaka S, Hanwella R, de Silva VA. Depressive disorder and grief following spontaneous abortion. BMC psychiatry. 2016 Dec;16(1):1-6.
5. Bellieni CV, Buonocore G. Abortion and subsequent mental health: Review of the literature. Psychiatry and clinical neurosciences. 2013 Jul;67(5):301-10.
6. Katz VL. Spontaneous and recurrent abortion. New York: Comprehensive gynecology. 2012 Feb 21:335.
7. Olaitan, Olukunmi Lanre. "Attitudes of university students towards abortion in Nigeria." *Journal of Neuroscience and Behavioral Health* 3, no. 6 (2011): 74-79.
8. Ganatra B, Tuncalp O, Johnston HB, Johnson Jr BR, Gulmezoglu AM, Temmerman M. From concept to measurement: operationalizing WHO's definition of unsafe abortion. Bulletin of the World Health Organization. 2014;92:155-.
9. Say L, Chou D, Gemmill A, Tunçalp Ö, Moller AB, Daniels J, Gülmezoglu AM, Temmerman M, Alkema L. Global causes of maternal death: a WHO systematic analysis. The Lancet global health. 2014 Jun 1;2(6):e323-33.

10. Yogi A, KC P, Neupane S. Prevalence and factors associated with abortion and unsafe abortion in Nepal: a nationwide cross-sectional study. BMC pregnancy and childbirth. 2018 Dec;18(1):1-0.
11. Hanley GE, Mintzes B. Patterns of psychotropic medicine use in pregnancy in the United States from 2006 to 2011 among women with private insurance. BMC Pregnancy and Childbirth. 2014 Dec;14(1):1-2.
12. Farren J, Jalmbrant M, Ameye L, Joash K, Mitchell-Jones N, Tapp S, Timmerman D, Bourne T. Post-traumatic stress, anxiety and depression following miscarriage or ectopic pregnancy: a prospective cohort study. BMJ open. 2016 Nov 1;6(11):e011864.
13. Antony MM, Bieling PJ, Cox BJ, Enns MW, Swinson RP. Psychometric properties of the 42-item and 21-item versions of the Depression Anxiety Stress Scales in clinical groups and a community sample. Psychological assessment. 1998 Jun;10(2):176.
14. Coclite E, Di Natale C, Nigro G. Congenital and perinatal cytomegalovirus lung infection. The Journal of Maternal-Fetal & Neonatal Medicine. 2013 Nov 1;26(17):1671-5.
15. Nigro G, Mazzocco M, Mattia E, Di Renzo GC, Carta G, Anceschi MM. Role of the infections in recurrent spontaneous abortion. The Journal of Maternal-Fetal & Neonatal Medicine. 2011 Aug 1;24(8):983-9.
16. van Meer MP, Mögling R, Klaasse J, Chandler FD, Pas SD, van der Eijk AA, Koopmans MP, Reusken CB, GeurtsvanKessel CH. Re-evaluation of routine dengue virus serology in travelers in the era of Zika virus emergence. Journal of Clinical Virology. 2017 Jul 1;92:25-31.
17. Tan PC, Soe MZ, Si Lay K, Wang SM, Sekaran SD, Omar SZ. Dengue infection and miscarriage: a prospective case control study. PLoS neglected tropical diseases. 2012 May 8;6(5):e1637.
18. Rousset C, Brulfert C, Séjourné N, Goutaudier N, Chabrol H. Posttraumatic stress disorder and psychological distress following medical and surgical abortion. Journal of Reproductive and Infant Psychology. 2011 Nov 1;29(5):506-17.
19. Farren J, Jalmbrant M, Ameye L, Joash K, Mitchell-Jones N, Tapp S, Timmerman D, Bourne T. Post-traumatic stress, anxiety and depression following miscarriage or ectopic pregnancy: a prospective cohort study. BMJ open. 2016 Nov 1;6(11):e011864.
20. Pundir J, Coomarasamy A. Obstetrics: Evidence-based algorithms. Cambridge University Press; 2016 Apr 7.
21. MacWilliams K, Hughes J, Aston M, Field S, Moffatt FW. Understanding the experience of miscarriage in the emergency department. Journal of Emergency Nursing. 2016 Nov 1;42(6):504-12.
22. World Health Organization. Health worker role in providing safe abortion care and post abortion contraception. World Health Organization; 2015 Dec 17.
23. Woods-Giscombé CL, Lobel M, Crandell JL. The impact of miscarriage and parity on patterns of maternal distress in pregnancy. Research in nursing & health. 2010 Aug;33(4):316-28.
24. Tavoli Z, Mohammadi M, Tavoli A, Moini A, Effatpanah M, Khedmat L, Montazeri A. Quality of life and psychological distress in women with recurrent miscarriage: a comparative study. Health and quality of life outcomes. 2018 Dec;16(1):1-5.

25. Nynas J, Narang P, Kolikonda MK, Lippmann S. Depression and anxiety following early pregnancy loss: recommendations for primary care providers. The primary care companion for CNS disorders. 2015 Jan 29;17(1):26225.
26. Kotta S, Molangur U, Bipeta R, Ganesh R. A cross-sectional study of the psychosocial problems following abortion. Indian journal of psychiatry. 2018 Apr;60(2):217.
27. Kicia M, Skurzak A, Korżyńska-Piętas M, Palus A, Iwanowicz-Palus GJ. Assessment of the relationship between socio-demographic factors and intensity of perceived stress in a group of women hospitalized due to miscarriage. Medycyna Ogólna i Nauki o Zdrowiu. 2021;27(3):285.
28. Major B. Report of the APA task force on mental health and abortion. American Psychological Association; 2008.
29. Coleman PK. Abortion and mental health: quantitative synthesis and analysis of research published 1995–2009. The British Journal of Psychiatry. 2011 Sep;199(3):180-6.
30. Steinberg JR, McCulloch CE, Adler NE. Abortion and mental health: findings from the national comorbidity survey-replication. Obstetrics and gynecology. 2014 Feb;123(2 0 1):263.
31. Horvath S, Schreiber CA. Unintended pregnancy, induced abortion, and mental health. Current psychiatry reports. 2017 Nov;19(11):1-6.
32. Zareba K, La Rosa VL, Ciebiera M, Makara-Studzińska M, Commodari E, Gierus J. Psychological effects of abortion. An updated narrative review. Eastern Journal of Medicine. 2020 Jul 1;25(3):477-83.