(RESEARCH ARTICLE)

Determinants of suicide among the elderly in Northern Morocco: A retrospective study

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Abstract

Suicide among the elderly is a growing global public health concern, with distinct patterns and determinants. This study investigates the main factors leading to suicide amongst individuals aged 65 and above in the provinces of Tetouan, Chefchaouen, and Ouazzane in Morocco. Drawing on a broad literature review, the background section establishes the prevalence and risk factors associated with elderly suicide globally and emphasize the need for targeted interventions. In this context, a large-scale retrospective study was conducted, involving the careful selection of cases from forensic medicine departments in the specified provinces. Data from 61 suicide cases and a comparative sample of 61 non-suicide deaths were analysed, considering socio-economic, psychiatric, and somatic factors. The study employed a specially designed questionnaire developed in collaboration with an interdisciplinary team of experts. The findings reveal key characteristics of elderly individuals who committed suicide, including a higher prevalence among males (66%), those residing in rural areas (69%), and individuals with lower educational levels (80%). Economic difficulties (77%), marital and relationship problems (66%), and psychiatric disorders (84%) were identified as significant contributing factors. Loneliness and isolation (84%) emerged as crucial determinants, emphasizing the role of social relationships in mental well-being.

Keywords: Suicide; Elderly population; Determinants; Morocco

1. Introduction

The word "suicide" means "to kill oneself", it is derived from the Latin term "suicidium". Suicide is considered one of the leading causes of death amongst older people, (older people are defined as those aged over 65 years old). In this context, they encounter a range of health, psychological, and social problems that can influence their daily lives; namely, chronic diseases, mental health conditions, loneliness, and social isolation. Therefore, elderly is a time when the risk of suicide is higher [1]. In almost all regions of the world, suicide rates are high for people aged 70 years and older, for both men and women [2]. Furthermore, old age is also a time when the number of suicides increases. The suicide rate for older men is three to four times higher than the global average [3]. However, suicide among older men has received relatively little attention as public health interventions, medical research, and media coverage have focused on younger age groups. [4] According to the World Health Organization (WHO), 703,000 suicides occur worldwide each year [5], with most deaths by suicide due to malaria, HIV/AIDS, and breast cancer [6]. Suicide has become an urgent and worrying global public health problem. Suicide rates are part of target 3.4.2 of the United Nations Sustainable Development Goals (SDGs), as well as the WHO's 13th General Program of Work and the WHO's Mental Health Action Plan 2030. Suicide rates are higher in low- and middle-income countries. Data from the 2019 Worldwide Wellbeing Appraisal appeared that among all age bunches, the elderly, both men and women, have the most noteworthy number of deaths due to

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deliberate self-harm, interpersonal violence, and community viciousness [6]. As the elderly proceed to be the quickest developing fragment of the populace compared to other age bunches, they moreover have higher suicide proportions [7]. In the same vein, the number of suicides and the methods of committing them may vary according to society, gender, and method of committing suicide and the causes ought to be analysed separately in older age groups [9, 10]. Despite some differences, epidemiological studies have shown that suicide proportions increase with age in all societies. Moreover, Studies have revealed that suicide rates intensify most rapidly after age 65 and peak after age 75. The suicide ratio increases two to three times in people aged 75 years and older [11].A study by researchers from 13 European countries found that the suicide rate among the elderly was 29.3 per cent each year. In the United States, suicide proportions increase with age, that is to say, it escalates among men aged 85 and older is by 20.0 per cent yearly [12]. In France, the suicide ratio among men aged 85 and older is 148.0 per cent annually, and amongst women aged 85 and older is 24.0 per cent every year [12].

Suicide in older people is known to be partly related to psychiatric disorders, particularly depression [13]. It has been suggested that depressive symptoms and suicidal thoughts associated with death may represent different subtypes of terminal depression [13]. Given the importance of depression as a factor in suicide in the elderly, early diagnosis and successful treatment are crucial. Cognitive dysfunction in the elderly is also associated with suicide [14]. Executive dysfunction in the frontal lobe may be particularly important for suicidal behaviour in the elderly, as it plays an important role in dealing effectively with stressful situations [14]. Personality traits such as social isolation, physical illness and pain, poor functional ability, stress, and low openness to experience are also associated with suicidal behaviour in the elderly [13, 14]. Although average levels of neuroticism generally decrease with age, neuroticism may contribute to the pathophysiology of suicide in older people. Resistance factors include participation in social networks and associations, religious practices, hobbies, and perceptions of life as meaningful and valuable. There is a general stigma associated with mental illness in society. This stigma is even stronger among older adults. As a result, older adults are reluctant or afraid to seek help for their mental health. We must work to change this attitudes and stigmas that prevent older adults from receiving effective treatment. Suicide in older adults has received less attention in the literature compared to suicide in adolescents and young adults [15]. For example, a Medline search found that only 21.4 per cent of articles focusing on suicide were about people aged 65 and older , and only 3.1 per cent were about people aged 80 and above [15]. This may reflect the negative perceptions and attitudes toward aging and the elderly in Western cultures. Suicide is considered more acceptable for older people than for younger ones. Dr. Robert Karstenbaum (1932-2013), an expert in the psychology of aging and death and author of several books, wrote in a 1992 article, 'I am particularly concerned about public policies (such as 'setting limits') that give the impression of a rational cost-benefit argument that devalues older people [16].

From a theoretical point of view, the literature on the determinants of suicidal cases can be classified according to the following broad factors: socioeconomic factors, psychiatric factors and somatic factors. Social health factors such as social, economic and environmental factors play an important role in determining the risk and incidence of suicide. Understanding these factors at different life stages can provide evidence to public health researchers and contribute to relevant policies on adolescent well-being and development. Many studies have shown that there is a strong relationship between personality traits and suicidal behavior. These factors include income, occupation, religion, mental health, personality, family dynamics, life events, bleeding and childbirth, access to weapons and drugs, and suicidal tendencies. Poverty, recognized as an important determinant of health, is often associated with negative effects on health and development [17].

Concerning the psychiatric factors, many studies have shown that negative emotions are the biggest problem for both men and women, followed by depression, substance abuse, and some behavioral problems. Early suicidal ideation has been consistently reported in several studies. Other factors that need attention are depression [18], psychological stress [19], psychological problems [20, 21] and problems related to PTSD [20]. In addition, articles that focus on the partial problem of specific events show the same pattern of results.

Regarding somatic factors, studies have shown the role of comorbid medical factors, such as chronic diseases other than mental disorders, in suicide has been understudied. Mac Lean et al (2008) described epilepsy. It is an important suicide simulator and its importance depends on the severity of the disease. Chronic diseases such as cancer [21] and multiple sclerosis may be significantly associated with suicidal behavior and suicide [22].In this respect, the aim of this article is to study and analyse the main determinants leading to suicide among the elderly (over 65 years) in the provinces of Tétouan, Chefchaouen and Ouazzane in Morocco.

2. Materials and Methods

2.1. Data and Subjects

This study aims at exploring the factors causing suicide cases among the elderly population in the northern region, specifically in the provinces of Tetouan, Chefchaouen, and Ouazzane through a large-scale retrospective study covering a wide range of factors: socio-economic, psychiatric, and somatic during the period 2017-2022. To this end, two categories will be compared: the first includes people who died by suicide, the second category includes people who died for other reasons than suicide, in particular illness, road accidents and other reasons unrelated to suicide.Our study began with a careful selection of Tetouan, Chefchaouen and Ouazzane provinces. Before starting the study, we obtained the necessary permissions from the competent authority. In addition, we received a positive opinion from the biomedical research ethics committee of the Faculty of Medicine and Pharmacy of Rabat (reference number: 13/23).To carry out the study, all relevant files on unnatural deaths were thoroughly examined in the forensic medicine departments (480 files), with special attention paid to suicide cases. This comprehensive review included access to 90 files of elderly people (aged 65 years or older). Of these, 61 files were identified as complete and met the following inclusion criteria:

Participants aged 65 and over were included.

- The suicide took place in the provinces of Tetouan, Chefchaouen and Ouazzane.
- We made certain to include complete cases of suicide that were well documented.

In addition, we ensured that all files contained necessary and relevant data for our overall analysis.

When analysing suicide cases(480 cases), contact details for relatives of the deceased were obtained from the relevant files. After detailed analysis of the files, 90 cases were identified.However, 19 people did not respond to the survey and 10 provided incorrect contact details were excluded from the final sample. Based on the available data, a sample of 61 cases was generated for further analysis. To facilitate this process, a special questionnaire was developed in collaboration with an interdisciplinary team of physicians, epidemiological and psychiatric experts and researchers.The second sample included 61 deaths of older adults not related to suicide (e.g., road accident, chronic illness, cardiovascular disease…). The diagram below summarizes the methodological approach adopted for data collection:
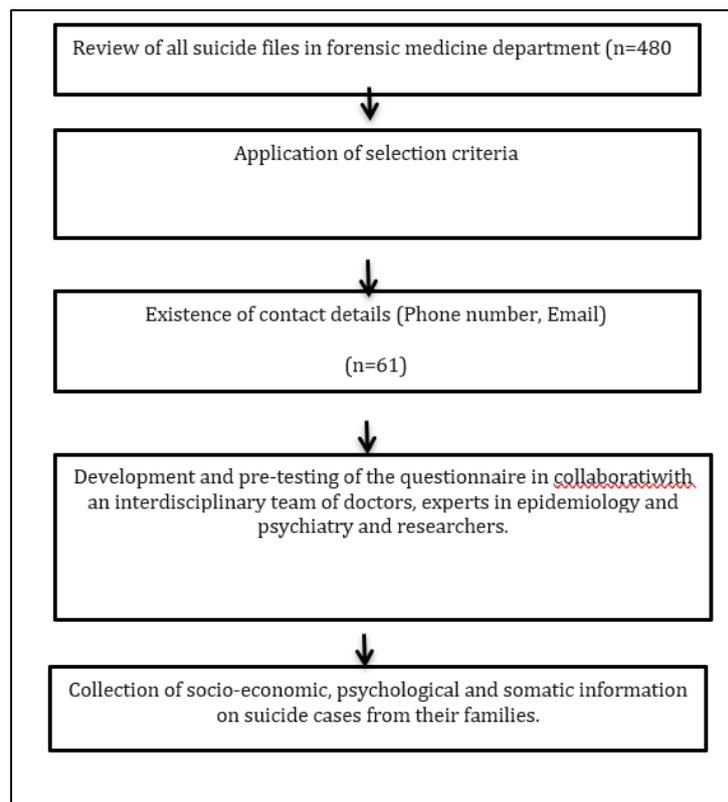
2.2. Analysis Method

In this study, IBM SPSS Statistics version 25.0 was used for the statistical analysis of the collected data. A confidence level of 95% was set in our study.

3. Results

Table 1 shows the main characteristics of the elderly in our sample (65 years and older) who committed suicide. Of the 61 cases, 66 per cent were males (n=40). The mean age was 76.77 years, with a minimum of 65 years and a maximum of 105 years. In terms of educational level, approximately 80 per cent of the victims were illiterate, 11 per cent had a university degree and 6% had a primary school education. About 69 per cent of suicide victims lived in rural areas and about 31 per cent in urban areas. Regarding marital status, 61 per cent of the victims were married (n=37) and 31 per cent were single. In addition, 77 per cent of the victims had economic problems (n=47), about 66 per cent had marital problems (n=40) and 49 per cent had relationship problems.

Table 1 Main characteristics of suicide cases in our study

Characteristics		N	%
Gender	Male	40	66
	Female	21	34
Age	Mean	76.77	
	Minimum	65	
	Maximum	105	
Education level	Illiterate	49	80
	Primary	4	6
	Secondary	1	2
	University	7	11
Residence	Urban	19	31
	Rural	42	69
Marital status	Single	19	31
	Married	37	61
	Divorced	1	2
	Widowed	4	6
Financial difficulty	Yes	47	77
	No	14	23
Marital problem	Yes	40	66
	No	21	24
Family/Relationship problem	Yes	30	49
	No	31	51

The analysis of suicide cases reveals that the month with the highest number of incidents is January, accounting for 18 cases of suicide, constituting 30 per cent of the total cases. Following closely is December, with a total of 10 cases (Figure 1).
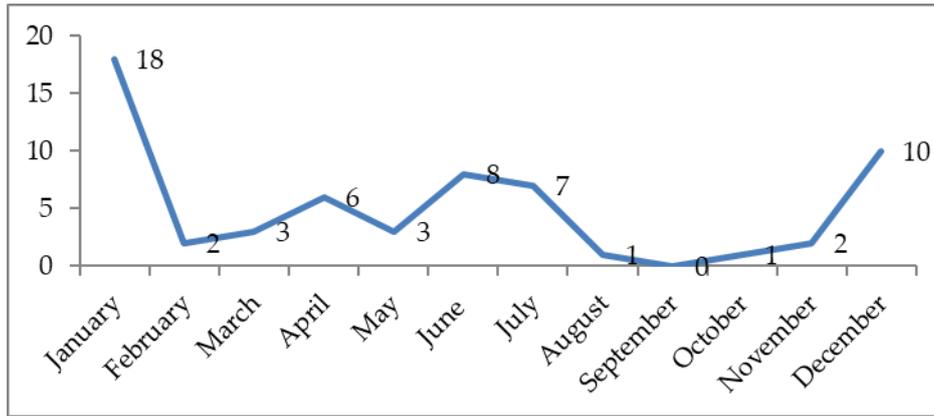
Figure 1 Distribution of suicide cases by month

In the same vein, and regarding the distribution by year of suicide, Figure 2 illustrates that the majority of cases occurred during the years 2020-2022 (47 cases representing 77% of the total suicides in our study). This is primarily attributed to the psychiatric and somatic effects of the COVID-19 health crisis.
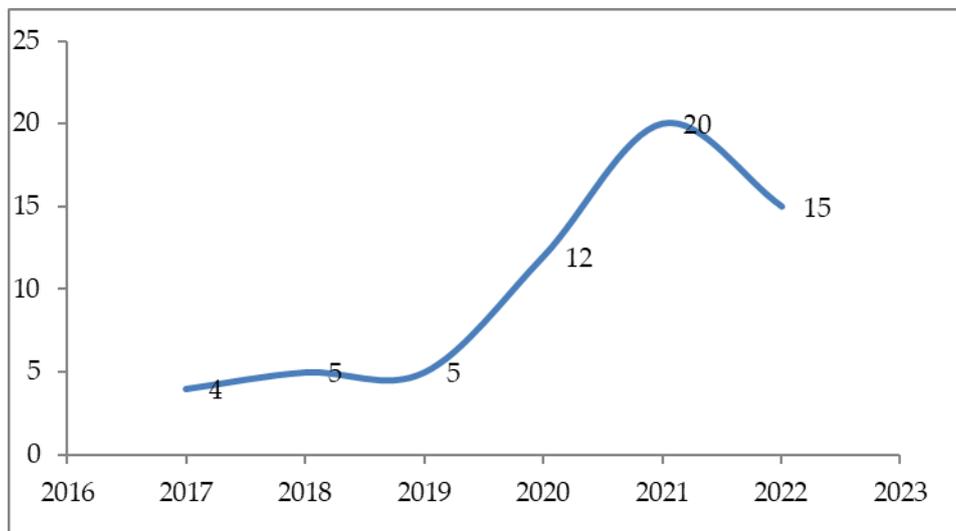

Figure 2 Distribution of suicide cases by year

Tables 2 and 3 demonstrate that the primary socio-economic, psychological and somatic determinants of suicide are: Gender, Education Level, Residence, Financial difficulty, Cases of suicide within the family, Psychiatric disorders, Loneliness and isolation.

In this context, a p-value (denoted as P in Tables 2 and 3) of 0.05 (5%) was considered statistically signifcant. Bivariate chi-square analysis was used to analyze data. Data analysis was conducted using the SPSS Statistics version 25.0

Table 2 Socio-economic determinants of suicide

Category	Suicide (N)	Other causes of death (N)	P
Gender			0,000
Male	40	30	
Female	21	31	
Age			0,484
+76.88 year	26	27	

-76.77year	35	34	
Education Level			0,000
Illiterate	49	30	
Primary	4	12	
Secondary	1	12	
University	7	7	
Residence			0,020
Urban	19	40	
Rural	42	31	
Marital status			0,090
Single	19	18	
Married	37	27	
Divorced	1	5	
Widowed	4	11	
Relationship/Emotional Problems			0,123
Yes	30	25	
No	31	36	
Marital problems			0.062
Yes	40	44	
No	21	17	
Financial difficulty			0,000
Yes	30	15	
No	31	46	
Cases of suicide within the family			0,000
Yes	37	26	
No	24	35	

Table 3 Psychological and somatic determinants

Category	Suicide (N)	Other causes of death (N)		P
Past medical history				0,253
Yes	26	21		
No	35	40		
Psychiatric disorders				0,000
Yes	51	23		
No	10	38		
Addiction to drugs			0,070	
Yes	32	27		

No	29	34	
Psychiatric follow-up			0,295
Yes	20	16	
No	41	35	
Loneliness and isolation			0,000
Yes	51	22	
No	10	39	
Anxiety about the future			0,320
Yes	33	28	
No	28	33	

4. Discussion

The purpose of the current study is to identify the factors behind suicide cases amongst the elderly (over 65 years old) in the provinces of Tetouan, Chefchaouen and Ouazzane(in the north of Morocco). To this end, a large-scale retrospective holistic analysis covering a plethora of factors: socio-economic, psychiatric, and somatic was carried out. Two categories were compared: the first comprised those who died by suicide whereas the second one embodied those who died for other reasons such as illness, road accidents and other non-suicide-related reasons.

To carry out this study, we went through two necessary phases. In the first phase, we opted for the selection of the cases to be studied. To do so, we compiled all files related to unnatural deaths. The second phase of the study involved an in-depth examination in forensic medicine departments, with a particular focus on suicide cases. Following this thorough examination, 90 files were obtained as the primal sample of this study; then, 61 files were selected as the final sample since they perfectly corroborate with the following inclusion criteria:

- Participants over the age of 65.
- The suicide took place in the provinces of Tetouan, Chefchaouen, and Ouazzane.
- We ascertained that all cases of suicide included were complete and well-documented.
- In addition, we ensured that all files contained the necessary and relevant data for our overall analysis.

The 61 files gathered and deemed relevant for our study provided access to contact details for relatives of the deceased. After an in-depth analysis of the files, 85 cases were identified, including their telephone numbers and addresses. Consequently, 61 cases were selected as the basis for this study after a review of the available databases. However, six people did not respond to the survey, nine provided incorrect contact details and three recorded incorrect information and were excluded from the final sample. A further six people aged under 65 were excluded from the final sample as well. Once the sample had been selected, a special questionnaire was drawn up to collect data from our sample, in collaboration with an interdisciplinary team of doctors, epidemiological and psychiatric experts and researchers. The second sample included 61 deaths of elderly people not related to suicide (e.g., road accident, chronic illness, shock...).

Our empirical results demonstrate that the main determining factors of suicide cases in the Moroccan kingdom are gender, residence area, education level, financial difficulty, psychiatric disorders, previous suicide cases among the family, and Loneliness and isolation.

Given this context, our findings perfectly corroborate with the extant literature on the factors leading to suicide cases. To begin with, the current study reveals that the 66 per cent of suicide cases among our sample were men. Moreover, previous research has demonstrated that men are more likely than women to die by suicide [23, 24, 25, 26]. The empirical results of these studies show that suicide rate is 2.3 times higher for men comparing to women (12.6 suicides versus 5.4 per 100,000 people).

Furthermore, our findings show that 69 per cent of suicide victims lived in rural areas whereas 31 per cent of our sample lived in urban areas. This is consistent with previous research investigating factors leading to suicide. Salma et al. (2022) proved that most students come from rural areas and face a host of challenges coping-up with the new urban

environment [26, 27]. In parallel, R.A. Mahesar and al. (2023) have shown that 61 per cent of their sample used to live in rural areas [28], which corroborate perfectly with our findings and other authors' works [29,30].

Beyond gender and residence area, the level of education can also be a suicidal factor among people. In a study of 302 suicide cases in Iran carried out between November 2019 and January 2020, Ali Sahraian et al. 2023 showed that more than 2/3 of the cases had no level of education. This agrees with a meta-analysis study conducted in 2013 on factors related to suicide attempts in Iran [31, 32].In the same veins of ideas, around 80 per cent of our victims were illiterate, 11 per cent had a university degree and 6 per cent had primary education.

Regarding the financial difficulties, our study uncovered hat 77 per cent of victims had financial problems; this finding is also in lined with an empirical study conducted by Known et al. (2022). The latter have undergone a quantitative study on 7498 adolescents in South Korea to explore the causes of suicide attempts. As a result, the financial problem was identified as a main factor causing a suicide attempt among adolescents [33]. The same authors have shown that suicide attempts are also relied to psychiatric issues [34]. More than 71 per cent of suicide attempters with psychiatric disorders reported major depression [33, 34]. In our case, 51 individuals were suffering from mental and psychiatric disorders. These disorders can be divided into the following categories (Table 4):

Table 4 Nature of psychiatric disorders among suicide cases in our sample

Category	%
Sleep-wake disorders	95
Sexual dysfunctions	87
Depressive disorders	85
Anxiety disorders	80
Neurocognitive disorders	80
Somatic symptom and related Disorders	75
Feeding and eating disorders	75
Personality disorders	45
Disruptive, impulse-control, and conduct disorders	45
Schizophrenia spectrum and other psychotic disorders	10
Trauma- and stressor-related Disorders	5
Elimination disorders	5
Obsessive-compulsive and related Disorders	5

In fact, our sample included 51 psychiatric disorders, including sleep and wakefulness disorders, sexual dysfunction, depressive disorders, anxiety disorders, neurocognitive disorders, and related physical symptoms, highlights the complexity of factors contributing to suicide in older adults. This contribution exposes the importance of implementing preventive strategies to deal with these disorders. This same finding has been confirmed by several studies, including that of Brådvik (2018) [35].

When it comes to loneliness and isolation, our empirical results show that 51 persons used to live alone far away from people. The previous findings agree with our results; for instance, Hyewon Kim et al. (2023) have undergone a study on a sample of 9529. They revealed that 1157 persons (9.9 per cent) stated that they live alone [36]. Other findings in the extant literature also prove that there is a strong link between suicide attempts and loneliness [37].

As demonstrated by our empirical findings and the results of previous research, the above factors represent the causes behind an act of suicide. In most cases, all these factors are present, from sex to fear of the future or anxiety.

5. Conclusions

Our investigation into the determinants of suicide among the elderly in the North region has yielded valuable insights into the multifaceted nature of this complex and tragic phenomenon. The identified determinants, including gender, educational level, place of residence, economic challenges, familial suicide, mental illness, and experiences of loneliness and isolation, collectively contribute to the heightened vulnerability of the elderly to suicidal tendencies.

The discernment of gender as a pivotal determinant underlines the imperative for targeted gender-specific interventions and support structures, acknowledging the unique needs and circumstances faced by elderly individuals. Additionally, the demonstrated potential protective effect of educational attainment suggests a promising avenue for suicide prevention through the facilitation of increased educational opportunities for the elderly population.

The observed differences between rural and urban areas emphasize the necessity for nuanced strategies that consider and address the distinct challenges posed by each environment. Effectively tackling economic hardships among the elderly demands not only targeted economic interventions, but also the implementation of comprehensive social support programs.

The recognition of the intergenerational aspect associated with familial suicide necessitates a holistic approach that takes into account the broader family context, highlighting the importance of comprehensive familial support structures in suicide prevention initiatives. Furthermore, the prominent role of mental illness as a determinant highlights the critical need for accessible and strong mental health care services tailored to the specific needs of the elderly population.

The significant impact of loneliness and isolation on suicidal tendencies emphasizes the pivotal role of social relationships in safeguarding the mental well-being of the elderly. Interventions that promote increased social participation and offer emotional support are integral components in mitigating the adverse effects of social isolation.

Compliance with ethical standards

Statement of informed consent

Informed consent was obtained from all subjects involved in the study.

References

[1]   Heisel M, Duberstein PR. Suicide prevention in older adults. SciPract. 2005; 12: 242–59.

[2]   Hall R.C, Platt D.E & Hall R.C, Suicide risk assessment: A review of risk factors for suicide in 100 patients who made severe suicide attempts. Evaluation of suicide risk in a time of managed care. Psychosomatics; 40:18–27, 1999.

[3]   Bhar SS, Wiltsey-Stirman S, Zembroski D, Zembroski D, McCray L, Oslin DW, Brown GK, Beck AT.Recruiting older men for geriatric suicide research. IntPsychogeriatr 2013; 25(1):88-95.

[4]   Ozguven HD. The epidemiology of suicidal behaviour. Turkey Clinics Journal of Psychiatry-Special Topics 2008; 1(3):1-7.

[5]   World Health Organization. Suicide worldwide in 2019: global health estimates. 2021.

[6]   World Health Organization. Global Health Estimates: leading causes of death. Cause specific mortality: 2000-2019. 2019. https://www.who.int/ data/gho/data/themes/mortality-and-global-health-estimates/ghe-leading-causes-of-death. Accessed 29 Jul 2022.

[7]   Kim JW, Jung HY, Won DY, Shin YS, Noh JH, Kang TI. Landscape of elderly suicide in South Korea: its trend according to age, gender, and educational attainment. Omega (United States). 2020;82:214–29.

[8]   He J, Ouyang F, Qiu D, Li L, Li Y, Xiao S. Time trends and predictions of suicide mortality for people aged 70 years and over From 1990 to 2030 based on the global burden of disease study 2017. Front Psychiatry. 2021;12 September:1–15.

[9]   Lew B, Kõlves K, Lester D, Chen WS, Ibrahim N bt, Khamal NR bt, et al. Looking Into recent suicide rates and trends in Malaysia: a comparative analysis. Front Psychiatry. 2022;12 January.

[10]   Razai D, Ghadirzadeh MR, Mahdavi SA, Hasani J, Nazari SSH. The suicide rate in the elderly population of Iran between 2008 and 2014. J Res Health Sci. 2020;20:e00471–e00471.

[11]   Crestani C, Masotti V, Corradi N, M SL, Cecchi R. Suicide in the elderly: a 37-years retrospective study. Acta Biomed. 2019;90 N.1:68–76.

[12]   Harwood D, Hawton K, Hope T, Jacoby R. Psychiatric disorder and personality factors associated with suicide in older people: a descriptive and case-control study. Int J Geriatr Psychiatry. 2001;16(2):155–165.

[13]   Butters MA, Whyte EM, Nebes RD, Begley AE, Dew MA, Mulsant BH, et al.. The nature and determinants of neuropsychological functioning in late-life depression. Arch Gen Psychiatry. (2004) 61:587–95.

[14]   Conejero I, Olié E, Courtet P, Calati R. Suicide in older adults: current perspectives. ClinIntervent Aging. (2018) 13:691–9. 10.2147

[15]   Richard-Devantoy S, Szanto K, Butters MA, Kalkus J, Dombrovski AY. Cognitive inhibition in older high-lethality suicide attempters. Int J GeriatrPsychiatry. (2015) 30:274–83. 10.1002

[16]   Nakamura T, Tsuji T, Nagamine Y, Ide K, Jeong S, Miyaguni Y, et al.. Suicide rates, social capital, and depressive symptoms among older adults in japan: an ecological study. Int J Environ Res Public Health. (2019) 16:4942. 10.3390

[17]   Mendez-Bustos P, de Leon-Martinez V, Miret M, Baca-Garcia E, Lopez-Castroman J. Suicide reattempters: a systematic review. Harv Rev Psychiatry. 2013;21(6):281–95.

[18]   Robson A, Scrutton F, Wilkinson L, MacLeod F. The risk of suicide in cancer patients: a review of the literature. Psychooncology. 2010;19(12):1250-8.

[19]   Pompili M, Serafini G, Innamorati M, Biondi M, Siracusano A, Di Giannantonio M, Giupponi G, Amore M, Lester D, Girardi P, Möller-Leimkühler AM. Substance abuse and suicide risk among adolescents. Eur Arch Psychiatry ClinNeurosci. 2012

[20]   Brady J. The association between alcohol misuse and suicidal behaviour. Alcohol Alcohol. 2006 ;41(5):473-8.

[21]   Cherpitel CJ, Borges GL, Wilcox HC. Acute alcohol use and suicidal behavior: a review of the literature. Alcohol Clin Exp Res. 2004;28(5 Suppl):18S-28S.

[22]   McGirr A, Renaud J, Bureau A, Seguin M, Lesage A, Turecki G. Impulsive-aggressive behaviours and completed suicide across the life cycle: a predisposition for younger age of suicide. Psychol Med. 2008;38(3):407-17.

[23]   Majid SafaeiLari, Sara EmamgholipourSefiddashti. Socio-economic, health and environmental factors influencing suicide rates: A cross-country study in the Eastern Mediterranean region. Journal of Forensic and Legal Medicine. Volume 93, January 2023, 102463.

[24]   Chih-Chiang Chiu, Hsing-Cheng Liu, Wei-Hsin Li,Shang-   Ying Tsai, Chiao-Chicy Chen, Chian-Jue Kuo.   2023. Incidence, risk and protective factors for suicide mortality among patients with major depressive disorder. Asian Journal of Psychiatry. Volume 8, 103399.

[25]   Vernon M. Langford DNP, APRN, FNP-C. Risk Factors for Suicide in Men .Nursing Clinics of North America. 5 August 2023

[26]   Salma AkterUrme, Md. Syful Islam, Hasena Begum, N.M. RabiulAwalChowdhur. Risk factors of suicide among public university students of Bangladesh: A qualitative exploration. Heliyon 8 (2022)

[27]   R.G. Kamble, V. Minchekar. 2018. Academic stress and depression among college students. Int. J. Curr. Res., 10 (12) (2018), pp. 76429-7643.

[28]   R.A. Mahesar and al. (2023). Demography and risk factors of suicide deaths in Pakistan: A twelve-month content analysis study. Asian journal of psychiatry 80.

[29] Arafat, S., 2017. Suicide in Bangladesh: a mini review. J. Behav. Health 6 (1). https://doi.org/10.5455/jbh.20160904090206

[30] RA, M., 2018. Newspaper coverage of suicide: a content analysis of daily Kawish Newspaper - an elite Sindhi Newspaper of Pakistan. J. Mass Commun. J. 08 (03) https://doi.org/10.4172/2165-7912.1000374.

[31] Ali Sahraian, SeyedehNiloofarSepehrtaj, Seyed Sadat Sepehrtaj, ParniaKamyab (2023). Characteristics and related factors of suicide attempts among patients admitted to an Iranian poisoning center: Implications for suicide prevention. Heliyon 9(9).

[32] M. N, et al., Factors related to suicide attempt in Iran: a systematic review and meta-analysis, Hakim Health Systems research journal 15 (4) (2013) 352–363.

[33] Myoungjin Kwon, Sun Ae Kim, KawounSeo (2022). Factors Influencing Suicide Attempts of Adolescents with Suicidal Thoughts in South Korea: Using the 15th Korean Youth Risk Behavior Web-Based Survey (KYRBS). Iran J Public Health, Vol. 51, No.9, 1990-1998.

[34] P.S. Indu, et al., Prevalence of depression and past suicide attempt in primary care, Asian journal of psychiatry 27 (2017) 48–52.

[35] Brådvik L. Suicide Risk and Mental Disorders. Int J Environ Res Public Health. 2018 Sep 17; 15(9):2028.

[36] Hyewon Kim, Soorack Ryu, Hong Jin Jeon, Sungwon Roh (2023). Lifestyle factors and suicide risk: A nationwide population-based study. Journal of Affective Disorders. Volume 328, 1 May 2023, Pages 215-221

[37] K. Hawton, K. van Heeringen. 2009. Suicide. Lancet (London, England), 373, pp. 1372-1381