Depressive symptomatology as an explanation of suicidal behavior in old age

Sintomatología depresiva como explicación de la conducta suicida en la vejez

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Abstract

Objetive. To establish the relationship between depressive symptoms and suicidal behavior in older people residing in the urban areas of five Colombian cities.

Methods. Quantitative, analytical study to evaluate associated factors in a survey of 2506 individuals older than 60 years of age. Univariate, bivariate and multivariate analysis was carried out, taking the dependent variable: suicidal behavior and independent variables: depressive symptoms, and demographic, social and health conditions to adjust the final model. Hypothesis tests and crude and adjusted prevalence ratios were also calculated.

Results. Suicidal behavior was 45.8%, with a highest proportion in adults from Pereira, followed by residents in Medellín and Santa Marta. The variability of risk is explained in 51.9%: depressive symptoms, discomfort, physical inactivity and low perception of quality of life.

Conclusions. Suicidal behavior in older people is a multifactorial phenomenon and preventable, which requires early detection of depressive symptoms, followed by the promotion of physical activity and the subjective perception of quality of life. Therefore, public health policies are needed that promote happiness, dignify old age and respect their rights.

Key words. Suicidal ideation, aging, depression, suicide, Colombia (Health Sciences Descriptors MeSH)

Resumen

Objetivo. Establecer la relación de la sintomatología depresiva con la conducta suicida de la persona mayor, residente en el área urbana de cinco ciudades colombianas.

Métodos. Estudio cuantitativo, analítico para evaluar factores asociados en una encuesta a 2506 personas mayores de 60 años. Se realizó análisis univariado, bivariado y multivariado tomando variable dependiente la conducta suicida y variables independientes: sintomatología depresiva, y condiciones demográficas, sociales y de salud para ajustar el modelo final. También se calcularon pruebas de hipótesis y proporción de prevalencias crudas y ajustadas.

Resultados. La conducta suicida fue del 45,8%, con mayor proporción en los adultos de Pereira, seguido de los residentes en Medellín y Santa Marta. La variabilidad del riesgo es explicada en un 51,9% por: sintomatología depresiva, malestar, inactividad física y baja percepción de calidad de vida.

Conclusiones. La conducta suicida en personas mayores es un fenómeno multifactorial y prevenible, por lo que requiere la detección temprana de los síntomas depresivos, seguido de la promoción de la actividad física y la percepción subjetiva de la calidad de vida. Por ello, se necesitan políticas de salud pública que promuevan la felicidad, dignifiquen la vejez y respeten sus derechos.

Palabras clave. Ideación suicida, envejecimiento, depresión, suicidio, Colombia (Descriptores en Ciencias de la Salud MeCS).

Background

According to the World Health Organization (WHO), the violence es "the intentional use of physical force or power, in fact or as a threat, against oneself, another person or a group or community, that causes or is highly likely to cause injury, death, psychological harm, mental health of development or deprivation" (Krug et al., 2002). Therefore, voluntarily attacking oneself constitutes a form of violence and typifies conduct (suicidal behavior) understood as "the diversity of behaviors that includes thinking about suicide (or suicidal behavior), planning suicide, attempting suicide, and committing suicide itself" (World Health Organization, 2014).

The WHO in 1976 defined suicide as "any act by which an individual causes him or herself injury, or harm, with a varying degree of intent to die, whatever the cause, degree of lethal intent or knowledge of true motive" (Montes de Oca y Rodríguez, 2019). Currently, approximately 700,000 individuals t;ake their own lives each year, but a greater number attempt it, and many more have suicidal thoughts, (WHO, 2023), making it a public health problem (OMS,2021b; WHO, 2021a) that could be prevented through joint public health actions (De Leo & Arnautovska, 2019; Nie et al., 2020; Zeppegno et al., 2019).

In Colombia, the definition as a diversity of behaviors that include thinking about suicide (suicidal ideation), planning suicide, attempting suicide and committing suicide itself (Harm et al., 2024; Ministerio de Salud y Protección

Social, 2018; Pan American Health Organization, 2006; Pérez, 1999). Suicide attempt is a self-injurious behavior with a non-fatal outcome accompanied by implicit evidence that the person intends to die (Desalegn et al., 2020), which is self-inflicted, initiated and performed by an individual with the use of different methods, without the intervention of others, and without a fatal outcome (Harm et al., 2024). The attempts are considered the main risk factor for completed suicide (Crosby et al., 2011; Rendón y Rodríguez, 2016). The DSM-V recognizes suicidal behavior disorder in individuals who commit at least one suicide attempt in a period not exceeding 24 months and is not instrumentalized for any political or religious purpose (American Psychiatric Association, 2013). Depressive disorders, use of psychoactive substances, loss of family and friends, and personality have been considered risk factors for committing an act. suicide in the general population (Velásquez, 2013).

Although suicide affects all population groups and mainly young people, an increase in suicidal behavior has recently been observed in the elderly population (60 years and over), establishing the need for decision makers to explore personal, family, community, and social environments (Stone et al., 2017).

Regarding gender, rates are higher among older males than in any other demographic group (Cui & Fiske, 2020). In the United States, the suicide rate for white men is 48.7 per 100,000 which is four times greater than the country's adjusted rate (Conejero et al., 2018). Moreover, Hu et al., (2020) reported a meta-

analysis involving 11,526 adults found a prevalence of suicidal behavior in elders living in rural areas between 11.5% and 21.5 in China, with those over 65 having the highest rate of completed suicide (44.3 per hundred thousand).

The most prevalent suicidal risk factors reported include age (major 45), impulsiveness, adverse life events, gender (males), widowed, separated, or divorced, living alone, unemployed, retired, family history, previous attempts, poor physical health, presence of firearms at home and mental illness (Minsalud, 2018). After the COVID-19 pandemic, other risk factors increased such as social isolation, loss of job, relatives or social networks, as well as economic and productive downfall (Banerjee & Rai, 2020).

Suicide is classified in different ways: completed (when the objective is achieved), frustrated (due to inexperience, rapid intervention by medical, family or community services or chance (Echeburúa, 2015). In the elderly, suicide is not reported in more than 40% of cases and are considered "silent suicides" (due to overdose, starvation or dehydration, as well as apparent accidents not reported (Gramaglia et al., 2019; Simon, 1989). Suicide rates, especially in those older than 70, are highest in almost the entire world (De Leo & Arnautovska, 2019), and therefore said population is considered high-risk, given their highly lethal methods, their few warning signs and their state of vulnerability that leads them to perceive self-annihilation as the best solution to their problems (Alphs et al., 2016; Stone & Crosby, 2014).

In addition, other risk factors include family history of suicide (Montes de Oca y Rodríguez, 2019; Pérez, 2012), recent widowhood or loss of a loved one (30), living alone, being single, social isolation (Calderón et al., 2021; Montes de Oca y Rodríguez, 2019; Khurana & Raj, 2018), recent house move, self-harm expressions and suicide threats, previous attempts, persistent insomnia, physical symptoms without organic cause, chronic illness, terminal illness with untreatable pain, and alcoholism (Alphs et al., 2016; Conejero et al., 2018).

The appearance of suicidal behavior can be a product of stress and its relationship with the environment in which it operates. It also depends on other intrinsic personality factors that result in poor adaptation, loss of meaning in life, hopelessness, and depression and psychological factors (Molina et al., 2020). Cognitively, processing of information and the train of thought are also affected, a phenomenon described by Beck as the "cognitive triad" which implies a negative vision of oneself, the world and the future, generating alterations in the quality of life, well-being, and satisfaction (Beck et al., 1979).

Suicidal behavior is quite common, and varies between 13.5% and 35% (Aslan et al., 2019); according to the Mexican Institute of Social Security, the main cause of suicide attempt in older adults is depression, triggered by a loss of vitality, changes in rhythm of life, decreased functions and capacities (added to unemployment or retirement), loss of significant figures (friends, partner, independence from children, distancing from family) , the appearance of chronic-

degenerative diseases and worsening economic situation, among others, added to poor health care (Martínez, 2007) and age discrimination (Montes de Oca, 2013), but more than 75% of consummated suicides had not disclosed prior suicidal intent (Schmutte & Wilkinson, 2020).

Depression is one of the main risk factors (Molina et al., 2020), but cultural aspects change the hierarchy of importance of associated factors, such as gender, given that men seem to be more vulnerable than women (Echeburúa, 2015; Ramírez et al., 2020).

In Colombia, prevalence of depression in the elderly is 49% (Minsalud, 2015). Depressive symptoms are mainly characterized by a constant sad mood that becomes pathological, given its disproportionality, not limited to a specific stimulus, its profoundness and that it tends to persist over time (Cerquera, 2008), loss of interest and enjoyment in activities, and a loss of enthusiasm for life (motivational syndrome) (Cardona et al., 2018). However, the stigmatization of mental health in old age in Colombia can lead to depressive symptoms being minimized or ignored, both by older adults themselves and by healthcare professionals. This creates a vicious cycle in which mental health problems in this population result in underreporting and a potential increase in the risk of suicidal behaviors.

This is compounded by the lack of longitudinal studies in Colombia that would allow for an understanding of how depressive symptoms evolve over time

in older adults and their relationship with suicide risk, as depression in old age does not always manifest with the same signs as in other stages of life (Robledo - Marín et al., 2023). Additionally, there is a significant gap in Colombian literature that would provide a better understanding of the relationship between depressive symptoms and suicidal behavior in old age, which could lead to clear prevention strategies for this population, especially in important public policies such as the National Mental Health Policy (Ministerio de Salud y Protección Social, 2019) and the National Public Policy on Aging and Old Age 2022-2031 (Ministerio de Salud y Protección Social, 2022).

With this in mind, the purpose of this article is to establish the relationship between depressive symptoms and suicidal behavior in older people residing in the urban areas of five Colombian cities.

Materials and methods

Objetive.

To establish the relationship between depressive symptoms and suicidal behavior in older people residing in the urban areas of five Colombian cities.

Design and participants.

A study observational to evaluate factors associated with the presence of suicidal behavior in the elderly, based on a survey of 2506 individuals older than 60 years

of age, who resided in the urban areas of five Colombian cities including Bucaramanga, Medellín, Pereira, Popayan and Santa Marta. Older people able to respond to a written survey were included in the study.

Sample and procedure.

Sample selection was done through probabilistic sampling (selection probability greater than zero) (Otzen & Manterola, 2017). In addition, cluster sampling (neighborhoods and blocks within each neighborhood), two-stage sampling (neighborhoods within each city or secondary sampling unit and blocks as the primary sampling unit) was also used. The final unit of analysis were elders who lived in the selected blocks and who meet the inclusion criteria. The Fleis formula was used, with a confidence level of 95%, an accuracy of 5%, an expected prevalence of 50% and a non-response percentage of 25%.

Variables. Suicidal behavior was evaluated using the SAD PERSONS scale (Patterson et al., 1983) recommended by the Ministry of Health and Social Protection of Colombia (Minsalud, 2017) y is an acronym for the main risk factors for suicide: Sex (S), Age (A), Depression (D), Previous attempt (P), Ethanol abuse (E), Rational thinking loss (R), Social Support Lacking (S), Organized plan (O), No spouse (N), and Sickness (S). For each element present, one point is added, with a final score ranging between 0-10; intervention criteria are defined based the following score: 0-2 outpatient follow-up, 3-4 close follow-up (may be in hospital),

5-6 suggests hospital admission, and 7-10 requires hospitalization (Patterson et al., 1983).

Given this score, the variable was grouped into low risk (score 0-2) and high risk (3-10). The independent variable of depressive symptomatology was measured through the CES-D scale of the Center for Epidemiological Studies (Radloff, 1977), validated in Colombian adults (Rueda et al., 2009).

Analysis of data.

A univariate analysis was performed to calculate absolute and relative frequencies and statistical measures; bivariate analysis was used to estimate the relationship between the dependent variable (suicidal behavior) and the independent variable (depressive symptomatology) and demographic, social and health variables were used to adjust the final model. In this analysis, hypothesis tests, p-values ($p<0.05$ statistical association), crude and adjusted prevalence ratios and their corresponding confidence intervals were calculated. Factors were estimated with logistical regression, given that a single point could be an early indicator of suicidal behavior and assumptions of the final model were verified.

Ethical considerations.

This article is based on the study "Mental health and well-being of the elderly, in five cities of Colombia in 2020", approved by the Ethics Committee of CES

University, classified as minimal risk (Act 134 of May 23, 2019). It is recorded that all participants signed informed consent before two witnesses and are at the CES University.

Data supporting the findings of this study are available at Universidad CES, Medellín Colombia, but restrictions apply to the availability of this data, which was used under license for the current study and is therefore not available publicly. However, the data are available from the authors upon request at corresponding author.

Results

Demographic, familiar, social, and personal characteristics of elders

Elder populations evaluated presented the following characteristics in the different cities included in the study: 54% were women with a higher percentage in Bucaramanga; only 10% were older than 80 years old, with the highest reported in Popayán, and 50% of participants were 68 years old or younger. Approximately 12% had the opportunity to access some type of education or training with similar behavior in all cities. With regards to Social Security, more than 97% were covered and for every two individuals affiliated with the subsidized system, one was in the contributory system.

In relation to the levels of depression, 1 out of every 2 elders reported an episode of clinical depression, 1 out of 3 reported having low quality of life, and 4

out of 10 were physically inactive (table I). Regarding suicidal behavior, more than 45.8% of the participants stated that they had some risk of suicidal behavior, with the highest risk observed in Pereira (66.3%), followed by Medellín and Santa Marta (54% and 55%, respectively), and Popayan with the lowest risk, with only 19.8% of participants presenting high risk of suicide (Table 1).

Table 1. Percentage distribution of the elderly, according to demographic, family, social and personal factors in five Colombian cities, 2021.

Characteristics	City										Total	
	Bucaramanga		Medellín		Pereira		Popayán		Santa Marta			
	n	%	n	%	N	%	n	%	n	%	n	%
Sex												
Male	187	37,4	199	39,8	266	52,7	230	45,9	271	54,2	1153	46,0
Female	313	62,6	301	60,2	239	47,3	271	54,1	229	45,8	1353	54,0
Age Group												
60 to 69	278	55,6	328	65,6	285	56,4	223	44,5	295	59,0	1409	56,2
70 to 79	173	34,6	137	27,4	156	30,9	191	38,1	166	33,2	823	32,8
80 or older	49	9,8	35	7,0	64	12,7	87	17,4	39	7,8	274	10,9
Educational Level												
Elementary	258	51,6	261	52,2	284	56,2	323	64,5	183	36,6	1309	52,2
High School	138	27,6	116	23,2	127	25,1	100	20,0	209	41,8	690	27,5
Tech/profesional	37	7,4	39	7,8	40	7,9	39	7,8	47	9,4	202	8,1
Postgraduate	7	1,4	41	8,2	7	1,4	5	1,0	35	7,0	95	3,8
None	60	12,0	43	8,6	47	9,3	34	6,8	26	5,2	210	8,4
Displaced												
Yes	19	3,8	41	8,2	10	2,0	51	10,2	10	2,0	131	5,2
No	481	96,2	459	91,8	495	98,0	450	89,8	490	98,0	2375	94,8
Immigrant												
Yes	9	1,8	5	1,0	1	0,2	1	0,2	5	1,0	21	0,8
No	491	98,2	495	99,0	504	99,8	500	99,8	495	99,0	2485	99,2
SGSSS												
Yes	489	97,8	491	98,2	486	96,2	495	98,8	480	96,0	2441	97,4
No	11	2,2	9	1,8	19	3,8	6	1,2	20	4,0	65	2,6
Social Security Régimen												
Contributive	243	48,6	190	38,0	148	29,3	135	26,9	177	35,4	893	35,6
Subsidized	246	49,2	301	60,2	338	66,9	360	71,9	303	60,6	1548	61,8
Not insured	11	2,2	9	1,8	19	3,8	6	1,2	20	4,0	65	2,6
Suicidal behavior												
No risk	331	66,2	230	46,0	170	33,7	402	80,2	225	45,0	1358	54,2
Some risk	169	33,8	270	54,0	335	66,3	99	19,8	275	55,0	1148	45,8

Characteristics	City										Total	
	Bucaramanga		Medellín		Pereira		Popayán		Santa Marta			
	n	%	n	%	N	%	n	%	n	%	n	%
Depressive Symptomatology												
Normal	334	66,8	178	35,6	177	35,0	393	78,4	176	35,2	1258	50,2
Depression	166	33,2	322	64,4	328	65,0	108	21,6	324	64,8	1248	49,8
Quality of Life												
Low	124	24,8	203	40,6	231	45,7	104	20,8	102	20,4	764	30,5
Moderate	166	33,2	240	48,0	151	29,9	223	44,5	279	55,8	1059	42,3
High	210	42,0	57	11,4	123	24,4	174	34,7	119	23,8	683	27,3
Physical Activity												
Inactive	177	35,4	141	28,2	296	58,6	124	24,8	263	52,6	1001	39,9
Active	323	64,6	359	71,8	209	41,4	377	75,2	237	47,4	1505	60,1
Risk of disability												
No risk	30	6,0	8	1,6	4	0,8	15	3,0	13	2,6	70	2,8
Some risk	470	94,0	492	98,4	501	99,2	486	97,0	487	97,4	2436	97,2

Depressive symptoms and suicidal behavior

Results indicated that significant differences for suicidal behavior were found for gender, depressive symptomatology, quality of life and physical activity; men presented risk of suicidal behavior 4 times greater than women, while low quality of life increased it 150%, and physical inactivity115%. Moreover, depressive symptoms increased the risk of suicidal behavior by almost 10 times (Table 2).

Table 2. Factors associated with suicidal behavior in the elderly in five Colombian cities, 2021.

Characteristics	Suicidal Behavior		X^2	p-Value	RPc (CI 95%)
	High Risk n (%)	Low Risk n (%)			
Age					
80 or older	112 (9,75)	162 (11,9)	3,017	0,221	1,000
70 a 79	382 (33,2)	441 (32,4)			1,25 (0,94 - 1,65)
60 a 69	654 (56,9)	755 (55,5)			1,25 (0,96 - 1,62)
Sex					
Female	400 (34,8)	953 (70,1)	312,658	0,000*	1,000
Male	748 (65,1)	405 (29,8)			4,40 (3,71 - 5,20)
Educational level					
None	86 (7,49)	124 (9,13)	3,276	0,512	1,000
Postgraduate	46 (4,00)	49 (3,60)			1,35 (0,83 - 2,20)
Tech/professional	99 (8,62)	103 (7,58)			1,38 (0,93 - 2,04)

Characteristics	Suicidal Behavior		X^2	p-Value	RPc (CI 95%)
	High Risk n (%)	Low Risk n (%)			
High School	312 (27,1)	378 (27,8)			0,84 (0,61 - 1,14)
Elementary	605 (52,7)	704 (51,8)			0,80 (0,60 - 1,08)
Displaced					
Yes	57 (4,96)	74 (5,44)	0,294	0,587	1,000
No	1091 (95,0)	1284 (94,5)			1,10 (0,77 - 1,57)
Immigrant					
Yes	9 (0,78)	12 (0,88)	0,074	0,785	1,000
No	1139 (99,2)	1346 (99,1)			1,12 (0,47 - 2,68)
Social Security Affiliation					
Yes	1117 (97,2)	1324 (97,4)	0,095	0,757	1,000
No	31 (2,70)	34 (2,50)			1,08 (0,65 - 1,76)
Social Security Régimen					
Contributive	380 (33,1)	513 (37,7)	5,928	0,051	1,000
Subsidized	737 (64,1)	811 (59,7)			1,22 (1,03 - 1,44)
Uninsured	31 (2,70)	34 (2,50)			1,23 (0,74 - 2,03)
Depressive Symptomatology					
Normal	254 (22,1)	1004 (73,9)	667,884	0,000*	1,000
Clinical Depression	894 (77,8)	354 (26,0)			9,98 (8,29 - 12,0)
Quality of life					
High	227 (19,7)	456 (33,5)	72,920	0,000*	1,000
Moderate	497 (43,2)	562 (41,3)			1,77 (1,45 - 2,16)
Low	424 (36,9)	340 (25,0)			2,50 (2,02 - 3,10)
Physical Activity					
Active	576 (50,1)	929 (68,4)	86,233	0,000*	1,000
Inactive	572 (49,8)	429 (31,5)			2,15 (1,82 - 2,53)
Risk of Disability					
No risk	25 (2,17)	45 (3,31)	2,957	0,085	1,000
High risk	1123 (97,8)	1313 (96,6)			1,53 (0,93 - 2,52)

PRc: crude prevalence ratio; X^2: Chi-square hypothesis test; CI: confidence interval.

Depressive symptomatology, gender, quality of life and physical activity accounted for 51.9% risk of suicidal behavior, and the remaining value could be explained by other variables. After adjustment, it is worth noting that gender increased the risk almost three times, and depressive symptomatology, increased it twice in relation to previous analysis; thus, males with depressive symptomatology had an 18 times greater risk of suicidal behavior compared to women and who did not present depressive symptoms. (Table 3).

Table 3. Explanatory model of suicidal behavior in the elderly according to factors in five Colombian cities, 2021

Characteristics	RPc (IC 95%)	RPa (IC 95%)
Depressive symptomatology		
Normal	1,000	1,000
Clinical Depression	9,98 (8,29 - 12,0)	18,3 (14,14 - 23,85)
Sex		
Female	1	1
Male	4,40 (3,71 - 5,20)	11,11 (8,58 - 14,37)
Quality of Life		
High	1,000	1,000
Moderate	1,77 (1,45 - 2,16)	1,14 (0,88 - 1,49)
Low	2,50 (2,02 - 3,10)	1,33 (1,007 - 1,772)
Physical Activity		
Active	1,000	1,000
Inactive	2,15 (1,82 - 2,53)	1,622 (1,314 - 2,003)

PRc: crude prevalence ratio; RPa: adjusted prevalence ratio; CI: confidence interval

When analyzing the behavior of the 1,148 individuals who reported risk of suicidal behavior, it is evident that it occurred with greater intensity, in those who manifested clinical depression, were men, had a moderate quality of life, were physically inactive and lived in Pereira. With regards to women, more than 90% of those with depressive symptoms exhibited suicidal behavior.

Discussion

People aged 60 and over show a higher incidence of suicidal ideation, considered a risk factor for completed suicide, in a relationship 8:1, and a third of those who fail try again in the same year (Mann et al., 1999). The risk of suicidal behavior reported in this study was 45.8%, with the highest risk in Pereira, followed by Medellín and Santa Marta, and the lowest risk in Popayan. In this regard, a similar

study carried out in Cuba in 2018 (Valiente et al., 2018) reported that the presence of suicide threats or plans have a high relation with suicidal behavior, given that findings suggest that patients with previous suicide attempts present more severe clinical profiles than those who have made one attempt. Therefore, it is relevant to call special attention to all manifestations of suicidal behavior in the elderly population. Values like those found in this study were also reported by Silva et al (2013) in Chile, who reported a prevalence of suicidal thoughts of 35.3%, a desire to die of 20.2%, suicidal ideation of 14.3% and attempted suicide of 7.7%. It is also important to note that in Colombia, the surveillance system emphasizes event reporting of "suicide attempts", however, it does not inquire about suicidal ideation or planning, which makes it difficult to monitor other manifestations of suicidal behavior, complicating its approach and early intervention. The findings of this study thus warrant the importance of considering the high lethality levels in the elder population in comparison to other population groups (Andrade et al., 2016; O´Connell et al., 2004).

After analysis of data and adjustment of variables of this study was completed, it was concluded that males had an increased risk of presenting suicidal behavior 4 times greater than females; these findings differ from those reported by Silva et al in Chile (Silva et al., 2013) who found that women had twice the risk of men of suicidal ideation and thrice of suicide attempt as well as from those reported by Bethancourt Santana et al in Cuba (2015) who found greater suicidal

intent in older women compared to men by González et al (2018) and by Fachola in Uruguay (2015) who emphasized female predominance in suicidal behavior phenomena. On the contrary, another study by Molina et al (2020) revealed that suicidal behavior was similar for both sexes. These differences reported between studies, could most likely be explained by the cultural, social, and economic characteristics and context of each country.

Regarding age, a higher risk of suicidal behavior, although not significant, was observed in individuals between 60 and 69 years, while in Cuba a higher risk was reported in the population older than 80 (Bethancourt, 2015).

According to the Mental Health Bulletin published by the Ministry of Health and Social Protection in 2018, more than 90% of those who present suicidal behavior also suffer some type of depressive disorder or substance abuse, suggesting that depression could increase the risk of suicidal behavior by up to 20 times; this is consistent with the findings of this study which indicate that depressive symptoms can increase risk of suicidal behavior up to 10 times. Silva et al (2013) also found that mood disorders and substance abuse were associated with a higher frequency of suicidal behavior and reported a decreased relation between anxiety disorders and other mental disorders with suicidal behavior, suggesting new possibilities of inquiry for future research. Similarly, Bethancourt et al reported that depression was the factor most associated with suicidal behavior risk (Bethancourt, 2015). In this regard, it should be taken into account that factors

such as loneliness, social isolation, the empty nest syndrome, widowhood, death of close friends, dependency in carrying out daily activities, disability, pain and chronic disease, are factors that increase emotional decline and consequently the risk of depression in the elder population that could later be associated with a greater presence of suicidal behavior (Andrade et al., 2016; Cardona et al., 2015; Fernández et al., 2022). From a biological standpoint, suicidal behavior in elders presents specific neuronal characteristics such as decreased serotonin and increased norepinephrine, which are directly linked to depression, due to increased hopelessness, demotivation, impulsiveness, and reactivity that can lead to suicidal behavior and increase lethality when performing self-injurious acts (Andrade et al., 2016; Carballo et al., 2008; Mann, 1999; van Heeringen, 2003).

The results of this study also indicate that physical inactivity increases the probability of suicidal behavior by 115%, which is in agreement with findings reported by Ramírez Arango et al (2020) in a study carried out in three Colombian cities which found that disability increased the risk of suicidal ideation. Although disability was not significantly associated with suicidal behavior, other reports have highlighted that reduced mobility increases the risk of suicidal behavior by 2.14 times, which could be related to difficulties in carrying out basic activities of daily living.

Moreover, Andrade-Salazar et al reported that the impact on quality of life and the perception of deterioration in health behaved as predictors of suicidal

behavior in a Colombian population of elders (Andrade et al., 2016) coinciding with the results of this study which showed that perception of low quality of life increased the risk of suicidal behavior by approximately 150%. Similarly, a systematic review by Calderón-Cholbi et al (2021) reported that the perception of health status and quality of life are relevant as predictors of suicidal behavior in the elderly population.

Conclusions

The primary purpose of this study was to establish the relationship between depressive symptoms and suicidal behavior in older people residing in the urban areas of five Colombian cities. The results confirm that the majority of older adults in the five cities analyzed are women. In general, they have low educational levels, high coverage of the social security system, and are between the ages of 60 and 69. Suicidal behavior is strongly influenced by factors such as sex, depressive symptoms, quality of life, and physical activity. Men are four times more at risk than women, while a low quality of life and physical inactivity significantly increase this risk. Additionally, depressive symptoms increase the likelihood of suicidal behaviors by nearly ten times, highlighting the need for specific interventions focused on these factors to improve mental health and prevent suicide.

It can be concluded that suicidal behavior in older people is a multifactorial phenomenon and that it is preventable, which is why it requires early detection of depressive symptoms in the first place, followed by promoting physical activity and the subjective perception of the quality of life. life.

Limitations and Future Perspectives

Despite the contributions made, this study has several limitations. First, depressive symptoms were analyzed as an explanation for suicidal behavior in old age from a cross-sectional approach. However, to establish causal relationships between the observed factors and suicidal behavior, understanding how these factors interact over time, it would be necessary to follow individuals over the course of several years. In this regard, planning and conducting longitudinal studies will be crucial. Second, only older adults without cognitive impairment were included, which could result in an underestimation of the prevalence of suicidal behavior in the general population. Therefore, it is necessary to develop new methodologies and approaches that allow the inclusion of this sector of the population, in order to understand the issue more comprehensively.

The findings identified pose a significant challenge and opportunity for professionals from various disciplines in Colombia, as they highlight the need to create and implement specific interventions that address mental health, promote

physical activity, and improve the quality of life of older adults. This should be achieved through differentiated approaches, the leadership of awareness campaigns to educate the community about depression and suicide prevention, helping to destigmatize mental health, enrich therapeutic approaches, strengthen research, and enhance the implementation of various strategies that contribute to a healthier and more resilient society, especially in the prevention of suicide among the elderly population.

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