



Geriatrics, Gerontology and Aging

ISSN: 2447-2115

ISSN: 2447-2123

Sociedade Brasileira de Geriatria e Gerontologia, SBGG

Cachioni, Meire; Cipolli, Gabriela Cabett; Alonso, Vanessa; Melo, Ruth Caldeira de; Wachholz, Patrick Alexander; Paúl, Constança
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Geriatrics, Gerontology and Aging, vol. 17, e0230026, 2023
Sociedade Brasileira de Geriatria e Gerontologia, SBGG

DOI: <https://doi.org/10.53886/gga.e0230026>

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Relationship between self-reported health and neuroticism in older adults: a scoping review

Relação entre saúde autorreferida e neuroticismo em idosos: uma revisão de escopo

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Received on: 03/14/2023

Accepted on: 05/22/2023

Associate Editor in Charge: Roberto Alves Lourenço

How to cite this article: Cachioni M, Cipolli GC, Alonso V, Melo RC, Wachholz PA, Paúl C. Relationship between self-reported health and neuroticism in older adults: a scoping review. *Geriatr Gerontol Aging*. 2023;17:e0230026. <https://doi.org/10.53886/gga.e0230026>

Abstract

This scoping review aims to identify and map the existing literature regarding the relationship between neuroticism and self-reported health in community-dwelling older adults. We adopted the Joanna Briggs Institute Manual for Evidence Synthesis recommendations and followed the PRISMA-SCr when reporting it. The search was performed on ten different databases, including: Cumulative Index to Nursing and Allied Health Literature, Cochrane, Embase, PsycArticles, PsycInfo, United States National Library of Medicine, Scopus, Web of Science, Ageline and Biblioteca Virtual em Saúde/Centro Latino-Americano e do Caribe de Informação em Ciências da Saúde databases until February 2021. Data screening and extraction were performed by two independent reviewers. We included primary studies with older adults (≥ 60 years) [participants] that adopted validated instruments to assess neuroticism and self-reported health [concept] in the community [context], published in Portuguese, English, or Spanish. We identified 3453 articles and included 15 studies in this review. We extracted the main categories of included studies, characteristics of the participants, methodological issues, and biopsychosocial factors. Outcomes were reported in three sections: Focus of studies; Definitions and measures of neuroticism and self-reported health; Associations with biopsychosocial factors. We found an association between high neuroticism and poor self-reported health. Some biopsychosocial factors may influence this relationship, such as chronic diseases, depression, social support, and a sense of control, which must be considered in future studies to shed light on this topic.

Keywords: aging; aged; review; self-assessment; neuroticism.

Resumo

Esta revisão de escopo tem como objetivo identificar e mapear a literatura existente sobre a relação entre neuroticismo e saúde autorreferida em idosos vivendo na comunidade. Adotamos as recomendações do Joanna Briggs Institute Manual for Evidence Synthesis e seguimos o PRISMA-SCr ao reportá-lo. A busca foi realizada em dez bases de dados diferentes, incluindo: Cumulative Index to Nursing and Allied Health Literature, Cochrane, Embase, PsycArticles, PsycInfo, United States National Library of Medicine, Scopus, Web of Science, Ageline e Biblioteca Virtual em Saúde/Centro Latino-Americano e do Caribe de Informação em Ciências da Saúde até fevereiro de 2021. A triagem e extração dos dados foram realizadas por dois revisores independentes. Incluímos estudos primários com idosos (≥ 60 anos) [participantes] que adotaram instrumentos validados para avaliar neuroticismo e saúde autorreferida [conceito] na comunidade [contexto], publicados em português, inglês ou espanhol. Identificamos 3.453 artigos e incluímos 15 estudos nesta revisão. Extraímos as principais categorias dos estudos incluídos, características dos participantes, questões metodológicas e fatores biopsicossociais. Os resultados foram relatados em três seções: Foco dos estudos; Definições e medidas de neuroticismo e autoavaliação de saúde; Associações com fatores biopsicossociais. Encontramos uma associação entre alto neuroticismo e má saúde autorrelatada. Alguns fatores biopsicossociais podem influenciar nessa relação, como doenças crônicas, depressão, suporte social e senso de controle, que devem ser considerados em estudos futuros para elucidar esse tema.

Palavras-chave: envelhecimento; idoso; revisão; autoavaliação; neuroticismo.



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INTRODUCTION

According to the literature,¹ self-reported health is a measure of the intersection between culture and biology, reflecting the state of an individual's body and mind. Self-reported health can be considered a subcomponent of an individual's self-concept that captures self-rated health.²

Self-reported health is considered an indicator of construed individual and subjective health and an excellent predictor of general health status³ even after controlling for objective health status, health-related behaviors, and sociodemographic factors.⁴ There is evidence that longer life expectancy can be associated with a good indicator of general health, as individuals who live longer tend to be those without uncontrolled chronic diseases.⁵ Self-reported health has significant associations with physical, well-being, mortality, and personality components in both the general and the older population.

A wide array of measuring instruments is used, ranging from comprehensive instruments involving several scales or using a variant of the single question "In general, how would you rate your overall health?"⁶⁻⁸

Self-reported health appears to provide a clearer picture of individual and subjective health than guided questions.¹ In addition to providing a subjective assessment of health, studies suggest that self-reported health may reflect socio-demographic,⁹ gender,¹⁰ and psychosocial¹¹ characteristics and vice-versa.

Notably, among different psychosocial characteristics, personality traits play a particularly important role and have been used in a series of studies.^{5,12} They can be one of the main aspects related to health and may lead the individual to rate their health as poor or excellent.¹³

Personality tends to stabilize during the life course, changing little on an individual level from adulthood on. However, changes in personality traits can influence general health status.¹² Some studies have shown that the "Big five" traits that make up personality (openness to experience, agreeableness, conscientiousness, neuroticism, and extraversion)¹⁴ are associated with self-reported health.⁹ Nevertheless, having a higher neuroticism level appears to be strongly linked with negative outcomes regarding how an individual rates their health.¹⁵

Individuals with high neuroticism, ie, with a strong tendency for negative emotionality, generally rate their health as poorer¹² and worse than objective indicators suggest. Studies using the "Big Five" personality factors described by Costa & McCrae¹⁴ reveal that higher neuroticism scores are not only linked to negative subjective health ratings, but also to behavioral markers of walking speed decline¹⁶ and biological dysfunction.¹⁷ Other authors have suggested that high neuroticism is a predictor of chronic respiratory diseases,

depression, and dementia.^{18,19} Individuals with higher neuroticism scores also tend to have more somatic complaints.²⁰

Although most studies examining the association between personality and self-reported health have centered on the younger population, a few studies conducted in older adults have shown a similar association between these variables.^{9,12} People can shape subjective interpretations, and this can influence their objective health status.² For example, people with high levels of neuroticism are more likely to report numerous symptoms that have no concrete physiological foundation. These individuals tend to accentuate actual symptoms and bodily sensations to seek medical help to a greater extent than people with a low level of neuroticism.^{21,22}

To date, no reviews have been found on the relationship between self-reported health and neuroticism in community-dwelling older adults. The objective of the present review was to map studies that described associations between neuroticism and self-reported health in community-dwelling older adults considering: the context in which the study was conducted; the instruments used to assess self-reported health and neuroticism; and the profile and sociodemographic factors involved in the relationship. The review was guided by the following research questions:

1. Does the personality trait neuroticism influence self-reported health in community-dwelling older adults?
2. What is the relationship between the personality trait neuroticism and self-reported health in community-dwelling older adults?
3. Can biopsychosocial factors contribute to good levels of self-reported health and low neuroticism?

METHODS

A scoping review or mapping review is commonly used to clarify definitions and conceptual boundaries regarding a particular field or area when an extensive body of literature is heterogeneous in nature and not amenable to accurate systematic review.²³ The Joanna Briggs Institute (JBI) Manual for Evidence Synthesis was consulted in conducting this scoping review, which was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-analyses Extension for Scoping Reviews checklist (PRISMA-ScR).²⁴ A scoping review does not seek to analyze the methodological quality of the included studies, but rather to map them. Based on a synthesis of the available knowledge, various types of study design are then incorporated to comprehensively summarize and synthesize the scientific evidence, disclosing practices, programs, and policies, as well as providing guidance for future searches.²⁵ The protocol for this study was

registered with Open Science Framework and published in a national journal.²⁶

Information sources and search strategy

We conducted electronic searches of the following databases: Ageline, *Biblioteca Virtual em Saúde/Centro Latino-Americano e do Caribe de Informação em Ciências da Saúde* (BVS-Bireme), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Cochrane, Embase, PsycArticles, PSYCINFO, Pubmed, Scopus, and Web of Science. Initially, articles published (without specifying starting date) up until July 2020 were searched, with a new update in February 2021. The new search string differed from the original search, with the inclusion of “self-reported health” in the search strategy, providing a new search string: Aged OR “Aged, 80 and over” OR “Old People” OR “Old Adults” AND Neuroticism OR Personality AND “Self-reported health” OR “Self-Rated Health”. When available in the databases, filters were applied to only select papers published in the selected languages (English, Portuguese, and Spanish). Additionally, hand searches were conducted using the included sources.

Eligibility criteria

All primary studies, including cohort studies, analyzed the association between neuroticism and self-reported health in community-dwelling older adults aged 60 years and older. Mean age was greater than or equal to 60 years (this was a deviation from protocol). Only studies published up to 2021 were eligible. Studies that involved residents of long-term care facilities or hospitalized patients were excluded because the instruments were tailored specifically for community-dwelling older adults.

Literature search and study selection

Studies satisfying the following criteria were selected:

1. Mean age equal to 60, men and/or women [*participants*];
2. Gerontological literature reporting neuroticism and self-reported health in older adults;
3. Studies that used validated instruments to assess neuroticism and self-reported health [*concept*];
4. Studies conducted in the community, as long as they included older adults [*context*];
5. Studies in Portuguese, English, or Spanish.

Sources such as books, theses, and dissertations (gray literature) were not considered, nor were case reports, letters to the editor, qualitative studies, case control studies, commentaries, and opinion papers.

After the exclusion of duplicate articles, the titles and abstracts of the retrieved studies were screened for inclusion

criteria by 2 independent researchers (GCC and VA) using Rayyan QCRI software developed by Hamad Bin Khalifa University. In case of disagreement between researchers, a third researcher (MC) was consulted. Moreover, full texts of potential studies were minutely analyzed to be eligible by the researchers (GCC and VA). In this phase, disagreement between the two researchers was resolved through discussion and consensus.

Data collection process and data items

Data from the final list of eligible studies were extracted and listed in a spreadsheet (Microsoft Excel 2011) by 2 of the reviewers. Another reviewer cross-checked the information for accuracy. Any discrepancies were resolved by discussion and consensus among the reviewers. The main categories of extracted data were characteristics of the study (first author, year, type, country), characteristics of the participants (sample size, sex, age), methodological details (instruments used), and biopsychosocial factors. The data extraction strategies were pilot tested for four studies and refined throughout the process. Whenever necessary, first authors were contacted by email for requesting further information. Results were graphically reported with tables containing the narrative that described the body of retrieved literature. Outcomes were reported in three sections considering the aims of the review as following:

1. Focus of studies;
2. Definitions and measures of neuroticism and self-reported health;
3. Associations with biopsychosocial factors.

RESULTS

The search and study selection process are presented in Figure 1. The search of the mentioned databases led to the initial retrieval of 3453 studies. After exclusion of 851 duplicates, 2602 entries were selected for analysis of title and abstract. A total of 2572 studies were excluded, resulting in 27 selected for full reading. After reading the full texts, we excluded 7 articles. The remaining 20 studies were assessed for eligibility. Five studies were excluded because they did not comprehend self-reported health and neuroticism in the same article ($n = 3$) and because they did not involve older adults ($n = 2$). A total of 15 articles were included in this review.

Study context

Studies considering the association between neuroticism and self-reported health in community-dwelling older adults make up a small proportion of the gerontology and

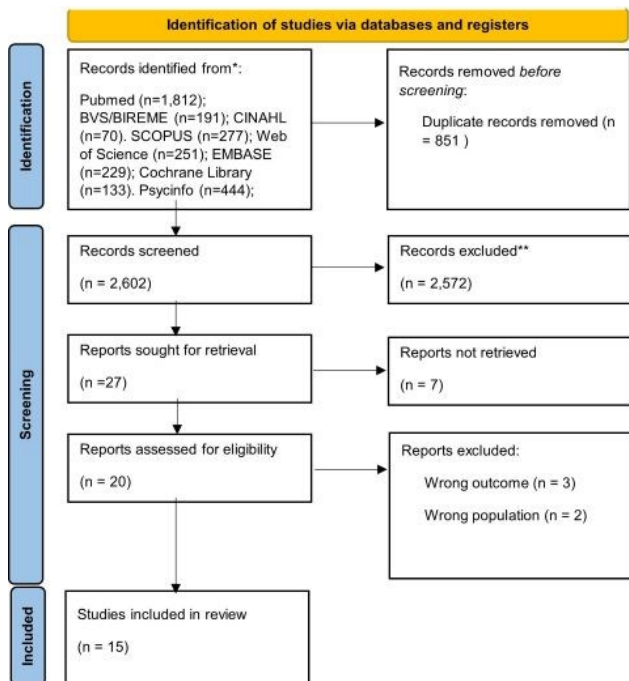


FIGURE 1. Flow diagram of the article inclusion process.

psychology literature. Of all included studies, 47% were published between 2008 and 2017, with publication gaps in 1993 – 2009, 2009 – 2012, and 2015 – 2016.

Study design

This review found 11 cross-sectional studies and 4 studies with longitudinal design. The characteristics of the included studies are shown in Table 1.

Countries of origin

All studies were published in the English language. Regarding the countries of origin, 9 studies were from the USA,^{5,12,15,21,27-31} 1 was from Australia,¹⁰ 1 was from the United Kingdom,⁷ 1 was from Ireland,¹¹ 1 was from Israel,³² 1 was from Brazil and Portugal,³³ and 1 was from Germany.³⁴ The countries of origin of the studies are shown in Table 1.

Population characteristics

Eight studies involved older adults only (60 years and over), but the age range used to define this population varied across studies^{7,15,21,28-31,35} or was not specified.¹⁰ Jerant et al.²⁸ recruited people living in the community aged 40 years and over, whereas Ward²⁹ included non-institutionalized individuals aged 50 years and over recruited from the Health and Retirement Study. Gale et al.⁷ used data from the UK Biobank and selected individuals aged 37 – 73 years living in the community. Some studies did not specify the age range

and the authors used the term “old people” to describe the target population.¹⁰ None of the studies focused on a specific gender, selecting women and men. Study sample size ranged from 266 to 321 456 people.

Most of the studies ($n = 10$) drew on secondary data from larger studies, while 3 collected data based on a convenience sample,²⁸ the electoral roll,¹⁰ or listed phone numbers.³⁰ The analyses of the study by Aiken-Morgan et al.,²¹ for instance, were obtained from the Baltimore Study of Black Aging (BSBA), whereas the study by Burke et al.¹¹ used data from the Technology Research for Independent Living (TRIL) study. Ward²⁹ collected data from the Health and Retirement Study (HRS), and Gale et al.⁷ performed their analyses based on the UK Biobank; Wettstein et al.³⁵ used data from the Interdisciplinary Longitudinal Study of Adult Development (ILSE). The study by Elran-Barak et al.³² drew on data from the Israel Diabetes and Cognitive Decline study, the only investigation considering older adults with specific diseases. Lastly, Mitchell et al.³¹ employed data from the Health and Retirement Study, while Duberstein et al.²⁷ and Chapman et al.¹² and both used the same sample from outpatient facilities.

Focus of studies

Most of the studies included ($n = 8$) in the review sought to explore the relationship between personality and self-reported health, albeit subjective or objective. Noteworthy³⁰ is a study that examined personality pathology and perceived health and a study⁷ that investigated the association between neuroticism and mortality and the influence of self-reported health on this relationship. Personality as a moderator of self-reported health in older adults with diabetes and of the effects of stressful life events³¹ was featured in 13.3% of the included articles.³²

Biopsychosocial factors played a role in the association between personality and self-reported health.^{11,28,29,33} Only one study¹¹ failed to find an association between neuroticism and self-reported health on multivariate analysis.

Definitions and measures of neuroticism and self-reported health

Firstly, according to the five-factor model (Big 5) of Costa & McCrae,¹⁴ personality is hierarchically organized, with 5 higher order dimensions or factors that can be divided into lower-level components or facets. At the top of the hierarchy, personality can be described along the following dimensions: neuroticism (N), extraversion (E), openness to experience (O), agreeableness (A), and conscientiousness (C). Neuroticism is characterized by distress, chronic negative emotionality, and vulnerability to stress; extraversion has the hallmarks

TABLE 1. Characteristics of the included studies (n = 15).

Author	Participants			Context			Concept	
	Sample size (n)	Female (n)	Age included	Mean age	Country	Settings	Design	Neuroticism assessment tool*
Jorm et al. ¹⁰	711	344	≥ 70 years	---	Australia	Community	Cross-sectional	EPQ-R
“Would you say your overall health nowadays is excellent, good, fair or poor? How would you rate your health compared to most people of your age: is it better, about the same, worse? How much do your health problems stand in the way of your doing things you want to do: not at all, a little, a great deal?”								
Duberstein et al. ²⁷	1304	832	≥ 60 years	71	United States of America	Outpatient clinic	Cross-sectional	NEO-FFI
Chapman et al. ¹²	266	-	≥ 60 years	71	United States of America	Outpatient clinic	Cross-sectional	NEO-FFI
Jerant et al. ²⁸	415	321	> 40 years	60	United States of America	Community	Cross-sectional	NEO-FFI
Löckenhoff et al. ⁵	Medicare PCC (648) BLSA (393)	Medicare PCC (489) BLSA (145)	≥ 65 years	Medicare PCC (81) BLSA (74)	United States of America	Community	Cross-sectional	NEO PI-R
Burke et al. ¹¹	492	336	≥ 60 years	72	Ireland	Outpatient clinic	Cross-sectional	EPI
Ward ²⁹	6891	3.735	≥ 50 years	65	United States of America	Community	Cross-sectional	MIDI
Continue...								

TABLE 1. Continuation.

Author	Participants			Context			Concept	
	Sample size (n)	Female (n)	Age included	Mean age	Country	Settings	Design	Neuroticism assessment tool*
Powers & Oltmanns ³⁰	697	397	≥ 55 years	---	United States of America	Community	Cross-sectional	SIDP-IV and NEO PI-R “In the last 12 months, would you describe your general health?” and “In general, would you say your health?”
Aiken-Morgan et al. ²¹	289	202	≥ 49 years	67	United States of America	Community	Cross-sectional	NEO PI-R The Health Problem checklist
Gale et al. ⁷	321 456	173 727	> 37 years	Died – 56 Did not die – 61	United Kingdom	Community	Longitudinal	EPQ-R and NEO -FFI “In general, how would you rate your overall health?”
Wettstein et al. ³⁴	500	260	> 40 years	63	German	Community	Longitudinal	NEO-FFI “How satisfied were they with their health?”
Elran-Barak et al. ³²	368	156	≥ 65 years	72	Israel	Community	Cross-sectional	NEO -FFI “In general, compared to other people your age, would you say your health is?”
Stephan et al. ¹⁶	HRS (n = 12 534) ELSA (n = 8112) NHATS (n = 2766)	HRS (n = 7270) ELSA (n = 4451) NHATS (n = 1631)	≥ 50 years	HRS (69) ELSA (66) NHATS (79)	United States of America and Europe	Community	Longitudinal	MIDI “Would you say your health?”
blinded to reviewers. ²⁶	FIBRA (n = 418) DIA (n = 380)	FIBRA (n = 292) DIA (n = 260)	≥ 70 years	FIBRA (80) DIA (77)	Brazil and Portugal	Community	Cross-sectional	NEO-FFI “In general, how would you rate your overall health?”
Mitchell et al. ³¹	14 418	8507	> 51 years	68	United States of America	Community	Longitudinal	MIDI “Would you say your health?”

Note: Medicare PCC; Medicare Primary and Consumer-Directed Care Demonstration; BLSA: Baltimore Longitudinal Study of Aging; HRS: Health and Retirement Study; ELSA: English Longitudinal Study of Aging; NHATS: National Health and Aging Trends Study; FIBRA: Frailty in Brazilian Older Adults; DIA: From Disability to Activity: The Challenge of Aging; NEO PI-R: Revised NEO Personality Inventory; SIDP-IV: Structured Interview for DSM-IV Personality; NEO-FFI: NEO Five Factor Inventory; EPQ-R: Eysenck Personality Questionnaire-Revised; EPI: Eysenck Personality Inventory; MIDI: Midlife Developmental Inventory Personality scale; SF-36: 36-item Short Form Health Survey.

of an optimistic outlook and a sociable and active lifestyle; openness to experience manifests as a willingness to consider new ideas and experiences and esthetic and/or intellectual sensitivities; agreeableness is characterized by trust, altruism, and friendship; and conscientiousness reflects reliability, diligence, and leaning toward action.³⁶

Whereas the “Big 5” assesses the 5 dimensions, the Eysenck Personality Questionnaire-Revised (EPQ-R)³⁷ is based on 3 similar dimensions of personality traits, namely: psychoticism (P), extraversion (E), and neuroticism (N). However, an updated EPQ-R, named the Eysenck Personality Inventory (EPI) and, also developed in 1964, is based on a personality concept that identifies extraversion and neuroticism as 2 primary independent factors comprising a global personality construct which measures 2 independent invasive dimensions of personality.³⁸ Besides these instruments, the Midlife Development Inventory (MIDI) developed by Lachman & Weaver³⁹ is a 26-item scale in which respondents are asked to indicate how well each describes them on a scale of 1 (not at all) to 4 (a lot). The inventory contains 4 items for extraversion, 5 for agreeableness, 5 for conscientiousness, 4 for neuroticism, and 7 for openness.

Regarding other measures, 7 studies used the NEO Five-Factor Inventory,^{7,12,27,28,32-34} 2 employed the EPQ-R,^{7,10} 3 used the Revised NEO Personality Inventory,^{5,30} 1 used the EPI,¹¹ and 3 studies used the MIDI.^{16,29,31} The instruments used to assess the neuroticism personality trait are outlined in Table 1.

Second, self-reported health can be defined as “... a summary statement about the way in which numerous aspects of health, both subjective and objective, are combined within the perceptual framework of the individual respondent.”¹ There are often implicit contextual frameworks that shape the ways in which people evaluate their own health and these are the most important in empirical research. These frameworks are difficult to measure directly in quantitative studies. Usually, they are indirectly represented by indicators such as age, nationality, or ethnic group. The framework of evaluation may also be shaped by individual characteristics such as an optimistic or pessimistic general disposition.¹

As outlined earlier, self-reported health can be measured using a general question and its derivatives. Nevertheless, although self-reported health can predict some negative health outcomes such as mortality,⁴⁰ it largely comprises 2 domains: physical and mental health,^{8,41} which can contribute unequally to these outcomes. Of the selected studies, 4 chose to use the question: “In general, how would you rate your overall health?”, 3 studies used a question derived from the general question (How would you rate your overall health?), and 1

study used 3 questions to measure self-reported health. Three articles were more specific regarding the questions probing self-reported health, eg, “In the last 12 months, would you describe your general health as excellent, very good, good, fair, or poor?” or “How satisfied are you with your health?” or “In general, compared to other people your age, would you say your health is excellent, very good, good, fair, or poor?”

Lastly, 5 studies used predefined self-reported health scales, namely the SF-36, the EQ-5D, and the Health Problem Checklist. For more details, see Table 1.

Associations with biopsychosocial factors

The studies showed that, besides the association between self-reported health and neuroticism, some biopsychosocial factors can contribute to self-reported health and neuroticism. The associations of biopsychosocial factors with self-reported health and neuroticism in the reviewed articles are illustrated in Figure 2.

Of the 15 included studies, only 5 assessed health indicators using instruments. For example, the study by Burke et al.¹¹ analyzed comorbidities using the Charlson Comorbidity Index (CCI), showing a mean risk of death in the sample of 1.92 (SD = 2.07). The study by Duberstein et al.²⁷ quantified diseases using the Cumulative Illness Rating Scale and the severity of depressive symptoms with the Hamilton Depression Rating Scale, detecting a significant association between neuroticism and poor perceived health, over and above the effects of depression and disease burden. In contrast to the study by Duberstein et al.,²⁷ the investigation by Chapman et al.¹² found that neuroticism was associated with perceived health controlled by disease burden and demographic variables, but not by depression. Participants in the study by Aikan-Morgan et al.²¹ showed that high neuroticism was associated with increased reports of general and cardiovascular health problems.

Only 2 studies addressed chronic diseases in the statistical models. Based on the collected data, physical health factors were grouped into arthritis, asthma, chronic obstructive pulmonary disease (COPD), coronary heart disease, heart failure, depression, diabetes, hypertension, stroke, and cancer. Among the older adults assessed in the study by Jerant et al.,²⁸ the most prevalent noncommunicable disease (NCD) was arthritis (56.1%), followed by (46.5%) and diabetes (41.4%). It is noteworthy that older adults who had higher self-reported health also informed diabetes, whereas a poor rating was associated with arthritis, depression, and high neuroticism. The study by Löckenhoff et al.⁵ using data from the Medicare Primary and Consumer-Directed Care Demonstration (PCC) and the Baltimore Longitudinal Study of Aging (BLSA), grouped

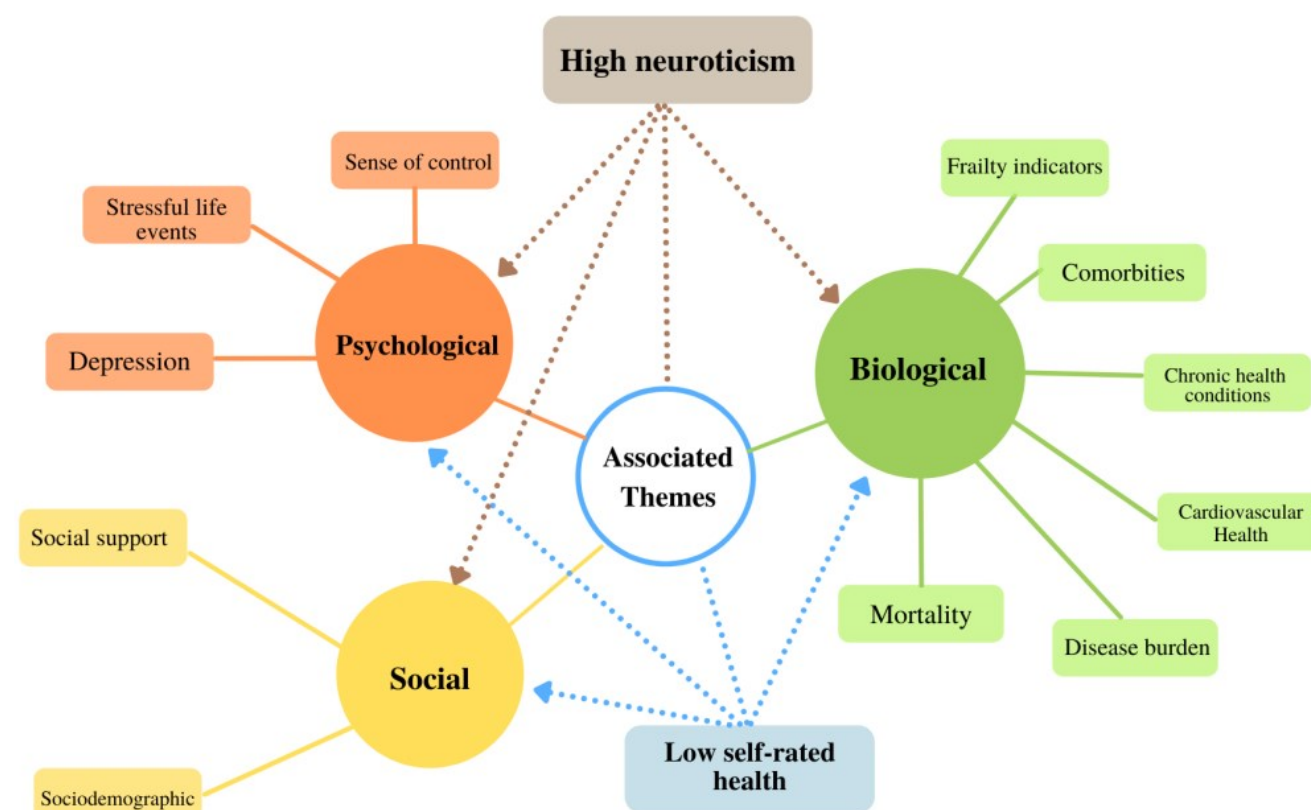


FIGURE 2. Framework with biopsychosocial factors.

health conditions (hypertension, diabetes, cancer, stroke, and coronary heart disease) and depression. Depression was the most prevalent condition in the Medicare PCC sample (9.3%), where the number of health conditions had a mean of 1.7 (SD = 1.1). In the study, the effect of neuroticism was moderated by health conditions. Lastly, Jorm et al.¹⁰ did not report the prevalence of health factors. Nonetheless, the study showed that arthritis was correlated with neuroticism in women ($r = 0.19$).

In addition to chronic NCDs, Elran-Barak et al.³² showed that low handgrip strength, slow gait speed, and poor general cognitive functioning were associated with poor subjective health only among individuals with high neuroticism. Similarly, Cachioni et al.³³ found that Brazilian and Portuguese older adults with low neuroticism self-reported their health as good or very good. Regarding the psychosocial factors assessed, analyses included sense of control,²⁹ social support,¹¹ and stressful life events.³¹ Ward²⁹ found that 25.1% of the sample self-reported their health as fair and/or poor, and that positive and negative affect correlated strongly with fair and/or poor health, and functional limitations correlated with sense of control. Burke et al.¹¹ found that self-reported health correlated with the

CCI ($r = -0.33$, $p < 0.01$), followed by instrumental activities of daily living ($r = 0.33$, $p < 0.01$), CES-D ($r = -0.29$, $p < 0.01$), the Pittsburg Sleep Score ($r = -0.20$, $p < 0.01$), social support from relatives ($r = 0.13$, $p < 0.01$) and friends ($r = 0.17$, $p < 0.01$), and neuroticism ($r = -0.24$, $p < 0.01$). Finally, Mitchell et al.³¹ found that neuroticism was directly associated with higher levels of depressive symptoms and worse stressful life events. Only one study had mortality as an outcome. Gale et al.⁷ found that, after adjustment for sex and age, there was an increase in all-cause mortality in study participants who had higher neuroticism (HR = 1.06, 95%CI 1.03 – 1.09, $p < 0.001$).

DISCUSSION

The aim of the present review was to map the scientific evidence on the relationship between neuroticism and self-reported health in older adults. The reviewed literature pointed out to conflicting data on the association between neuroticism and self-reported health. Among all factors involved in this relationship, biopsychosocial factors are relevant. The presence of chronic diseases such as arthritis, cardiovascular diseases, asthma, COPD, depressive symptoms, social

support, and sense of control may influence the relationship between self-reported health and neuroticism in older adults.

Personality traits are examples of characteristics that predict positive and/or negative health outcomes.⁴² The results of this review reveal evidence on the association between neuroticism and self-reported health in older adults, with most studies showing a negative correlation.^{7,11,28} These data suggest that older adults with high neuroticism tend to rate their overall health as poorer, and this finding was consistent with previous studies.⁴³⁻⁴⁵

Those with high neuroticism tend to experience higher levels of negative emotionality, become more affected by stressing experiences, and have more difficulty controlling their impulses⁴⁶ in contrast with those who have high conscientiousness and extraversion, who are better able to control their impulses.⁴⁷ Negative emotions and pessimism, associated with neuroticism, can contribute to more negative assessments of health status, thereby influencing self-reported health.⁴ In the present review, this premise is evident in the study conducted by Burke et al.,¹¹ showing that a higher neuroticism score on the Eysenck personality scale was significantly and negatively associated with perceived health on bivariate analysis, but not on multiple regression analyses. Similarly, the study by Jerant et al.²⁸ showed a significant negative association between self-reported health and neuroticism in individuals with chronic diseases.

In the opposite direction, this review also confirmed a positive association between neuroticism and self-reported health as shown by the analysis made by Jorm et al.,¹⁰ which reported a positive correlation between neuroticism and subjective health measures and demonstrated a stronger association between neuroticism and self-reported health in women compared to men. The reasons underlying this difference remain unclear. It is known that women have higher levels of neuroticism than men and tend to suffer more from rheumatic diseases over time, which can negatively impact their perceived health due to the presence of pain and disabilities.⁴⁸ There is evidence that a more pessimistic self-assessment can contribute to a more accurate self-perceived health.²¹ According to Friedman²² and Aiken-Morgan et al.,²¹ those with high neuroticism can be more vigilant regarding their health and can seek medical care more quickly than those with lower neuroticism.

There is also evidence supporting the moderating role of self-reported health in the relationship between neuroticism and mortality, which can also mediate or predict this relationship.⁴⁰ According to the findings of the present review, the longitudinal study conducted by Gale et al.⁷ found that after adjustment for all the variables (particularly

self-reported health), higher neuroticism was associated with an 8% reduction in all-cause mortality from cancer, cardiovascular disease, and respiratory disease, but not mortality due to external causes. Higher neuroticism was associated with lower mortality only in people with fair or poor self-reported health, and a higher neuroticism score on a facet of neuroticism related to worry and vulnerability was associated with lower mortality. By contrast, Ward²⁹ found no association of neuroticism with self-reported health after adjustment for negative effects, and neuroticism was considered a confounding variable in the relationship between sense of control and self-reported health in older adults.

The reviewed literature revealed conflicting data on the association between neuroticism and self-reported health, suggesting a more complex relationship. There are at least two pathways by which the dimensions of personality can influence subjective health.⁵ First, personality can indirectly influence subjective health by influencing objective health; in other words, personality traits can promote healthy or unhealthy patterns of behavior. The study by Löckenhoff et al.⁵ found an association of personality traits with subjective health. Data confirmed the association between personality and subjective physical health only in the BLSA sample.

Studies also suggested that overall health status can shape personality factors over time. However, it is unclear in what ways singular differences in the self-reported health and sex of participants¹⁰ with varying levels of personality factors are reflected in the different measures of perceived health.⁵ A timely question that emerges amid the current life course perspective is how the aging process can influence the association between personality and health. In the context of neuroticism, it appears that the tendency to worry about health can be exacerbated by physical⁴⁹ and cognitive⁵⁰ losses inherent to older age. Given the effects of personality traits become progressively weaker as the challenges related to the physical health of older individuals increase, it seems that the association between self-reported health and personality in older adults might follow a curved trajectory. However, studies on the effects of health on personality have focused primarily on linear associations.⁵

This scoping review has several limitations. The dearth of literature on the relationship between neuroticism and self-reported health in older adults explains the small number of studies included in the present review. In addition to the scant evidence on this aspect in the older population, both neuroticism and self-reported health were measured using a variety of different scales. These distinct strategies can lead to inconsistent results and hamper comparison between studies.

Moreover, self-reporting measures have limitations that might negatively impact analyses of the relationship with neuroticism.

CONCLUSION

The findings of this review support the association between neuroticism and self-reported health in older adults, although this relationship remains unclear since the literature shows conflicting data. Taken together, the results point to a complex relationship between personality and sociodemographic factors, medical conditions, and self-reported health. Further studies may shed a light on the influence of aspects of personality on subjective health in older adults. The reason for gender differences in the relationship between neuroticism and subjective health also remains unclear. Lastly, longitudinal studies might elucidate how age impacts the relationship between neuroticism and self-reported health, promoting therapeutic strategies to address this issue and developing effective public policies focused on older adults.

Conflict of interests

The authors declare no conflict of interests.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors contributions

GCC: conceptualization, data curation, formal analysis, investigation, methodology, visualization, writing - original draft, writing - review & editing. MC: conceptualization, methodology, resources, supervision, visualization, project administration, writing - original draft, writing - review & editing. VA: conceptualization, data curation, formal analysis, investigation, methodology, visualization, writing - original draft, writing - review & editing. RCM: conceptualization, methodology, writing - review & editing. PAW: writing - review & editing. CP: conceptualization, methodology, writing - review & editing.

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