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LONELINESS AND DEFICITS IN SOCIAL CONNECTEDNESS AS MEDIATORS OF DEPRESSION AND SUICIDAL IDEATION/BEHAVIOR IN MEN: A SYSTEMATIC SCOPING REVIEW OF EVIDENCE FROM THE DIGITAL ERA

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ABSTRACT

Loneliness and deficits in social connectedness emerge as critical yet under-examined mediators linking the social and digital conditions of contemporary life to depression and suicidal ideation or behaviour in men. This systematic scoping review synthesises evidence showing that both subjective loneliness and structural isolation robustly predict elevated depressive symptoms and suicide-related outcomes among men, with effects intensified by masculine norms that constrain emotional expression and help-seeking. In the digital era, problematic social media and internet use frequently displace higher-quality offline ties, amplifying loneliness particularly among younger men, while purposeful online engagement and community-based models of male connection offer partial buffers. Few studies have formally tested these mediation pathways in exclusively male samples with longitudinal designs, and measurement of both loneliness and digital exposures remains inconsistent. Intersectionality and life-course transitions receive limited attention. The findings nevertheless carry clear implications: clinical and prevention efforts should routinely assess social connectedness alongside conventional mental-health indicators, prioritise gender-sensitive, action-oriented and peer-based approaches, and strengthen offline networks while promoting healthy digital engagement. Public health strategies aimed at reducing male suicide would benefit from treating social connectedness as a core rather than

peripheral target. Addressing loneliness and social disconnection therefore constitutes a modifiable pathway with substantial potential to reduce preventable suffering among men.

Keywords: Loneliness, Social Connectedness, Social Isolation, Depression, Suicidal Ideation, Men's Mental Health, Social Media, Mediation

1 INTRODUCTION

Depression and suicidal ideation/behaviour contribute substantially to the global disease burden, with pronounced sex differences in presentation and outcome. Men account for the large majority of suicide deaths in most countries despite lower diagnosed rates of depression. Loneliness and deficits in social connectedness have emerged as potentially modifiable pathways that may help explain these disparities, especially amid rapid digital transformation of social life.

1.1 Epidemiology of depression and suicide in men

Suicide rates among men consistently exceed those among women, often by a factor of three or more [1]. This disparity persists even though lifetime prevalence of major depressive disorder is typically higher in women. Men more frequently present with externalising features such as irritability, anger, substance use and risk-taking rather than classic internalising symptoms, contributing to under-detection [2]. Conformity to traditional masculine norms of self-reliance, emotional restriction and stoicism further shapes symptom expression, attitudes toward help-seeking and coping, resulting in lower rates of service engagement [3]. Relationship breakdown, living alone and reduced social network size are also associated with elevated odds of suicidal ideation, attempt and death among men [4].

1.2 Loneliness and deficits in social connectedness as risk pathways

Loneliness (the subjective perception of inadequate relationships) and social isolation (objective reduction in network size or contact) independently predict adverse mental and physical health outcomes. Both are linked to increased all-cause mortality, with effect sizes comparable to established risk factors [5,6]; the association of loneliness with mortality appears slightly stronger in men [7]. Prospective evidence establishes loneliness as a predictor of subsequent suicidal ideation and behaviour, with depression frequently mediating the pathway [8]. In men, loneliness shows robust associations with depressive symptoms and psychological distress [9]. Structural indicators of connection, such as contact frequency and number of close ties, are linked to lower depressive symptoms, often fully mediated by perceived social support. Qualitative accounts from men experiencing suicidal crises frequently describe overwhelming isolation and erosion of meaningful relationships as proximal contributors to psychological pain [10].

1.3 The digital-era context

Since approximately 2010, widespread adoption of social media, online gaming and constant connectivity has altered patterns of social interaction. These technologies offer new avenues for contact while introducing risks of offline relationship displacement, social comparison, cyberbullying and addictive use. Associations between problematic digital engagement, loneliness, depression and suicidal ideation have accumulated, with loneliness identified as a mediator in several pathways [11]. Men, particularly younger cohorts, report distinct patterns of online engagement and may experience different trajectories from digital exposure to loneliness and distress. Offline social support often mediates links between addictive social media use and loneliness, with men tending to report lower offline support [12]. Certain forms of digital contact can also buffer loneliness under specific conditions, illustrating the dual potential of technology.

1.4 Rationale and objectives

Synthesis of evidence examining loneliness and social connectedness deficits as mediators of depression and suicidal ideation/behaviour specifically in men within the digital era remains limited. This systematic scoping review maps the available evidence, clarifies mediation pathways, identifies gender-specific mechanisms and highlights gaps. It focuses on empirical findings concerning the mediating roles of loneliness and social connectedness deficits in relationships between risk factors (especially digital-era exposures) and depression or suicidal ideation/behaviour among men, operationalising the digital era primarily as literature from 2010 onward.

2 METHODS

This systematic scoping review was conducted to map the breadth of evidence on loneliness and deficits in social connectedness as mediators of depression and suicidal ideation/behaviour in men, with particular attention to digital-era exposures. A scoping approach was selected because the literature spans heterogeneous designs, populations and digital contexts, making a more restrictive systematic review with meta-analysis less feasible at present.

2.1 Framework and reporting standards

The review followed the methodological framework originally proposed for scoping studies and subsequent refinements that emphasise iterative searching, transparent charting and stakeholder relevance [13,14]. Reporting adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist to ensure completeness and transparency [15]. Guidance from the Joanna Briggs Institute on the conduct of systematic scoping reviews further informed decisions regarding eligibility, data extraction and presentation of results [16].

2.2 Eligibility criteria

Empirical studies (quantitative, qualitative or mixed-methods) published in English from 2010 onward were eligible if they examined loneliness, social isolation or social connectedness (structural or functional) in relation to depression or suicidal ideation/behaviour, and included male participants or provided sex-stratified analyses. Priority was given to studies that tested mediation, moderation or pathway models, or that addressed digital technologies (social media, online gaming, internet use or virtual interaction). Reviews, editorials, conference abstracts without full data and studies focused exclusively on children or purely clinical samples without community relevance were excluded.

2.3 Search strategy and information sources

A comprehensive search was performed across PubMed/MEDLINE, PsycINFO, Scopus, Web of Science and Embase. Search strings combined terms for loneliness or social connectedness, depression or suicidality, men or masculinity, and digital or online exposures. Reference lists of key papers and relevant reviews were hand-searched. Grey literature was considered only when peer-reviewed equivalents were unavailable. Searches were last updated to capture literature through 2025.

2.4 Study selection, data charting and synthesis

Titles and abstracts were screened independently against eligibility criteria, followed by full-text assessment of potentially relevant records. Discrepancies were resolved by discussion. A standardised charting form captured study design, sample characteristics (age, sex composition), measures of loneliness or connectedness, mental-health outcomes, digital-era elements, mediation findings and key limitations. Given the heterogeneity of designs and measures, results were synthesised narratively and organised thematically around mediation pathways, gender-specific mechanisms and digital exposures. Formal critical appraisal was undertaken using adapted tools appropriate to study design (for example, the Newcastle-Ottawa Scale for observational studies) to characterise overall evidence quality rather than to exclude studies.

2.5 Limitations of the approach

Scoping reviews prioritise breadth over exhaustive quality filtering; consequently, included studies vary in methodological rigour. Restriction to English-language publications and the rapid evolution of digital platforms may have omitted relevant non-English or very recent work. These constraints are acknowledged and inform the interpretation of findings.

3 CONCEPTUAL AND THEORETICAL FRAMEWORKS

Understanding loneliness and social connectedness as mediators of depression and suicidal ideation/behaviour in men requires clear conceptual distinctions and theoretically grounded models. This section outlines key definitions, the interpersonal theory of suicide, gender-role strain perspectives, and frameworks that address digital-era social interaction.

3.1 Definitions of loneliness and social connectedness

Loneliness is the unpleasant experience that arises when a person's network of social relations is deficient in some important way, either quantitatively or qualitatively [18]. It is subjective and distinct from objective social isolation, which refers to measurable reductions in network size, contact frequency or living arrangements. Structural connectedness concerns the presence and quantity of ties, whereas functional connectedness concerns the perceived quality of those ties, including support, belonging and the sense of being understood. Both dimensions are relevant to mental-health pathways, yet they are not interchangeable; individuals may maintain large networks while still experiencing loneliness, or feel connected despite limited contact.

3.2 Interpersonal theory of suicide

The interpersonal theory of suicide proposes that suicidal desire emerges from the concurrent presence of thwarted belongingness and perceived burdensomeness, and that the transition to lethal behaviour additionally requires an

acquired capability for suicide [19,20]. Thwarted belongingness closely overlaps with loneliness and social disconnection. In men, reduced opportunities for emotionally intimate relationships and cultural constraints on expressing vulnerability may heighten the likelihood of experiencing both thwarted belongingness and burdensomeness, thereby elevating risk for suicidal ideation and behaviour.

Figure 1 presents the core assumptions of the interpersonal theory of suicide, illustrating how the concurrent experience of thwarted belongingness (closely overlapping with loneliness and social disconnection) and perceived burdensomeness generates suicidal desire, with the additional requirement of acquired capability for the transition to lethal behaviour. This framework provides a direct theoretical bridge to the mediating role of social connectedness deficits in men.

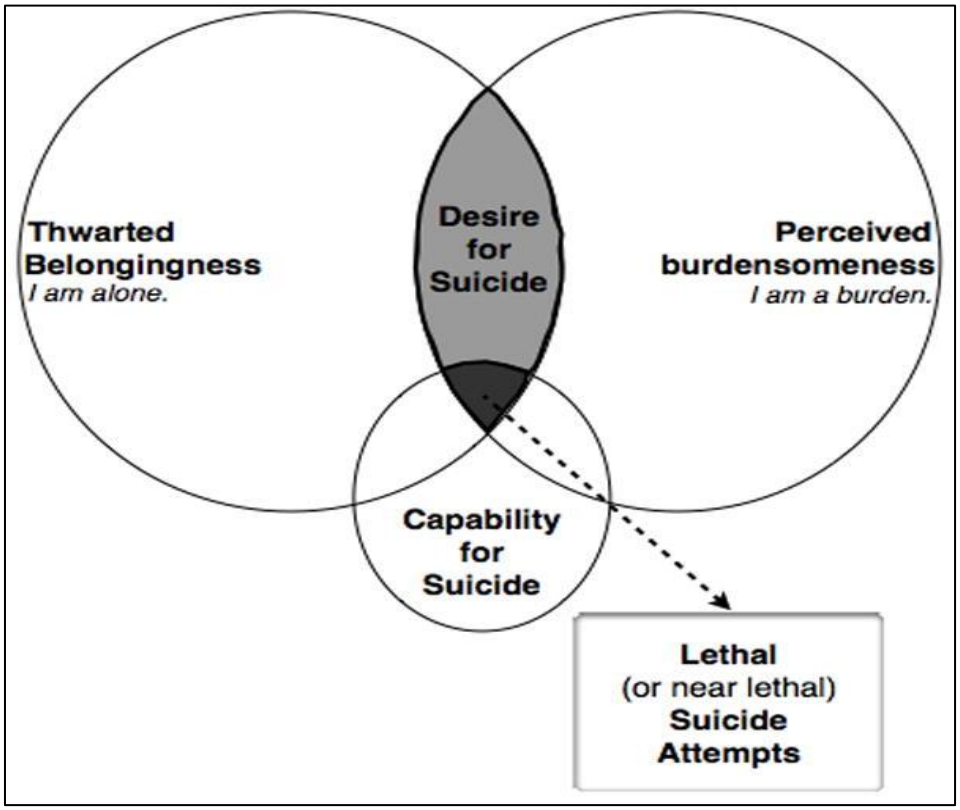

Figure 1: Conceptual model of the Interpersonal Theory of Suicide [43]

3.3 Gender-role strain and masculinity

The gender-role strain paradigm posits that gender roles are socially constructed, often contradictory, and that adherence to or violation of traditional masculine norms can generate psychological strain [21,22]. Norms emphasising self-reliance, emotional restriction and independence may limit men's capacity to form and maintain supportive relationships, increase reluctance to seek help, and intensify the subjective impact of loneliness. These processes help explain why deficits in social connectedness may exert particularly strong effects on depression and suicidality among men.

3.4 Digital-era frameworks

Two competing hypotheses have guided research on online social interaction. The displacement hypothesis suggests that time spent online reduces face-to-face contact and thereby increases loneliness [23]. The stimulation hypothesis proposes that online communication can enhance existing relationships and expand opportunities for connection, potentially reducing loneliness [24]. Empirical findings are mixed and appear contingent on how digital tools are used whether to maintain close ties or to substitute for them and on individual differences such as baseline loneliness and gender. These frameworks provide a basis for examining mediation pathways that incorporate both offline and online forms of connectedness.

Together, the definitions and theories outlined above supply the conceptual scaffolding for synthesising evidence on loneliness and social connectedness as mediators in men within the digital era.

4 EVIDENCE ON LONELINESS, SOCIAL CONNECTEDNESS, DEPRESSION AND SUICIDAL IDEATION/BEHAVIOUR IN MEN

A substantial body of observational and longitudinal research links loneliness and deficits in social connectedness to elevated risk of depression and suicidal ideation or behaviour in men. This section synthesises key quantitative associations, prospective findings, mediation evidence and qualitative insights.

4.1 Strength of association

Meta-analytic work restricted to men demonstrates large positive associations between loneliness and both depressive symptoms and psychological distress, with pooled correlations around 0.51 [9]. Loneliness is also a significant prospective predictor of suicidal ideation and behaviour across mixed-sex samples, with depression frequently acting as a partial mediator [8]. Sex-stratified analyses of mortality data indicate that the association between loneliness and all-cause mortality is slightly stronger in men than in women [7]. Living alone and reduced emotional support independently elevate suicide risk among men, even after adjustment for subjective loneliness [25]. In representative population samples, the link between loneliness and suicidal ideation is particularly pronounced among younger men [27].

4.2 Longitudinal and pathway evidence

Prospective cohort studies show that baseline loneliness predicts subsequent depressive symptoms and suicidal ideation. In men, loneliness has been found to mediate pathways from social anxiety to suicidality, particularly when childhood trauma is present [26]. Structural indicators of connection (contact frequency, number of close friends) are associated with lower depressive symptoms; these relationships are often fully mediated by perceived social support. Relationship breakdown further amplifies risk: separated or divorced men show elevated odds of suicidal ideation, attempt and death compared with married men, with loneliness and isolation frequently implicated as contributing factors [4]. Longitudinal data from large male cohorts also indicate that reduced investment in social networks prospectively predicts higher depressive symptoms [28]. Thwarted belongingness has been shown to mediate the association between loneliness and suicidal ideation in men, including during periods of heightened social restriction [29].

4.3 Qualitative and narrative evidence

Qualitative syntheses of accounts from men who have experienced suicidal crises and from those bereaved by male suicide consistently identify isolation, loss of belonging and the erosion of meaningful relationships as proximal drivers of psychological pain [10]. Masculine norms that discourage emotional disclosure and help-seeking appear to intensify these experiences, limiting opportunities for reconnection and reinforcing a cycle of withdrawal. Social isolation emerges repeatedly as one of the most common factors reported in the lead-up to suicide attempts among men [30].

4.4 Summary of patterns in men

Taken together, the evidence indicates that loneliness and deficits in both structural and functional social connectedness are robustly associated with depression and suicidal outcomes in men. Effect sizes are clinically meaningful, pathways are observable in longitudinal designs, and qualitative data underscore the lived experience of disconnection. These findings provide a foundation for examining how digital-era exposures may further shape or mediate these relationships.

5 DIGITAL-ERA FACTORS AND MEDIATION PATHWAYS

The digital transformation of social interaction has introduced new exposures that interact with loneliness and social connectedness in shaping depression and suicidal ideation among men. This section examines evidence on problematic digital use, mediation pathways involving loneliness, and the dual potential of online engagement.

5.1 Problematic digital use and loneliness

Problematic or addictive social media use, social network addiction and excessive online gaming are consistently associated with higher loneliness and elevated risk of depressive symptoms and suicidal ideation. Cross-sectional and longitudinal studies indicate that loneliness partially mediates the relationship between these digital behaviours and adverse mental-health outcomes [31]. In men specifically, greater time spent on social media has been shown to mediate the pathway from loneliness to psychological distress, with the effect particularly evident among younger men [32]. Longitudinal data further show that social media addiction prospectively predicts elevated loneliness and depressive symptoms, as well as reductions in social network size, reinforcing a cycle of digital engagement and offline withdrawal [35].

5.2 Offline support and compensatory use

Offline social support often mediates the association between addictive social media use and loneliness. Individuals with higher addictive engagement tend to report lower offline support, which in turn contributes to greater loneliness; this pattern holds for both sexes, although men frequently report higher levels of addictive use and comparatively lower offline support [33]. Compensatory internet use theory suggests that lonely individuals may turn to digital platforms in an attempt to meet unmet social needs, yet such use can inadvertently reinforce isolation when it displaces higher-quality offline interaction. Among men, self-reliance a core masculine norm has been shown to moderate the link between loneliness and social media addiction, with lower self-reliance amplifying the association in certain generational cohorts [36].

5.3 Mixed protective and risk findings

Not all digital engagement is detrimental. Contact-oriented online interaction can reduce loneliness over time among individuals with high baseline loneliness, and certain forms of social gaming have been linked to short-term reductions in loneliness and depressive mood in boys. However, these potential benefits appear contingent on the quality and purpose of use. Passive consumption, exposure to negative online interactions, and reliance on digital platforms as a primary source of connection more often exacerbate distress. Social media behaviour characterised by toxic masculine norms has also been associated with higher depression scores in men, mediated in part by the quality of online interactions [34].

5.4 Synthesis of digital-era pathways

Overall, the digital era introduces both risk-enhancing and potentially buffering pathways. Loneliness frequently operates as a central mediator linking problematic digital engagement to depression and suicidal ideation in men. Offline connectedness remains a critical protective factor, and the net effect of digital technologies appears to depend on whether online activity supplements or substitutes for meaningful real-world relationships. These patterns underscore the need for gender-sensitive approaches that address both the quantity and quality of men's digital and offline social ties.

Table 1 organises the principal digital-era pathways identified in the literature, emphasising the recurrent mediating role of loneliness and the effects of online versus offline support among men.

Table 1: Digital-era exposures, loneliness mediation, and mental-health pathways in men

Digital exposure	Association with loneliness	Mediation / pathway finding	Sex- or gender-specific pattern	Protective or risk contingency	Key sources
Problematic / addictive social media use	Consistently associated with higher loneliness	Loneliness partially mediates link to depressive symptoms and suicidal ideation	Greater time on social media mediates loneliness → psychological distress especially in younger men	Risk elevated when use is compensatory or passive	Meshi & Ellithorpe [31]; Seidler et al. [32]; Santini et al. [35]
Social network addiction / excessive online gaming	Linked to elevated loneliness and depressive symptoms	Longitudinal: addiction predicts later loneliness, depressive symptoms and reduced network size	Men often report higher addictive use	Cycle of digital engagement and offline withdrawal	Santini et al. [35]; related findings [31]
Offline social support	Lower offline support associated with greater loneliness	Offline support mediates addictive social-media use → loneliness	Men frequently report comparatively lower offline support	Protective when offline ties remain strong	Meshi & Ellithorpe [31,33]
Compensatory internet use	Lonely individuals may	Can reinforce isolation if it	Self-reliance moderates loneliness–	Risk when used as primary rather than	Kardefelt-Winther [17];

	increase digital engagement	displaces offline interaction	addiction link in some generational cohorts	supplementary connection	Seidler et al. [32,36]
Contact-oriented / purposeful online interaction	Can reduce loneliness over time among high-baseline-loneliness individuals	Short-term reductions in loneliness and depressive mood reported in some gaming contexts (boys)	Benefits contingent on quality and purpose of use	Protective when used to maintain close ties	Mixed findings synthesised in Section 5.3
Passive consumption / negative online interactions	Associated with greater distress	Quality of online interactions mediates links to depression	Toxic masculine norms online linked to higher depression scores	Risk when passive or characterised by toxic norms	Parent et al. [34]
Social media behaviour reflecting toxic masculinity	Higher depression scores	Mediated in part by quality of online interactions	Men-specific digital subcultures	Risk-enhancing	Parent et al. [34]
Overall dual potential	Online platforms can buffer or amplify loneliness	Net effect depends on whether activity supplements or substitutes for real-world relationships	Younger men appear particularly vulnerable to displacement effects	Context-dependent (stimulation vs displacement)	Primack et al. [4]; Twenge et al. [5]; Hunt et al. [6]

6 GAPS, IMPLICATIONS AND DIRECTIONS FOR RESEARCH AND PRACTICE

Despite growing recognition of loneliness and social disconnection as contributors to depression and suicidal outcomes in men, important gaps remain in the evidence base. This section identifies key limitations and outlines implications for research, practice and policy.

6.1 Evidence gaps

Few studies have formally tested loneliness or social connectedness as mediators specifically within male samples using longitudinal designs [9,32]. Measurement inconsistency is common: some investigations rely on single-item indicators of loneliness, while others employ multi-dimensional scales, limiting comparability. Digital-era mechanisms particularly the quality versus quantity of online interaction, platform-specific effects and the role of masculine norms in shaping digital behaviour remain under-examined in sex-stratified analyses [32,34]. Intersectionality (age, socioeconomic status, sexual orientation, cultural background) is rarely integrated, leaving uncertainty about differential risk among subgroups of men. Systematic reviews of male-focused interventions also highlight limited high-quality evidence on effectiveness for reducing suicidal ideation or depression [38].

6.2 Implications for research

Future work should prioritise prospective cohort studies and formal mediation models that disentangle structural isolation from subjective loneliness and that incorporate digital exposures as both predictors and moderators. Experimental and quasi-experimental designs evaluating gender-sensitive interventions are needed, alongside qualitative inquiry that captures how men experience and negotiate connection in both offline and online contexts. Greater attention to life-course transitions (relationship breakdown, unemployment, retirement) and to the interplay between self-reliance norms and help-seeking barriers will strengthen causal inference [3,10]. Research on community-based models such as Men's Sheds offers promising avenues for understanding mechanisms of social connection and wellbeing in men [39,40].

6.3 Implications for practice and prevention

Clinicians and prevention programmes should routinely assess both loneliness and the quality of social ties in men presenting with depression or suicidal ideation. Gender-sensitive approaches that align with male preferences for action-oriented, peer-based and activity-focused support show promise for engagement [37,41]. Digital literacy

interventions that encourage purposeful rather than compensatory online use, combined with efforts to strengthen offline networks, may help interrupt the pathways identified in earlier sections. Community initiatives that create structured opportunities for male social connection (for example, Men's Sheds or peer-support models) warrant wider evaluation and implementation [39,40]. Online interventions designed specifically for men have also demonstrated potential benefits related to social support and treatment motivation [42].

6.4 Policy considerations

Public health strategies addressing male suicide should explicitly incorporate social connectedness as a target domain. Investment in longitudinal monitoring of loneliness among men, support for community-based connection programmes, and guidance on healthy digital engagement could contribute to reducing the burden of depression and suicidal behaviour. Coordinated efforts across health, education and community sectors are required to address the structural and normative factors that sustain disconnection in men.

7 CONCLUSION

This systematic scoping review examined the role of loneliness and deficits in social connectedness as mediators of depression and suicidal ideation or behaviour in men within the digital era. The accumulated evidence indicates that both subjective loneliness and structural social isolation are robustly linked to elevated depressive symptoms and suicidal outcomes among men. These associations appear particularly pronounced in the context of traditional masculine norms that discourage emotional disclosure and help-seeking, thereby intensifying the psychological impact of disconnection.

Digital technologies introduce complex pathways. While online platforms can offer opportunities for connection, problematic or addictive use frequently mediates or amplifies loneliness, especially when it displaces higher-quality offline relationships. Younger men appear particularly vulnerable to these digital mediation effects. At the same time, certain forms of purposeful online engagement and community-based models of male social connection show potential to buffer risk.

Important gaps persist. Few studies have formally tested mediation models in exclusively male samples using longitudinal designs, and measurement of both loneliness and digital exposures remains inconsistent. Intersectionality and life-course transitions are under-explored. These limitations constrain the precision of current conclusions and the design of targeted interventions.

Nevertheless, the findings carry clear implications. Clinical practice and prevention programmes should routinely assess social connectedness alongside conventional mental-health indicators in men. Gender-sensitive approaches that prioritise action-oriented, peer-based and activity-focused support, together with efforts to strengthen offline networks and promote healthy digital engagement, offer promising directions. Public health strategies aimed at reducing male suicide would benefit from treating social connectedness as a core intervention target rather than a secondary concern.

In sum, loneliness and deficits in social connectedness constitute significant, modifiable pathways linking the social and digital environments of the contemporary era to depression and suicidality in men. Addressing these pathways through research, practice and policy holds potential to reduce a substantial and preventable burden of suffering.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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