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REVIEW

A Scoping Review of Warning Signs for Suicide Among Autistic People

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Abstract

Purpose of review We asked the following research questions: (1) What evidence exists that describes specific warning signs of suicide in autistic people? and (2) What gaps exist related to research on warning signs of suicide among autistic people?

Recent findings Following the six-step approach for scoping reviews, we identified 15 sources that described potential warning signs of suicide in autistic people. The majority of sources were published between 2020 and 2025, and most sources were books or book chapters. Only one source explicitly defined 'warning signs'. Robust research on warning signs of suicide in autistic people is lacking.

Summary Most evidence on warning signs of suicide in autistic people exists from first-person narratives and fictional case examples. Two important next steps to advance the science and practice of suicide prevention include adopting a clear definition of warning signs consistently used by researchers and practitioners, and systematically evaluating warning signs of suicide in autistic people.

Keywords Autism · Suicide · Warning sign · Risk · Mental health

Introduction

Autistic people are more likely to think about and attempt suicide than non-autistic people, and 3–5 times more likely to die by suicide [1, 2]. Autistic differences in social communication, cognition, sensory processing, interests and behavior are part of natural neurological diversity [3], with an autism diagnosis bestowed if these differences, emerging early in life, are judged to cause difficulties in everyday functioning. Although suicidal thoughts are not inherent to being autistic, autistic differences in thought and emotion mean that they seem to experience suicidal thoughts in a slightly different way compared to non-autistic people [4]. Further, autistic people report invalidation in services which can increase feelings of hopelessness and suicidal thoughts [5, 6]. There is an urgent need to improve clinical support for autistic people in suicidal crisis, and to develop tailored approaches to understanding and preventing suicide in this group.

Warning signs are indicators or signals of imminent suicidal behavior [7], recognition of which can lead to life-saving intervention. Warning signs are dynamic and proximal "thoughts, feelings (both emotional and physiological), and circumstances that might mean a potential suicidal crisis is developing" (p. 5) [8]. In the general population, warning

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signs include noticeable changes, such as disclosures of thoughts of suicide or self-harm; change in mood or sleep patterns; expressions of hopelessness; and social withdrawal [7]. More recent work defining warning signs has broadened more explicitly included significant or precipitating events, which are conceptualized as the events, which in the context of other cognitive and/or emotional warning signs, act as a catalyst for suicidal crisis and suicide attempt, such as anniversaries, birthdays, or loss of a job or home [8, 9]. Contemporary research on warning signs of suicide in the general population suggests warning signs are changes in cognitive, affective, behavioral, or situational factors that occur within people 1–2 days preceding an attempt [10]. However, there is lack of agreement about the specific temporal aspect of warning signs in the general population. Some have used a more general timeframe of warning signs that may be exhibited "within days, hours, or minutes" of a suicidal crisis [10, 11], and others are more specific in named timeframes of 6-hours, 24-hours and 48-hours prior to a suicide attempt as key temporal periods for exhibiting warning signs [10, 12]. Warning signs among autistic people have been identified as a community priority [13]. Understanding individual warning signs are vital to inform personalized risk assessments, safety plans, support and safety protocols [14].

Suicide warning signs are distinct from risk factors, though these terms are frequently confused and used interchangeably and are not always clearly defined in context. Risk factor research has typically identified static and distal experiences that correlate with suicidal thoughts and/ or behaviors [7, 15–18]. In Box 1, we present examples of risk factors versus warning signs. Research to date in autistic people has identified important differences in how suicide risk factors, such as depression [19], or social disconnectedness [20] are experienced, conceptualized and measured by autistic people, compared to non-autistic people. However, risk factor research has been criticized for having notably little impact on suicide rates and giving little indication of who may go on to attempt or die by suicide [15], leading to renewed interest in warning signs. Warning signs are often poorly defined in the literature because they may or may not imply the specific outcome of suicide which has not elapsed at the time of observation. As such, they must be taken in the context of existing risk factors, protective factors, and current changes. For example, buying a weapon may or may not be a warning sign, depending on these factors. Some people might purchase a gun for hunting season, or other reasons that are not related to suicide, so this behavior alone is not a warning sign. In contrast, buying a weapon in the context of existing risk factors (e.g., existing depression) and/ or other warning signs (e.g., change in statements about not wanting to be alive) is more clearly indicative of a warning sign and should be addressed. Recognizing warning signs, which signal imminent suicidal behavior, can create an opportunity for intervention and save a life. Thus, understanding and identifying suicide warning signs could improve treatment and support, yet no research has systematically examined these in autistic people.

Scoping reviews are a valuable methodology for exploring the breadth and depth of literature on a topic, particularly when evidence is scarce and there are notable gaps for further investigation [21–24]. We aimed to identify present knowledge and knowledge gaps through exploring published sources which identify and describe warning signs of suicide in autistic people, addressing the question: "What evidence exists that describes specific warning signs of suicide in autistic people and what gaps exist related to research on warning signs of suicide among autistic people?" On the basis that both scoping review methodologies and evidence-based practice optimally include perspectives from those with lived experience and/or clinical expertise alongside research evidence [25], our scoping review is contextualized through lived experience and clinical best practices.

Box 1. Clinical Examples of Risk Factors versus Warning Signs

Example 1:

Jonelle contently spends most of the day in her bedroom doing schoolwork and hobbies. It's her safe space where she can count on how things will go. Jonelle's family are preparing to welcome a new baby, which Jonelle has found quite stressful. It has been difficult for her family to help and reassure her, as it's not always clear when Jonelle is struggling; she has alexithymia, so often thinks and says she is fine when she's not. Alexithymia is a *risk factor* for Jonelle because she cannot express how she is feeling about the changes in her family or easily get help for managing the changes, increasing the *potential* for suicidal ideation; Jonelle will need added support to manage such a large change.

When the baby arrived, Jonelle was moved to a new bedroom. Even though Jonelle's parent took photos of her room and moved everything to the new room positioned exactly, Jonelle avoids the new room. She interacts less and less with the household. This is a *warning sign* as Jonelle's reactions indicate she is entering into crisis; support needs to focus on prevention.

Example 2:

Soren has a history of social exclusion. They have often felt invalidated and invisible in their social world but have had strong familial support such that they have created a life that feels fulfilling. Recently, due to certain developmental transitions, Soren has begun to have unusual meltdowns during seemingly familiar situations, pulling their ears, lashing out, then sleeping for much longer than usual. Soren reports being 'unable to escape' what's happening but can't articulate what that is. Their behavior is either extreme acting out or pulling into themselves. Doctor visits produced a new diagnosis of depression.

Life transitions on top of already challenging experiences (invalidation; invisibility) require energy that may not exist; extreme overwhelm is occurring, with Soren being unable to catch up. Risk factors here are pre-existing social experiences, pre-existing alexithymia, and previous diagnosis of depression; they produce strain that gives a potential for suicidal ideation. Soren needs support to identify and increase protective factors that can bring them back to baseline. Warning signs for Soren, which demonstrate imminent danger, include increased frequency of meltdown without usual ability to recover, withdrawing, inability/difficulty communicating, and need to escape. Without immediate intervention, suicidal ideation can lead to action.

For more examples of warning sign scenarios, refer to our team's Warning Signs of Suicide for Autistic People resource [13].

Methods

Following recommended practice for scoping reviews [22, 24, 26], we explored our research question through an interactive process involving the following steps: (a) identifying relevant sources; (b) selecting sources; (c) charting the data; (d) collating, summarizing and reporting the results; and (e) evaluating the findings through the lens of lived experience. We report our findings using the PRISMA Extension for Scoping Reviews [26]. The authors have lived experience of: autism, suicidal ideation and suicide attempts, clinical psychology, social work, and occupational therapy training in working with autistic people, and/or formal doctoral training in research methodologies. These perspectives ensured both the rigor of the scientific approach and the inclusion of lived experience in the interpretation of the findings.

Eligibility Criteria

We included published sources of any date that were written in English and searchable through available databases, including peer-reviewed research articles, books or book chapters, dissertations or theses, and peer-reviewed and published conference proceedings. We included sources that focused on autistic people (self-diagnosed or clinically diagnosed) and discussed at least one warning sign(s) of suicide in the results or discussion. We excluded sources that (a) were not reliably or replicably searchable, including blogs, websites, white papers, presentations, or pre-prints; (b) solely focused on risk factors for suicide; and/or (c) mentioned 'warning signs' in the context of safety planning interventions without any examples or definitions of 'warning signs'. To guide inclusion and exclusion, *risk factors* for suicide were defined as distal, defined constructs (e.g. diagnosis) which implies a longer-term risk or enduring factor, while *warning signs* have a proximal relationship with suicidal behaviors [7]. Because of the lack of consensus in temporality of warning signs in the general population, we did not define 'proximal' or 'distal' and required that the potential warning sign was about a *change* that was associated with suicidal behavior, and that change usually happens close to suicidal behavior. Specifically, we relied on the following statements to evaluate possible warning signs discussed in the literature: Warning signs are indicators that an individual may be close to engaging in lethal suicide behavior [7]; an important distinction is that warning signs signal suicidal behavior. Warning signs may include precipitating events. Warning signs usually include a change in behavior, talk/communication, thoughts, or mood.

Information Sources

We used PubMed and GoogleScholar for our search, the former because it includes both peer-reviewed literature and self-archived works and allows use of Boolean, index and MeSH terms, and application of keywords to other similar indexed terms. GoogleScholar, while lacking Boolean operators, includes wider sources, including books and book chapters, as well as published conference proceedings. We used the first 20 pages of GoogleScholar (200 sources, or 10 sources per page) determined through a decreasing number of relevant titles and content.

Search

We applied the following terms in PubMed using MeSH, index terms, and Boolean operators to maximize search results (see Appendix Table 3 for full search results): 'autism', 'suicide', 'warning', 'warning sign', 'warning signs', 'imminent', 'acute risk'. GoogleScholar offers no Boolean or other search approaches besides date or article type. We searched GoogleScholar using the following terms: 'autism', 'suicide', 'warning', with no date or article type selected. The searches were last run on September 29, 2025.

Source Selection

Following searches, one author exported all sources and citations to an online shared folder for review. Source selection occurred through two stages: (1) title review and (2) full-text review. Inclusion/exclusion decisions were applied at each stage, and reasons for exclusion noted. Our title screen examined titles for the population of interest (autism) and the topic (suicide). We did not require titles to mention or include warning signs. Full-text evaluation required sources to identify at least one example of a warning sign using our definition. In systematic or scoping reviews in which the topic is highly focused, using a title screen (rather than a title and abstract screen) is a valid approach which increases efficiency and maintains the likelihood of retaining potentially relevant sources for eventual full-text evaluation [27, 28].

To assure consistency in title screening, authors first reviewed two articles to practice and obtain consistency. Following this, authors conducted a screening of titles independently ($n=204$). A random 10% of titles across all primary reviewers ($n=20$ sources) were screened by a second reviewer: authors achieved 75% inter-rater reliability as defined as percent agreement with the decision of the original reviewer. Due to lower than anticipated agreement, to assure sources were not missed, an additional 70 article titles were re-screened (for a total of 92 articles screened by two people), resulting in 73% agreement. Following title screen, we sought all sources and then conducted a full-text evaluation of sources we were able to obtain in electronic or print format.

At full-text review, authors were encouraged to mark sources for team discussion if there were questions about inclusion and to err on the side of discussion rather than exclusion. Following full-text evaluation, authors met to discuss sources that were identified as unclear and made group decisions about inclusion to ensure consensus. Figure 1 depicts the flow from identification to inclusion.

Charting the Data and Data Items

Authors were assigned sources to extract data. We developed, trialed, and used an online data extraction form to record source year, source type (e.g., peer-reviewed article; book chapter), source design if peer-reviewed research (e.g., online survey), country of source origin, sample (average age, age range, sex and/or gender [if clearly described]), variables identified as 'warning signs' or variables which met our definition of a warning sign, and examples given of warning signs. Following extraction, each possible warning sign underwent another round of review by authors through an online Qualtrics to assign the possible warning sign into categories described by the American Foundation for Suicide Prevention (AFSP) [29] and U.S. National Institutes of Health [30]: behavior, talk [communication], and mood/affect. We also categorized 'thoughts', 'precipitating events', 'unclear warning sign', or 'not a warning sign'. Agreement from four of six authors resulted in classification. Possible warning signs without consistent categorization (e.g., < 4 authors agreeing) were discussed by the entire team to identify sources of disparate classification. Decision rules to guide classification when a warning sign might represent more than one category were discussed and used to re-categorize possible warning signs in a third round of individual classification in Qualtrics. Lack of agreement after this third review resulted in the item being assigned as an 'unclear warning sign'.

Collating, Summarizing, and Reporting the Results

We report frequency counts for characteristics of included sources. We present categorized warning signs in list format (behavior, talk/communication, mood/affect, thoughts, precipitating events, unclear warning sign) and associated sources. Many sources described 'cases' of people experiencing suicidal ideation and/or behavior with associated warning signs, although some were described as fictional, and it was difficult to discern how many were derived from

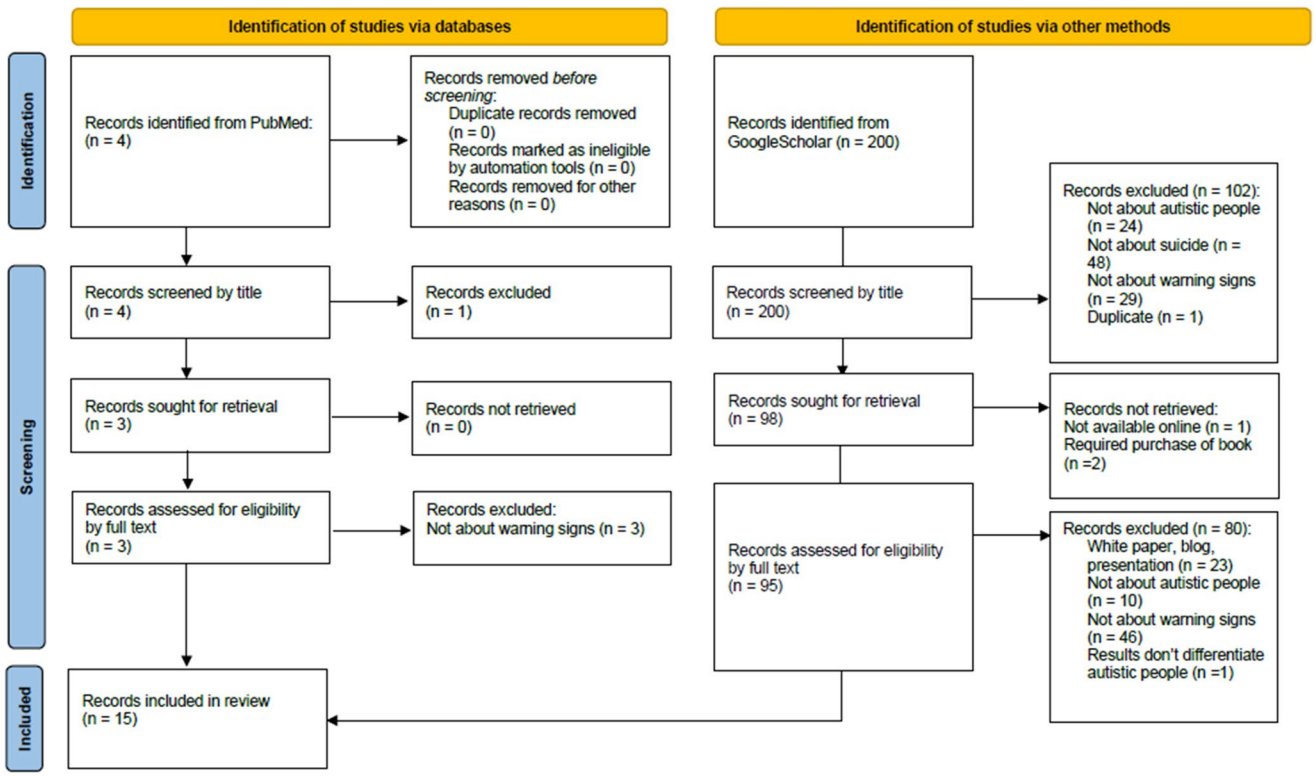

Fig. 1 PRISMA Flow Diagram Illustrating Identification, Screening, and Inclusion of Sources

autistic people's experiences versus the authors' interpretation of warning signs they extrapolated from either the general population or other sources. We included all examples of warning signs, fictional or not, in the original data extraction. Following evaluation and rating by the author team, we present only those examples rated as representing warning signs. All six authors participated in data collation, summary, and reporting.

Results

A total of 15 sources were included in the scoping review [31–45]. Source characteristics and demographics from included sources are reported in Table 1. Table 2 lists categorized warning signs or potential warning signs as described in the source text. The majority of sources were from the United States (n = 7 sources, 47%) and the United Kingdom (n = 6 sources, 40%). Approximately 67% (n = 10) were published in the past 5 years (2020–2025). Most sources were books or book chapters (n = 8, 53%), followed by peer-reviewed articles (n = 5 sources, 33%) and dissertations (n = 2, 13%). The majority of sources discussed autistic people with no mention of intellectual disability; two sources discussed people on the spectrum with co-occurring intellectual disability and warning signs [35, 40]. Only five of the sources were original research, with the study designs ranging from survey [41], qualitative [32], network analysis [42], and mixed methods [31, 33]. Only one source defined the term 'warning sign'; these authors state, "Warning signs are indicators that signal the onset of a crisis… Warning signs can include situations, thoughts, moods, behaviors… that elevate the risk of an individual harming themselves…." (p. 10451) [35]. Sources used the following language when describing what appeared to be potential warning signs: "risk markers of those who died by suicide" (p. 686) [31]; "proximal" to suicidal thoughts and behaviors (p. 161) [41]; "signs of imminent risk" (p. 264) [43]; or describing of actions, thoughts, or events which "precipitated" or were "preceding" a suicide attempt. One author described "warning sign of suicidal ideation" (p. 5) [42], which although is not the same as preceding imminent suicidal *behavior*, the context was sufficiently similar to include. Most sources (n = 10, 67%) uniquely described changes in behavior [31–35, 37, 38, 40, 42, 43, 45] or changes in mood/affect [32, 33, 36–38, 40–43, 45] as warning signs. Lastly, we identified that at least two sources discussed that in some cases, there were no observable warning signs of suicide in autistic people who later attempted suicide [31, 44].

Discussion

We undertook the task of exploring the depth and breadth of extant literature which describes warning signs of suicide in autistic people. We identified 15 sources [31–45] that described potential warning signs. Changes in mood included increased depression/sadness, anxiety, anger, guilt, emotional dysregulation, and hopelessness. Changes in behavior included increased withdrawal or isolation, loss of interest in preferred activities, increased perseveration or non-acceptance of change, accessing means to harm self or making a suicide plan, shut down or inability to communicate, increased self-harm, or changes in energy. Fewer examples were identified for *changes in talk/communication*, *changes in thoughts*, or *precipitating events* as warning signs. Overall, this adds to the limited body of knowledge available to support autistic people and continues efforts to advance understanding with our guide to warning signs for suicide in autistic people [13]. We noted several important gaps in the available literature. These included: lack of clear definitions of 'warning signs' used by sources; lack of robust research on warning signs in autistic people beyond case presentations, qualitative research, or surveys; lack of temporal relationship of potential warning signs to suicidal behavior; and limited discussion of warning signs relative to more frequently discussed risk factors. These gaps, and implications, are discussed more fully below.

Despite the importance of understanding warning signs of suicide as an important part of suicide prevention interventions (e.g., Safety Planning Intervention) [46], only one source clearly defined 'warning signs' [35]. This contrasts with research that describes the importance of using precise terminology to define suicide constructs [47, 48]. The lack of a clear definition and consistent terminology in the field greatly diminishes the ability to concretely understand, intervene, and advance knowledge about suicide and suicide prevention. We strongly recommend the adoption of a clear definition and consistent use of the term 'warning sign' to assist in driving the field forward, including clarification of elapsed time between observed 'warning sign' and suicidal behavior.

Our review was impacted because the sources did not contain sufficient information from which to understand and categorize warning signs, resulting in imprecise categorization. The sources we reviewed did not provide enough information about the temporal relationship of possible warning signs to suicidal behavior to distinguish risk factors from warning signs. Scholars in the field of warning sign research emphasize the importance of

Table 1 Characteristics of Included Studies

Source citation	Source type	Source country of origin[#]	Source Design[+]	Number of autistic participants, if available	Autistic participant age, if available	Sex or gender of autistic participants[^], if available
Cassidy et al. (2022) [31]	Peer-reviewed article	United Kingdom	Two-stage psychological autopsy study. Phase 1: Coroner's inquest record review Phase 2: Qualitative interviews with next of kin	*N*=80 deaths of suspected/diagnosed autistic	Mean 44.9 years (SD=15.5) for all deaths	68 male (85%), 12 female (15%)
Cervantes et al. (2025) [32]	Peer-reviewed article	United States	Qualitative study of computerized adaptive test	*N*=5	13–17 years (autistic youth)	60% female, 40% male
Dean, M.L. (2024) [33]	Dissertation	United Kingdom	Mixed methods with 3 studies with survey, interpretative phenomenological analysis of interviews, and an autoethnographic study	Survey: *N*=74 Interview: *N*=7 (subset of 74) Autoethnography: *N*=1	Survey: Mean 37.54 years Interview: 20-29y: *N*=4 30-29y: *N*=2 40-29y: *N*=1 Autoethnography: Not reported	Survey: 22 male (29.7%), 37 female (50%), and 15 non-binary (20.3%). Interview: 2 female, 1 male, and 4 non-binary. Autoethnography: female.
Dubin (2014) [34]	Book	United Kingdom	Personal perspective	N/A	N/A	N/A
Fields et al. (2025) [35]	Peer-reviewed article	United States	Review paper with fictional case of 21-year old with autism and mild intellectual disability	N/A	N/A	N/A
Finnie, S. (2023) [36]	Book chapter	United Kingdom	Clinician perspective with case of 36-year-old man with autism and no intellectual disability	N/A	N/A	N/A
Fruh, Parikah, & Soares (2020) [37]	Book chapter	United States	Clinician perspective	N/A	N/A	N/A
Ghaziuddin, M. (2005) [38]	Book	United States	Clinician perspective with case of autistic 12-year-old male	N/A	N/A	N/A
Grant, R.J. (2024) [39]	Book chapter	United States	Clinician perspective with case of autistic 15-year-old male	N/A	N/A	N/A
Johanning-Gray, Vandana, Wynn, & Hamel-Lambert (2022) [40]	Book chapter	United States	Clinician perspective with case of a 13-year-old with autism and mild intellectual disability	N/A	N/A	N/A
Pelton, M. K. (2023) [41]	Doctoral dissertation	United Kingdom	Survey design	*N*=463 autistic	41.5 years	282 female (61%)
Sáez-Suanes, G. P., & Pecora, R. (2025) [42]	Peer-reviewed article	Spain	Network analysis of cross-sectional data from autistic people with co-occurring learning disabilities	*N*=128	19 to 63 years (M=36.63, SD=8.54)	80 men (63%), 48 women (37%)
Shtayermman, O. (2013) [43]	Book chapter	United States	Clinician perspective with case	N/A	N/A	N/A
Weiner et al. (2019) [44]	Peer-reviewed article	France	Case report (single subject)	*N*=1	21 years	Described as male/man
Williams, D. (2002) [45]	Book chapter	United Kingdom	Personal perspective with case of male client	N/A	N/A	N/A

#For books/book chapters, where there wasn't a clear origin of the author's background, we used the publishing country as the source country of origin

[+]We categorized 'personal perspective' as reflecting an autistic person's lived experience; we used 'clinician perspective' when the author was providing information from a clinical background; '…with case' refers to whether the author chose to give an example of a scenario. Due to the nature of published books, it was often unclear whether the case(s) were fictional or real. We chose to assume the cases reflected as close to real examples as possible for the purpose of the scoping review

[^]In many cases, the authors did not distinguish between sex at birth or gender of the participants. In this column, we report the language used by the authors

Table 2 Categorization of Extracted Warning Signs of Suicide Among Autistic People

Warning sign category	Extracted warning signs from included sources
Mood/ Affect	Changes in mood • "A rapid change in mood from depression to contentment or happiness (may indicate that the student has made a decision and regards suicide as a way to escape pain)" (Shtayermman, 2013, p. 264)[43] • "sudden changes in mood" (Fruh, Parikah, & Soares, 2020, p. 223)[37] • "…his mood deteriorated and he attempted suicide…" (Finnie, 2023, p. 251)[36] • "…increasingly… depressed" (Ghaziuddin, 2005, p. 137, 138)[38] • "…a client who came to see me feeling detached and dead inside and on the verge of suicide…" (Williams, 2002, p. 181)[45] • ". . the depression coincides with times of planning suicide…" (Dean, 2024, p. 200)[33] • Low mood (Pelton, 2023)[41] • "sad" [picture in a pictorial safety plan] (Johanning-Gray, Vandana, Wynn, & Hamel-Lambert, 2022, p. 130)[40] Increase in anger, guilt, or anxiety • "…felt angry…" (Ghaziuddin, 2005, p. 138)[38] • Feelings of guilt for death of his pet hamster (Ghaziuddin, 2005, p. 137)[38] • Increased anxiety (Dean, 2024)[33] Feelings of hopelessness • "…had lost all hope in his future…" (Ghaziuddin, 2005, p. 138)[38] • Hopelessness (Pelton, 2023, p. 161)[41] Dysregulation or distress • Emotion dysregulation (Cervantes et al., 2025, p. 608)[32] • "Emotional dysregulation, internal anxiety or distress" (Sáez-Suanes & Pecora, 2025, p. 5)[42]
Talk/ Communication	Expressed hopelessness or meaninglessness • "… expressing feelings of hopelessness…" (Fields, Lewis, Smith Hill, Reynolds, Gilreath, Castle, 2025, p. 10451)[35] • "Expressing helplessness, hopelessness, or that life is meaningless" (Shtayermman, 2013, p. 264)[43] Expressed statements of not wanting to be here • Statements of "…not wanting to be "here" anymore…" (Grant, 2024, p. 164)[39] • "Direct statements about suicide (e.g., "I'm going to kill myself ")" (Shtayermman, 2013, p. 264)[43] • "During the dinner before said attempt, he had a dispassionate philosophical discussion with his mother on the topic of suicide, in which he advocated his right to end his life. He reports that he had not yet decided to attempt suicide by then, but thought it was his responsibility to prepare his mother to the possibility" (Weiner, et al., 2019, p. 127)[44] Indirect statements about suicide • "e.g., 'Don't bother grading my test; I won't be here to pick it up,' 'It won't matter anymore,' 'Sometimes I just don't want to wake up'…" (Shtayermman, 2013, p. 264)[43]
Thoughts	• " … he started having 'obsessive negative thoughts', and attempted suicide by jumping from a window…the repetitive and rigid suicide-oriented thinking of our patient was not part of a depressive episode. Instead, it followed a purely logical, inflexible, and pervasive reasoning pattern focused on a topic that fascinated him – i.e., suicide…" (Weiner, et al., 2019, p. 127–128)[44]
Behavior	Increased withdrawal or isolation • "…recently noticed a change in his behavior, including increased withdrawal…" (Fields, Lewis, Smith Hill, Reynolds, Gilreath, Castle, 2025, p. 10445)[35] • "Increasingly withdrawn" (Ghaziuddin, 2005, p. 137)[38] • "Social withdrawal" (Fruh, Parikah, & Soares, 2020, p. 223)[37] • "Isolating behaviors" (Shtayermman, 2013, p. 264)[43] • [Presumed change in] "social isolation" (Cassidy et al., 2022, p. 688)[31] Loss of interest in preferred activities • "dropping out of activities that had been important" (Shtayermman, 2013, p. 264)[43] • "Loss of interest in one's special interests" (Cervantes et al., 2025, p. 609)[32] Increased non-acceptance of change or perseveration • "…an increase in restricted interests may be a warning sign…" (Sáez-Suanes & Pecora, 2025, p. 5)[42] • "…need for invariance and nonacceptance of change" (Sáez-Suanes & Pecora, 2025, p. 5)[42] • "Increased perseveration" (Cervantes et al., 2025, p. 609)[32] Accessing means to harm self or making a plan • "seeking or gaining access to a weapon or other means of harming oneself" (Shtayermman, 2013, p. 264)[43] • "devised a plan to end his life" (Fields et al., 2025, p. 10445)[35] Shutdown or inability to communicate • "Shut down" (Williams, 2002, p. 181)[45] • "communicatively frozen… only able to mimic others" (Williams, 2002, p. 181)[45]

Table 2 (continued)

Warning sign category	Extracted warning signs from included sources
	Increased self-harm ● Increased self-harm, including non-suicidal self-injury (Cervantes, et al., 2025, p. 609)[32] ● "Self-injurious behavior" (Fruh, Parikah, & Soares, 2020, p. 223)[37]
	Change in energy (either increased tiredness or sleeping, or increase in energy) ● "However, when coming out of an episode [of depression], the feeling of not wanting to live may still be present, and there might be a sufficient increase in energy to carry through with the [suicide] plan." (Dubin, 2014, p. 137)[34] ● "…suicidal episodes coincided with, "an increase in tiredness, a high level of anxiety and difficulties in social relationships"…" (Dean, 2024, p. 207)[33] ● Sleep disturbances (Sáez-Suanes & Pecora, 2025, p. 5)[42]
	Increased expressed anger or sadness ● "Recently noticed a change in his behavior including…tearfulness" (Fields, et al., 2025)[35] ● "Yelling" [picture in a pictorial safety plan] (Johanning-Gray, et al., 2022, p. 130)[40]
Precipitating Events	Extreme stress ● "triggered by severe stress" (Dean, 2024, p. 209)[33] ● "… suicide ideation would emerge in highly stressful situations…" (Grant, 2024, p. 164)[39] ● "…sometimes the thoughts are responses to current situations that are too difficult to deal with…" (Dean, 2024, p. 209)[33]
	Death of an important person or animal ● Suicide plan "…coincided with the death of his hamster …" (Ghaziuddin, 2005, p. 137)[38] ● Bereavement (Cassidy, et al., 2022, p. 688)[31]
Unclear or lack of agreement on whether these are warning signs of suicidal behavior from source (versus risk factors for suicide)	● "Full of fear" (Williams, 2002, p. 181)[45] ● "Full of self-loathing" (Williams, 2002, p. 181)[45] ● "preoccupation with suicide and/or death in writing, poetry, or artwork" (Shtayermman, 2013, p. 264)[43] ● "… "overwhelmed by social stimuli and I would drop out, that would then lead to be becoming depressed then suicidal"… " (Dean, 2024, p. 202)[29] ● Asking for reassurance (Sáez-Suanes & Pecora, 2025, p. 5)[42] ● Failure (Pelton, 2023, p. 161)[41] ● Burdensomeness (Pelton, 2023, p. 161)[41] ● Bullying and abuse (Cassidy, et al., 2022, p. 688)[31]

Note: These categorizations and inclusions represent the authors' interpretation of original source descriptions; original sources may not have identified these as warning signs

defining the temporal relationship of warning signs to suicidal behavior (e.g., days or hours preceding an attempt) [7, 10, 11]. Words used by authors to discuss temporal (timing) features of potential warning signs included: "dinner before attempt" [44], "recently" [35], "coincided with" [33, 38], and "triggered by" [33]. *No specific timeframes* were noted in available literature, making it difficult to define a specific timeframe for warning signs. Our best estimate would be to retain the 'minutes, hours, and days' prior to suicidal behavior with a strong recommendation to researchers to quantify the time period in which individual warning signs emerge for autistic people. Methods of researching the temporal aspect have relied on several approaches in other populations and we encourage autism researchers to consider these. These include timeline follow-back methodology with individuals who have attempted suicide [12], case-crossover design with timeline follow-back [10], and survey recall methods [11]. Ecological momentary assessment has also been used to track fluctuations in thoughts, emotions, behavior related to suicidal thoughts [49].

Similar lack of clarity was observed in sources related to describing *changes* in mood, behavior, thoughts, communication, or precipitating events from a person's unique baseline. For example, when something was listed without any *dynamic nature or change aspect*, such as 'depression', we evaluated that to be a risk factor, but if the authors described 'increased depression' we identified it as a warning sign because of the reported *change* in mood. Another example we observed was "unemployed", which is a risk factor, but if there was a noted "recent unemployment or loss of a job", that was considered a warning sign (precipitating event). Lastly, the lack of context in many of our sources made categorization difficult. For example, 'increased hopelessness' preceding suicidal behavior can be both a thought and a feeling. When expressed to other people, it would be 'talk/ communication'. Without sufficient context, our team made decisions to prioritize those that we felt could be most observable first (e.g., behavior, talk/communication) and then those that were less observable (e.g., thoughts, mood/feelings), and lastly categorizing a warning sign as a precipitating event (if there wasn't clear context).

We identified some warning signs that are similar to those in the general population. However, it was not always clear from the source material when authors were relying on examples of autistic people or published warning signs from the general population. Because so many of our sources were books or book chapters, there was limited information available from which to evaluate the quality of the source. Robust research is urgently needed to identify more detailed and nuanced descriptions of the function, observable nature of, and internal experiences that may indicate warning signs of suicidal crisis in autistic people. In the general population, researchers describe novel methodologies, such as the case-crossover methodology or count versus combination classification, that can be applied to autistic populations that explicate and understand warning signs in more concrete ways [12, 50]. Applying such work in autistic people could expand our understanding of both *dynamic changes* from a person's baseline and *temporality* related to suicidal behavior [19]. This would allow more detailed guidance for action planning and could inform clinical guidance that would allow these experiences to be understood and validated [51].

Autistic people report frequent experiences of invalidation in seeking services or supports, particularly when they require verbal communication, something that is distinctly challenging for autistic people in crisis [51, 52]. In one example of coroner's reports of suicide, some people immediately surrounding the autistic person who died indicated *no observable warning signs* [31]. This is not to say that there were no warning signs, but just that the warning signs were not observed by others. Autistic people are taught to camouflage (hide autistic features) and may have difficulty communicating their experiences, which may contribute to how warning signs are identified [39]. Weiner et al. (2019) similarly identified in their case that the autistic person who attempted suicide had suicidal *thoughts* but no observable changes in mood or behavior, and there were no known precipitating events (p. 127) [44]. This speaks to the need to best understand a person's 'usual' [53], as well as the potential need to regularly ask about suicidal thoughts and behaviors. Experientially, our author team has identified that when autistic people are asked about suicidal thoughts or behaviors, that autistic people will readily share if they have experienced these, and are able to identify what they either thought, felt, and/or experienced just prior to suicidal behaviors. Prevention approaches will require collaborating with autistic people to develop approaches that respect autonomy and enhance supports; safety plans are one approach which ask about individual warning signs and strategies to mitigate those times people experience suicidal thoughts or behaviors.

Importantly, there were a few warning signs not easily categorized in relation to talk/communication, feeling/mood, or behavior [29, 30], including increased dysregulation, shut downs, or changes in 'energy'. Although we eventually categorized these as mood or behavior warning signs, our team felt these could also be physiological warning signs, a distinction supported by others [8] and within recognized domains of human functioning [54]. Physiological changes, although invisible to others, may be instrumental in understanding suicidal behavior, and appear to have a particular signature in relation to suicidal thoughts and behavior in autistic people [55]. As such, we encourage the consideration of physiological changes as a potential future warning sign category as well as increased research into this area.

Limitations and Future Research Directions

This is the first systematic exploration of the extant literature to describe warning signs that may indicate imminent suicidal behavior in autistic people. As such, this scoping review advances scientific knowledge that can be applied in clinical settings to identify and mitigate risk in highly vulnerable people, but it is not enough. There are important limitations. Notably, we considered but eventually excluded websites and blogs that may discuss warning signs (e.g., The Suicide Response Project, n.d [56]). Although autistic people share information online about suicidal thoughts and this is an important source of information about warning signs of suicide, we only included sources which had undergone some level of editorial review. We encourage research to systematically explore publicly-available blogs, websites, and online discussion forums for information related to warning signs as an important next step, with the important caveat that privacy and other ethical considerations are implemented with this type of online research. Another potential next step is to convene autistic people, care partners, the clinical community, and researchers to define 'warning signs' of suicide in autistic people. A second limitation is that few sources used the term 'warning sign', which was a necessary search term but also not sufficient to capture possible literature. For example, our search did not turn up an older source, Wing (1981) [57], whose work describes the case of L.P. who ".attempted suicide… precipitated by the possibility of reorganization in the office where he works…" (p. 126). Third, despite multiple reviews and discussions to resolve questions, our

agreement rate remained lower than anticipated for inclusion. We identified the primary cause of lack of agreement was due to lack of source material utilization of terms that guided inclusion: almost no sources used 'warning sign', sources lacked clear temporal language or language suggesting change in behavior, mood, talk, thoughts or events. Our recommendations to adopt clear terminology would improve future work aiming to strengthen knowledge of warning signs in autistic people. The nascence of this field is such that scholars and clinicians must remain open to the likelihood of warning signs other than those listed here. We moreover encourage exploration of factors which might potentially moderate the presentation of warning signs, such as gender, age, or the presence of co-occurring forms of neurodivergence, including intellectual disability. And lastly, changes in a person's behavior, mood, communication, and other experiences may also require us to better understand when someone is flourishing, joyful, and thriving, concepts which have equally been ignored within autism research.

Conclusion

Our review of 15 articles identified limited research on warning signs of suicide among autistic people. We call on the autism research and clinical communities to adopt a consistent definition of 'warning signs' and use terminology consistently to promote future work that aims to identify warning signs. In the absence of existing consensus, we propose as a starting definition, the following: Warning signs signal imminent suicidal behavior, and include changes in mood, actions, communication, thoughts, or physiology. Warning signs may include precipitating events. Warning signs may not be easily observed due to alexithymia, impulsivity, or loss of communication. Future studies may want to adjust our definition as new research emerges and should consider specifying a specific timescale between warning sign and suicidal behavior. We had no available information from which to base a timescale from research in autistic people. A second important step is to systematically assure that autistic people with lived experience are centered in research and practice related to understanding warning signs of suicide. Lastly, rigorous studies using novel methodologies are required to fully understand what autistic people experience in the days or hours preceding suicide attempts to move beyond risk factors and towards warning signs of suicidal behavior.

Key References

- Warning Signs of Suicide for Autistic People [Resource]. Available at: https://www.autismcrisissupport.com/resourcesSA
  - This resource contains a proposed set of warning signs of suicide for autistic people. It was developed by an international team of subject matter experts, including researchers, clinicians, and autistic people with lived experience.
- Rudd MD, Berman AL, Joiner Jr TE, Nock MK, Silverman MM, Mandrusiak M, et al. Warning signs for suicide: Theory, research, and clinical applications. Suicide Life Threat Behav. 2006;36(3):255-62. doi:10.1521/suli.2006.36.3.255.
  - This is a classic article summarizing conceptual issues with warning signs versus risk factors of suicide. Although focused on the general population, the description of obtaining expert consensus and defining a research agenda provides a basis for research into warning signs of suicide in autistic people.
- Bagge CL, Littlefield AK, Wiegand TJ, Hawkins E, Trim RS, Schumacher JA, et al. A controlled examination of acute warning signs for suicide attempts among hospitalized patients. Psychol Med. 2023;53(7):2768-76. doi: 10.1017/S0033291721004712
  - This study on warning signs of suicide in among veterans does not include autistic people, however, the novel methodology seeks to better understand the nature of the temporal relationship of warning signs to suicidal behavior, providing a potential approach for replication in autistic people.
- Littlefield AK, Himes KP, Conner KR, Bagge CL. Warning signs in a period of acute risk for suicide attempt: The utility of count-and combination-based classification. Gen Hosp Psychiatry. 2024;89:55-9. https://doi.org/10.1016/j.genhosppsych.2024.05.009
  - This article also is not about autistic people but uses a methodology that could potentially be applied to address gaps in knowledge about warning signs of suicide in autistic people.

Appendix

Table 3 PubMed Search Strategy

Query	Search details	Results
((autism) AND (suicide)) AND ((((((("warning") OR ("acute risk")) OR (imminent)) OR ("red flag")) OR ("warning sign")) OR ("warning signs"))	("autism s"[All Fields] OR "autisms"[All Fields] OR "autistic disorder"[MeSH Terms] OR ("autistic"[All Fields] AND "disorder"[All Fields]) OR "autistic disorder"[All Fields] OR "autism"[All Fields]) AND ("suicid"[All Fields] OR "suicidal ideation"[MeSH Terms] OR ("suicidal"[All Fields] AND "ideation"[All Fields]) OR "suicidal ideation"[All Fields] OR "suicidality"[All Fields] OR "suicidal"[All Fields] OR "suicidally"[All Fields] OR "suicidals"[All Fields] OR "suicide"[MeSH Terms] OR "suicide"[All Fields] OR "suicides"[All Fields] OR "suicide s"[All Fields] OR "suicided"[All Fields] OR "suiciders"[All Fields]) AND ("warning"[All Fields] OR "acute risk"[All Fields] OR ("imminence"[All Fields] OR "imminent"[All Fields] OR "imminently"[All Fields]) OR "red flag"[All Fields] OR "warning sign"[All Fields] OR "warning signs"[All Fields])	4
(((((("warning") OR ("acute risk")) OR (imminent)) OR ("red flag")) OR ("warning sign")) OR ("warning signs")	"warning"[All Fields] OR "acute risk"[All Fields] OR "imminence"[All Fields] OR "imminent"[All Fields] OR "imminently"[All Fields] OR "red flag"[All Fields] OR "warning sign"[All Fields] OR "warning signs"[All Fields]	52,156
"warning"	"warning"[All Fields]	39,565
"warning signs"	"warning signs"[All Fields]	4,339
"acute risk"	"acute risk"[All Fields]	521
imminent	"imminence"[All Fields] OR "imminent"[All Fields] OR "imminently"[All Fields]	10,714
"red flag"	"red flag"[All Fields]	1,692
"warning sign"	"warning sign"[All Fields]	1,547
suicide	"suicid"[All Fields] OR "suicidal ideation"[MeSH Terms] OR ("suicidal"[All Fields] AND "ideation"[All Fields]) OR "suicidal ideation"[All Fields] OR "suicidality"[All Fields] OR "suicidal"[All Fields] OR "suicidally"[All Fields] OR "suicidals"[All Fields] OR "suicide"[MeSH Terms] OR "suicide"[All Fields] OR "suicides"[All Fields] OR "suicide s"[All Fields] OR "suicided"[All Fields] OR "suiciders"[All Fields]	132,682
autism	"autism s"[All Fields] OR "autisms"[All Fields] OR "autistic disorder"[MeSH Terms] OR ("autistic"[All Fields] AND "disorder"[All Fields]) OR "autistic disorder"[All Fields] OR "autism"[All Fields]	87,209

Author contributions All authors conceived of the study and contributed to the planning of the review. MP, BM, RLM, and LM initially drafted the introduction. TB conceived of the methodological approach, initially drafted the methods text, completed the database search, and organized the sources for review. All authors screened titles, reviewed full-texts, participated in secondary screening, participated in discussions when consensus was required, and participated in data analysis and coding. TB, BM, LM, RLM, and MP completed data extraction on included sources. TB drafted results, figures, and tables. MD drafted clinical case examples. LM was the senior author, who originally brought the team together and identified the need for more research on warning signs of suicide among autistic people. All authors reviewed and finalized the text, tables, and figures together and approved of the manuscript as submitted.

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Data Availability No datasets were generated or analysed during the current study.

Declarations

Competing interests Teal Benevides has received grants, contracts, or subcontracts to her university from PCORI, HHS/ACL/NIDILRR, HHS/CDC, HHS/HRSA, and RWJF; Teal Benevides has received travel or honoraria for speaking from University of North Carolina at Chapel Hill and from Fonden Samradet; Teal Benevides serves as an unpaid board member for the Organization for Autism Research and American Occupational Therapy Foundation. Mirabel Pelton is supported by Economic and Social Research Council [grant number UKRI 2628]', and reports funding from Mind Ed Trust and Edinburgh Mental Health Network paid to their institution. Mirabel Pelton reports receiving honoraria for speaking from Corpore Case Management, and travel funding from the British Psychological Society, West Midlands British Psychological Society, Guarantors of Brain, and Coventry University. Lisa Morgan has received grants or contracts from PCORI; Lisa Morgan has received travel from Lived Experience Committee of Vibrant 988; Lisa Morgan serves as an unpaid co-chair of the Autism and Suicide Prevention Workgroup.Rachel Moseley, Brenna Maddox, and Mary P. Donahue declare that they have no conflict of interest.

Human and Animal Rights This article did not conduct research on human or animal subjects and included published sources as included materials.

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