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Understanding Contagion of Suicidal Ideation: The Importance of Taking Into Account Social and Structural Determinants of Health

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ABSTRACT

Suicidal behavior is a critical mental health problem in the United States, and this is particularly true for youth with social identities that are historically minoritized and discriminated against. There is also a growing awareness of the influence of social determinants of health (SDOH) on mental health. The current study examines links between one's own thoughts of suicide and the dose of exposure to other people's suicidal thoughts, often labeled contagion, within the context of different minoritized identity groups and SDOH deficits. *Project Lift Up* is a national longitudinal study of youth aged 13–22 years designed to understand exposure to suicidal thoughts and behaviors in social networks. A cohort of 4981 adolescents and young adults was recruited online via social media between June 13, 2022, and October 30, 2023. Youth who knew one person with suicidal thoughts were 1.75 times ($p = 0.002$) more likely than those without such exposure to self-report recent thought of suicide and those who knew between 2 and 4 people were 1.81 times more likely ($p < 0.001$). These odds increased to 3.47 ($p < 0.001$) if the youth knew five or more people with thoughts of suicide. Youth who identified with a social identity group that experiences marginalization and systemic oppression (based on race, ethnicity, disability status, gender, and sexual identity) and exposure to suicidal thoughts had higher odds of recent thoughts of suicide compared to non-minoritized and non-exposed youth. SDOH also explained unique variance in self-reported ideation. Exposure to other people's suicidal thoughts is associated with one's own thoughts of suicide and the number of people exposed to amplifies this effect, especially for individuals also experiencing adversity burden from SDOH. Results add to the extant literature documenting the higher odds of suicidal ideation that minoritized youth face.

1 | Introduction

1.1 | Suicidal Thoughts and Behaviors Are a Significant Public Health Concern

Suicidal thoughts and behaviors (STBs), defined as anything a person does intentionally that can cause injury to one's self,

including death (i.e., suicide attempt, suicidal ideation, non-suicidal self-injury (NSSI) (Crosby et al. 2011), is a significant public health issue. Estimates suggest attributable public health costs of suicide deaths are \$513.3 billion annually in medical and work loss and costs of suicide-related injuries an additional \$31.3 billion (Centers for Disease Control and Prevention 2022–2023) with substantial psychological, physical, social,

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and academic consequences (Centers for Disease Control and Prevention 2024). As a precursor to suicidal behavior, thoughts of suicide are a key mental health problem for youth globally (Van Meter et al. 2023). Studies suggest rates are increasing in the United States (Van Meter et al. 2023; Xiao et al. 2021). Research also makes clear that rates differ across gender, race, and sexual identity groups (Kernan et al. 2023).

This is even with the existence of numerous STB-focused programs which cover a variety of key domains, including awareness and education, screening, treatment interventions, and means restrictions (Hofstra et al. 2020; Mann et al. 2005). Given the high and increasing rates of STBs in the United States, new approaches and perspectives for understanding, preventing, and intervening with suicidal thoughts are clearly warranted and can have important returns in cost analyses globally (Stelmach et al. 2022).

1.2 | Links Between Exposure to and Personal Thoughts of Suicide

A significant risk factor for personal thoughts of suicide may be exposure to other people's suicidal thoughts or behaviors, what has been termed contagion or peer affiliation effects (Bottomley et al. 2018; Cerel and Roberts 2005; Liu et al. 2023; Mitchell et al. 2019; Nanayakkara et al. 2013). Indeed, in one national study of youth, exposure to someone else's suicidal behavior was associated with past-month trauma symptoms, suicidal ideation, and thoughts of self-harm (Mitchell et al. 2019). Contagion, whereby processes of social influence create social network links between others' suicide behaviors and one's own is a process that may be pronounced in adolescence when peer influence is strong (Mueller and Abrutyn 2015). Some studies show this effect is more pronounced for suicide attempt than ideation (Schlagbaum et al. 2021). Recently, the dose of exposure as indicated by the number of different contagion sources (family, friend, sibling) was found to be related to greater risk of suicidal ideation, self-harm, and suicide plans among adolescents (Liu et al. 2023). These contagion effects may differ among subgroups of young people given differences in risk factor exposure (Green et al. 2022). The current study draws from two key theories that help frame differences in groups of young peoples' lived experiences: Minority Stress Theory (Frost and Meyer 2023) and Social Determinants of Health Theory (Kerrie et al. 2024).

1.3 | Increased Risk for Suicidal Behavior Among Minoritized Communities

Rates of exposure to and personal STBs are not evenly distributed among youth, with those who identify as sexual and/or gender minority, for example, reporting higher rates of suicide exposure (Mitchell et al. 2021) and their own suicidal thoughts and attempts (Bottomley et al. 2018; Cerel and Roberts 2005; Kernan et al. 2023; Liu et al. 2023; Mitchell et al. 2019; Nanayakkara et al. 2013). Researchers note the need for further research to answer questions about how individuals and groups who are systemically marginalized may differ in their dose of

stress exposure and in how that exposure magnifies or diminishes their own mental health (Green et al. 2022).

Minority stress theory (MST) was developed by Meyer to better understand the particular lived experiences of LGBTQ+ individuals (Frost and Meyer 2023). The model shows how mental and physical health outcomes are affected by both general stressors that may affect many groups (e.g., adverse childhood experiences, poverty) but also by stressors that are unique to LGBTQ+ individuals' social identity group (such as rejection by family members due to gender or sexual identity, discrimination and micro aggressions). Researchers like (Green et al. 2022) use this theory to understand suicide risk. One source of minority stress may be higher exposure dose. While exposure to suicidal ideation may be a general stressor that all youth have a chance of encountering, it may also be considered a minority stress because its presence is magnified in certain communities. Consider, for example, the disproportionate rates of STBs among LGBTQ+, American Indian Alaska Native, and Black youth (Green et al. 2022).

1.4 | The Role of Social and Structural Determinants of Health in Understanding Suicidal Thoughts and Behavior

Recent research has sought to improve our understanding of mental health outcomes and disparities among young people by moving beyond the exclusive use of demographic categories as indicators of identity (Hamby 2015) to an examination of associated social determinants of health (SDOH) (Xiao et al. 2023). Unlike demographics and identity, which are usually relatively stable and are not appropriate targets for intervention, SDOH constructs, like economic stability, neighborhood and built environments, adversity, discrimination, and barriers to mental health care, offer more opportunities for modification.

SDOH is a conceptual model originally applied to understand variability in physical health outcomes (De Maio et al. 2013; Frank et al. 2020; World Health Organization 2025). It posits that health is determined not only by an individual's behavior but by systemic and structural variables in the communities and contexts where the individual lives over their life-course. These social, political, economic, and environmental factors include access to resources like education, power, money, services, green spaces, and exposure to problems like discrimination or crime and can accumulate over time as risk or protective processes. More recently, SDOH Theory has been applied to mental health outcomes including suicidal behaviors (Llamocca et al. 2023; Na et al. 2025; Occhipinti et al. 2021; Oyegoke et al. 2024; Runkle et al. 2023; Xiao et al. 2023). These studies find that across age groups, for example, higher suicide risk and suicide deaths are associated with living in under-resourced neighborhoods, poverty, experiencing discrimination, and exposure to disasters. SDOH Theory is connected to other theories such as Minority Stress Theory (Meyer 2003) that links experiences with discrimination (an SDOH) to minoritized identity (e.g., gender or sexual identity) in ways that amplify distress and mental health concerns.

1.5 | Putting the Pieces Together: Exposure to Suicidal Thoughts, Minoritized Identities and SDOH

To integrate all of these constructs, we conceptualize SDOH as nested within Minority Stress Theory. The SDOH risk variables help make up the environmental circumstances and general stressors in Meyer's model (Frost and Meyer 2023). SDOH Theory, however, suggests that these environmental contexts are unique and varied in combination with minoritized identities. It may be helpful to look at these in combination. SDOH Theory may be useful as another layer in helping to understand how aspects of lived experience across and within minoritized identity groups are related to mental health outcomes. These theories help us measure key variables that need to be implicated in understanding both the distribution of adversities like suicidal ideation exposure and its impact. SDOH constructs, like economic stability, neighborhood and built environments, adversity, discrimination, and barriers to mental health care, offer more opportunities for modification of existing prevention and intervention strategies. Exploring group differences in these processes may help us better understand the high rates of suicidal ideation and varied links between exposure and mental health that are increasingly documented in research.

1.6 | Current Study

Despite this extant literature, more research is needed about contagion effects in combination with identity and SDOH for young people with different lived experiences and access to resources. Specifically, more research is needed about how demographic group membership, SDOH, and exposure dose each explain unique variance in thoughts of suicide among diverse groups of youth. The current study adds to our knowledge about disparities in suicidal ideation risk by addressing several research questions:

Research Question 1: How many people do youth know who struggle with suicidal thoughts (“dosage”) and how does this vary across different minoritized identities, including sexual minority, gender minority, racial and ethnic minority youth and those with a diagnosed disability or chronic medical condition?

Research Question 2: How do youth report their own social and structural determinants of health and does this vary by minoritized identity?

Research Question 3. How is the dose of suicidal ideation exposure in one's social network related to a participants' own suicidal ideation (a contagion effect)? First, we examine the overall effect of dose on ideation. Then we use a planned comparison to look at exposure dose within different minoritized identity groups. Relative to those with *neither* exposure to suicidal ideation or membership in a specific minoritized identity group, analyses examined how identity and exposure dose groups are related to the participants' own reports of ideation.

Research Question 4. What are the main effects of SDOH on personal suicidal ideation in the context of different minoritized identities?

2 | Methods

Project Lift Up is a national longitudinal study of youth and young adults designed to understand exposure to self-directed violence in social networks. A cohort of 4981 adolescents and young adults aged 13–22 years was recruited between June 13, 2022, and October 30, 2023. Weighted percentages and unweighted *n*'s of sample characteristics are displayed in Table 1. A waiver of caregiver permission was granted for minors because requiring it could potentially place youth in situations where their sexual and gender identity could be unintentionally disclosed, potentially creating a dangerous situation for the youth. Appropriate mechanisms were in place to protect participants, such as localized referrals to mental health supports by a clinical member of the research team. The protocol was reviewed and approved by the University of New Hampshire Institutional Review Board.

Participants were recruited through study advertisements on social media on Facebook and Instagram. Advertisements encouraged youth to “have their voice heard” and “make a difference.” Survey aims were not mentioned to reduce self-selection bias based upon interest in the survey topic. Those who were interested clicked on the advertisement and were linked to a survey which provided a study description and screening questions to determine eligibility. Those who were eligible, defined as being 13–22 years of age, living in the United States, and English literate, were then asked to read an assent/consent form and to indicate their willingness to participate in the study before continuing with the main survey.

Participants were given a \$15 incentive as an Amazon gift code for completing the survey. Ineligible youth were directed to a web page that included links to general resources for youth. To promote a diverse sample and allow for planned sub-group analyses, demographic quotas were identified based on age (13–17 vs. 18–22), sex assigned at birth, sexual or gender minority identity (yes/no) and race or ethnic minority (yes/no). Quotas were identified based on the overarching aims of the grant and based on the experience of the research team that has extensive expertise in social media recruitment. Once the targeted number of youth in a particular group had been achieved, subsequent youth in this group who were otherwise eligible were deemed ineligible. The participation rate of this study, defined by the American Association for Public Opinion Research as the number of completed responses divided by the number of invitations (American Association for Public Opinion Research 2024), was 21.0%.

A data quality protocol was used to identify untrustworthy data, including age verification, reverse lookup of IP addresses and phone numbers, review of names, addresses, social media accounts, time to survey completion, attention check questions, and direct participant outreach, as needed. We started with 6237 completed surveys at baseline: 4981 (79.9%) were deemed valid and represent the analytical sample, 579 (9.3%) were dropped due to a failed age check, 256 (4.1%) were malicious duplicate entries coming from outside of the United States—all of which were submitted within a 2-day period after we tried to recruit participants through advertisements on TikTok, and 421 (6.7%) were smaller scale duplicate entries, for example, one

TABLE 1 | Rates of lifetime exposure to other people's suicidal behavior and one's own recent thoughts of suicide by demographic characteristics ($N = 4981$).

	All participants N (%)	Exposure to someone else's thoughts of suicide n (%)		p value	Any personal thoughts of suicide-past 2 weeks ^a n (%)		p value
		No	Yes		No	Yes	
All youth	4981	808 (21.5)	4173 (78.5)	—	3031 (73.8)	1776 (26.2)	—
Age							
Adolescent	2835 (48.4)	467 (21.3)	2368 (78.7)	0.90	1662 (71.8)	1053 (28.2)	0.05
Young adult	2146 (51.6)	341 (21.6)	1805 (78.4)		1369 (75.7)	723 (24.3)	
Sex at birth							
Male	1868 (50.6)	402 (25.4)	1466 (74.6)	< 0.001	1206 (74.8)	607 (25.2)	0.01
Female	2931 (47.7)	383 (17.4)	2548 (82.6)		1743 (73.5)	1087 (26.5)	
Intersex	46 (0.5)	4 (17.5)	42 (82.5)		21 (39.5)	22 (60.5)	
Prefer not to answer	136 (1.3)	19 (18.8)	117 (81.2)		61 (60.5)	60 (39.5)	
Sexual identity ^b							
Gay	364 (3.7)	53 (25.4)	311 (74.6)	0.34	203 (71.5)	154 (28.5)	0.51
Lesbian	325 (2.3)	33 (9.1)	292 (90.9)	< 0.001	149 (54.4)	159 (45.6)	< 0.001
Bisexual	1149 (11.2)	136 (13.5)	1013 (86.5)	< 0.001	610 (60.7)	496 (39.3)	< 0.001
Heterosexual	2037 (65.6)	448 (24.5)	1589 (75.5)	< 0.001	1537 (80.4)	451 (19.6)	< 0.001
Queer	360 (3.5)	33 (13.1)	327 (86.9)	0.03	171 (53.4)	174 (46.6)	< 0.001
Polysexual, omnise- xual, sapiosexual or pansexual	409 (3.4)	34 (8.6)	375 (91.3)	< 0.001	178 (53.2)	207 (46.8)	< 0.001
Demisexual	167 (1.5)	15 (10.3)	152 (89.7)	0.03	79 (49.5)	78 (50.5)	< 0.001
Asexual	376 (7.9)	54 (16.5)	322 (83.5)	0.13	187 (61.4)	171 (38.6)	< 0.001
Questioning/unsure	196 (3.1)	40 (21.6)	156 (78.4)	0.98	91 (53.8)	92 (46.2)	< 0.001
Any sexual minority							
No	2072 (68.3)	456 (24.5)	1616 (75.5)	< 0.001	1560 (80.4)	457 (19.6)	< 0.001
Yes	2909 (31.7)	352 (14.9)	2557 (85.1)		1471 (59.5)	1319 (40.5)	
Gender identity ^b							
Cisgender boy	1403 (46.2)	324 (25.7)	1079 (74.3)	< 0.001	987 (76.4)	383 (23.6)	0.02
Cisgender girl	1753 (39.5)	291 (19.1)	1462 (80.9)	0.05	1246 (78.5)	462 (21.5)	< 0.001
Nonbinary	879 (7.3)	81 (9.6)	798 (90.4)	< 0.001	383 (48.1)	454 (51.9)	< 0.001
Transgender girl	234 (1.0)	32 (12.5)	202 (87.5)	0.004	99 (45.1)	124 (54.9)	< 0.001
Transgender boy	510 (1.8)	36 (8.2)	474 (91.8)	< 0.001	205 (39.9)	287 (60.1)	< 0.001
Genderqueer	363 (1.5)	28 (6.4)	335 (93.6)	< 0.001	139 (39.7)	206 (60.3)	< 0.001
Gender fluid	379 (1.7)	35 (11.4)	344 (88.6)	0.01	160 (45.6)	190 (54.4)	< 0.001
Agender	204 (1.0)	19 (12.1)	185 (87.9)	0.11	94 (51.1)	99 (48.9)	< 0.001
Questioning/unsure	294 (2.4)	31 (15.2)	263 (84.8)	0.13	127 (45.2)	149 (54.8)	< 0.001
Any gender minority							
No	3166 (87.7)	631 (23.0)	2535 (77.0)	< 0.001	2247 (77.4)	839 (22.6)	< 0.001
Yes	1814 (12.3)	177 (10.5)	1637 (89.5)		783 (47.7)	937 (52.3)	
Race and ethnicity ^b							
White	3711 (70.3)	544 (19.9)	3167 (80.1)	0.02	2222 (72.8)	1368 (27.2)	0.12
Black or African American	557 (16.0)	124 (29.0)	433 (71.0)	0.003	360 (79.6)	178 (20.4)	0.01
Asian	572 (9.5)	118 (24.6)	454 (75.4)	0.25	373 (74.7)	181 (25.3)	0.74
Two or more races	472 (7.3)	72 (22.4)	400 (77.6)	0.81	259 (71.1)	193 (28.9)	0.40
Hispanic or Latino	1071 (24.3)	166 (18.1)	905 (81.9)	0.05	673 (71.9)	362 (28.1)	0.27

(Continues)

TABLE 1 | (Continued)

	All participants <i>N</i> (%)	Exposure to someone else's thoughts of suicide <i>n</i> (%)			Any personal thoughts of suicide-past 2 weeks ^a <i>n</i> (%)		
		No	Yes	<i>p</i> value	No	Yes	<i>p</i> value
Race or ethnic minority							
No	2828 (52.4)	424 (20.2)	2404 (79.8)	0.17	1682 (73.3)	1044 (26.7)	0.56
Yes	2153 (47.6)	384 (22.9)	1769 (77.1)		1349 (74.4)	732 (25.6)	
Diagnosed disability or chronic medical condition ^b							
PTSD	684 (8.5)	49 (10.0)	635 (90.0)	< 0.001	285 (53.6)	375 (46.4)	< 0.001
ADHD	1276 (21.1)	149 (17.5)	1127 (82.5)	0.04	670 (63.4)	558 (36.6)	< 0.001
ODD	142 (2.3)	10 (6.5)	132 (93.5)	0.004	64 (53.5)	74 (46.5)	0.001
Autism or Aspergers	565 (7.9)	72 (18.7)	493 (81.3)	0.39	259 (61.8)	275 (38.2)	< 0.001
Intellectual disability	60 (1.0)	7 (26.9)	53 (73.1)	0.64	28 (58.7)	29 (41.3)	0.17
Learning disorder	318 (5.4)	40 (19.2)	278 (80.8)	0.61	164 (70.5)	136 (29.5)	0.42
Psychiatric disorder	550 (7.5)	50 (9.9)	500 (90.1)	< 0.001	228 (52.8)	297 (47.2)	< 0.001
Any of above diagnosed disabilities only	1967 (32.8)	238 (17.7)	1729 (82.3)	0.008	1017 (64.7)	874 (35.3)	< 0.001
Chronic medical condition only	559 (10.5)	80 (18.6)	479 (81.4)	0.28	326 (70.1)	212 (29.9)	0.17
Any disability or medical condition							
No	2455 (56.7)	490 (24.2)	1965 (75.8)	0.001	1688 (79.9)	690 (20.1)	< 0.001
Yes	2526 (43.3)	318 (17.9)	2208 (82.1)		1343 (66.0)	1086 (34.0)	

Note: Unweighted *n*'s, weighted percentages. ADHD = attention deficits hyper-activity disorder, ODD = oppositional defiant disorder; PTSD = posttraumatic stress disorder. Row percentages; weighted percentage, unweighted *n*.

^a*N* = 4807 due to missing data for 174 participants on this variable.

^bParticipants could endorse multiple identities so the comparison group for each are those participants who did not endorse each particular identity.

person submitting the survey 2–3 times under different names. More details about this protocol are published elsewhere (Mitchell et al. 2025).

2.1 | Measures

2.1.1 | Exposure to Thoughts of Suicide

This item was designed and pilot tested for this study (Banyard et al. 2021). Participants were asked: “Thinking of situations where someone was thinking about, considering, or planning to kill themselves but did not move forward with it. How many people have you ever known who have done this?”. Response options were none, 1, 2, 3, 4, 5 or more, and prefer not to answer. For the current analyses, participants were coded into the following levels of exposure: none, one, 2–4, and 5 or more.

2.1.2 | Participant's Own Personal Thoughts of Suicide

This item is from the DSM-5-TR Self-Rated Level 1 Cross-Cutting Symptom Measures for Ages 11–17 (American Psychological Association 2024): “In the past 2 weeks, have you thought about killing yourself or dying by suicide?” Response options were yes, no, prefer not to answer.

2.1.3 | Social and Structural Determinants of Health Deficits

SDOH screening tools exist but are designed primarily for in-person assessment of adults in clinical settings. Items and scales used in the current study were drawn from these tools (American Academy of Family Physicians 2018) and then modified and piloted with youth. As noted above, SDOH Theory encompasses many variables. The current study investigates several but not all of these. Items cover six domains of SDOH:

1. *Economic instability* was captured with three items including difficulty paying bills, having one's cell phone shut off, and skipping meals (each on 5-point scale ranging from 0 (never) to 4 (always). High economic instability for each was captured at one standard deviation above the mean for each variable and then summed for a total economic instability count score ($M = 0.49$, $SD = 0.86$, $Range = 0–3$).
2. *Lifetime non-victimization adversity* due to non-violent traumatic events and chronic stressors were measured using 10 yes/no items (e.g., serious illnesses, family homelessness) (Turner and Butler 2003). Items were summed to reflect a total adversity count ($M = 2.78$, $SD = 2.16$, $Range = 0–11$).
3. *Discrimination* was measured using the Everyday Discrimination Scale (Williams et al. 1997). Response options

ranged from 0 (never) to 5 (almost every day). Examples include being treated with less courtesy and respect than others and being threatened or harassed. Items were summed and averaged to create a mean scale score ($M = 1.40$, $SD = 1.04$, Range = 0–5).

4. *Barriers to accessing mental health care.* Participants were asked to rate five concerns that might affect their decision to seek treatment for a mental health problem, including not knowing where to get help, not having transportation, it being too hard to schedule an appointment, difficulty getting time off work or school, and cost. These were adapted from Britt and colleagues (Britt et al. 2008) with language made appropriate for the younger sample. Response options ranged from 1 (strongly disagree) to 5 (strongly agree). Items were summed and averaged to create a mean barriers score ($M = 2.81$, $SD = 1.03$, Range = 1–5).
5. *Poor home conditions.* Eight items covered problems where one currently lives (American Academy of Family Physicians 2018). Participants were told to think about their permanent place of residence and asked whether there were: bugs everywhere, mold, lead paint or pipes, not enough heat, the oven or stove does not work properly, there are no smoke detectors or they do not work, water leaks, and no or frequent loss of electricity. Response options for each were yes/no and summed to create a total score ($M = 0.51$, $SD = 0.97$, Range = 0–8).
6. *Neighborhood disorder.* Twelve items measured perceptions of the severity of different neighborhood conditions (Perkins et al. 1990). They were re-worded, where necessary, to be more meaningful to youth. For example, “night noise” was changed to “police or ambulance sirens at night” and “vandalism” was changed to “damage”. All items were pilot tested with youth to ensure comprehension. Participants were asked to rate each one as to whether it is: no problem, a minor problem, or a serious problem in their neighborhood: for example, gangs, graffiti, drugs, and homelessness. Response options for each were yes/no and averaged to create a mean score ($M = 0.36$, $SD = 0.42$, Range = 0–2).

2.1.4 | Minoritized Identities

Sexual identity was measured by asking participants which of the following provided options best represented how they thought of themselves. They were instructed to mark all that apply. Options are listed in Table 1.

Gender identity was measured by asking participants what terms best express how they describe their gender identity. They were instructed to mark all that apply. Options are listed in Table 1.

Race response options included: White, Black or African American, Asian, Hawaiian or Pacific Islander, American Indian or Alaska Native, Unknown or not reported, other, and prefer not to answer. Participants could mark all that apply. Participants were also asked if they were of *Hispanic or Latino origin*, such as Latin American, Mexican, Puerto Rican, or Cuban. (yes/no).

Participants were asked if they had ever had a *chronic medical condition or disability* that got in the way of things like their schoolwork/work, recreational activities or daily life? (yes/no); this item was developed for the current study. They were also provided with a list of different diagnoses they may have had in their lifetime (Vanderminden et al. 2023) and asked if they had ever been diagnosed by a doctor, therapist or another professional for each. These are listed in Table 1. For the current analyses, a positive response to any chronic medical condition or diagnosis was coded as 1.

2.1.5 | Additional Demographic Characteristics

Age was a continuous variable for multivariate analyses (Mean age = 17.4 years, $SE = 0.03$) and dichotomous (coded as ages 13–17 and 18–22) for bivariate analyses. *Sex assigned at birth* was captured as: male, female, intersex, and prefer not to answer.

2.2 | Data Analysis

Data was weighted using Sample Balancing, which is an iterative sample weighting program that balances the distributions of all variables at the same time using the Deming Algorithm (Deming and Stephan 1940). Missing data were less than < 5% and conservatively coded as “no” for dichotomous constructs and replaced with the mean for continuous constructs. All analyses included survey weights and were conducted using the survey data analysis tools available in Stata/SE 18.5 (Stata/SE 1996–2025). For all statistical comparisons, we provide the exact p -value and use $p < 0.001$ as our own significance threshold given the large number of statistical tests conducted.

We first estimate weighted rates of any lifetime exposure to other people's thoughts of suicide and participants' personal recent thoughts of suicide by demographic characteristics (Table 1) and the number of different people they knew who had struggled with thoughts of suicide (a measure of exposure dose) in their lifetime (Table 2). Between-group comparisons were conducted using chi-squared tests (Tables 1 and 2). Next, across the same demographic characteristics, we report means and standard deviations for the six main SDOH deficits measured: economic, structural, non-victimization adversity, discrimination, and barriers to mental health care access (Table 3). Statistical comparisons use t -tests (for two groups) and Analysis of Variance (for three or more groups).

Then, we focus on the following four minoritized identities for the remaining analyses: sexual minority, gender minority, race and ethnic minority, and participants with a disability or chronic medical condition. Youth could be included in more than one category, so each analysis also adjusts for the other minoritized identities, as well as age and sex assigned at birth. We first estimate five logistic regression models with recent thoughts of suicide as the dependent variable and independent variables representing the number of exposures to suicidal ideation for: (1) all participants, and dosage of exposure and (2) by sexual minority identity, (3) by gender minority identity, (4)

TABLE 2 | Rates of different levels of exposure to someone else's thoughts of suicide by demographic characteristics ($n = 4845$).

	None <i>n</i> (%)	1 person <i>n</i> (%)	2–4 people <i>n</i> (%)	5 or more people <i>n</i> (%)	<i>p</i> value
All participants	672 (19.6)	981 (25.6)	1643 (32.3)	1549 (22.5)	—
Age					
Adolescent	379 (19.1)	602 (27.6)	948 (32.6)	818 (20.7)	0.14
Young adult	293 (20.1)	379 (23.8)	695 (32.0)	731 (24.2)	
Sex assigned at birth					
Male	347 (23.8)	436 (28.8)	614 (30.0)	416 (17.4)	< 0.001
Female	135 (15.3)	522 (22.6)	991 (34.9)	1035 (27.2)	
Intersex	1 (11.5)	5 (5.4)	7 (25.5)	30 (57.7)	
Sexual identity					
Gay	38 (20.7)	56 (20.1)	119 (35.7)	136 (23.6)	0.57
Lesbian	22 (6.8)	41 (13.5)	127 (45.6)	124 (34.1)	< 0.001
Bisexual	97 (10.5)	172 (20.5)	402 (38.2)	439 (30.8)	< 0.001
Heterosexual	407 (23.0)	524 (28.2)	643 (30.1)	422 (18.8)	< 0.001
Queer	19 (8.3)	38 (11.2)	100 (43.6)	189 (36.9)	< 0.001
Polysexual, omnisexual, sapiosexual or pansexual	24 (6.6)	61 (16.9)	142 (38.1)	172 (38.5)	< 0.001
Demisexual	8 (4.5)	25 (15.5)	50 (44.1)	77 (35.9)	0.001
Asexual	42 (13.9)	78 (24.1)	117 (31.0)	127 (30.9)	0.06
Questioning/unsure	32 (17.5)	25 (19.5)	64 (38.2)	67 (24.8)	0.52
Any sexual minority	259 (12.0)	439 (19.4)	986 (37.2)	1132 (31.4)	< 0.001
Gender identity					
Cisgender boy	287 (24.1)	362 (29.6)	454 (29.7)	263 (16.5)	< 0.001
Cisgender girl	249 (16.9)	384 (23.7)	616 (35.0)	462 (24.4)	0.01
Nonbinary	56 (7.3)	108 (13.2)	274 (32.6)	416 (46.9)	< 0.001
Transgender girl/woman	23 (10.1)	39 (20.7)	76 (32.3)	87 (36.9)	< 0.001
Transgender boy/man	22 (5.5)	45 (12.3)	143 (30.0)	286 (52.2)	< 0.001
Genderqueer	19 (4.7)	32 (13.3)	94 (28.6)	209 (53.3)	< 0.001
Gender fluid	23 (8.9)	43 (13.3)	127 (32.6)	174 (45.1)	< 0.001
Agender	14 (9.5)	41 (21.7)	57 (27.9)	87 (40.9)	0.005
Questioning/unsure	20 (12.1)	48 (21.3)	99 (33.3)	116 (33.3)	0.05
Any gender minority	122 (8.0)	229 (15.4)	570 (33.8)	838 (42.7)	< 0.001
Race and ethnicity					
White	448 (18.1)	668 (23.3)	1222 (33.2)	1277 (25.5)	< 0.001
Black or African American	106 (26.6)	120 (28.7)	190 (29.5)	123 (15.2)	0.001
Asian	100 (21.6)	148 (33.7)	173 (28.4)	133 (16.3)	0.005
Two or more races	56 (18.7)	74 (20.6)	158 (33.7)	168 (27.1)	0.43
Hispanic or Latino	146 (16.9)	221 (27.5)	390 (35.9)	294 (19.6)	0.06
Race or ethnic minority	334 (21.1)	477 (28.8)	731 (31.9)	561 (18.2)	< 0.001
Diagnosed disability or chronic medical condition					
PTSD	33 (8.2)	66 (14.5)	170 (25.3)	399 (52.0)	< 0.001
ADHD	112 (15.4)	172 (18.7)	381 (30.5)	574 (35.4)	< 0.001
ODD	5 (3.7)	12 (14.1)	48 (32.6)	72 (49.7)	< 0.001

(Continues)

TABLE 2 | (Continued)

	None <i>n</i> (%)	1 person <i>n</i> (%)	2–4 people <i>n</i> (%)	5 or more people <i>n</i> (%)	<i>p</i> value
Autism or Aspergers	42 (14.4)	60 (20.0)	178 (35.5)	255 (30.2)	0.04
Intellectual disability	5 (26.5)	6 (11.6)	22 (29.9)	25 (32.0)	0.49
Learning disorder	24 (14.5)	39 (24.0)	102 (31.5)	137 (30.0)	0.35
Psychiatric disorder	30 (7.8)	54 (14.6)	156 (29.6)	290 (48.0)	< 0.001
Any of above diagnosed disabilities only	179 (15.5)	262 (18.8)	608 (31.6)	859 (34.1)	< 0.001
Chronic medical condition only	64 (16.9)	113 (27.1)	179 (31.7)	187 (24.2)	0.70
Any disability or medical condition	243 (15.8)	375 (20.8)	787 (31.7)	1046 (31.7)	< 0.001

Note: Weighted row percentages (unweighted *n*). Missing data about number of people for 136 participants.

Abbreviations: ADHD = attention deficits hyper-activity disorder; ODD = oppositional defiant disorder; PTSD = posttraumatic stress disorder.

by race or ethnic minority identity, and (5) by disability/chronic medical condition (Table 4). For each of these analyses we include a planned comparison to a reference category representing “no exposure, no minoritized identity” to explore the additive effects of number of exposures and minoritized identity. Next, each of the six SDOH constructs are added to each of the above logistic regression models to see how the main effects of SDOH are related to personal thoughts of suicide—overall and by minoritized identity.

3 | Results

3.1 | Lifetime Exposure to Someone Else's Thoughts of Suicide (RQ 1)

In their lifetime, almost 8 in 10 (78.5%) of participants knew someone who had thoughts of suicide (Table 2). When measured as simply any exposure, it was more frequently reported by sexual minority (85.1%) compared with exclusively heterosexual participants (75.5%). Similar rates of exposure to suicidal thoughts were found for participants who identified as a gender minority identity (89.5%) compared to cisgender girls (80.9%) and cisgender boys (74.3%). Rates of exposure to suicidal thoughts were similar across racial and ethnic groups—85.9% for participants identifying as any racial or ethnic minority. Rates were highest among Hispanic or Latino youth (81.9%), White youth (80.1%), and youth identifying with two or more races (77.6%). 81.4 percent of participants with a diagnosed disability or chronic medical condition reported exposure to suicidal thoughts, ranging from 73.1% with a diagnosed intellectual disability to 90.0% for those with a PTSD diagnosis and 90.1% with a personality disorder.

Table 2 reports on rates of exposure to different numbers of people struggling with thoughts of suicide, a measure of exposure dose: Zero (19.6%), 1 person (25.6%), 2–4 people (32.3%), and 5 or more people 22.5%). Again, groups with minoritized identities reported greater doses of exposure to suicidal ideation. Twenty-six percent of participants reported having their own thoughts of suicide in the 2 weeks before the survey. This was true for 40.5% of sexual minority, 52.3% of gender minority, 25.6% of racial or ethnic minority, and 29.9%

of participants with a diagnosed disability or chronic medical condition. More details for specific sub-groups are provided in Tables 1 and 2.

3.2 | Rates of Structural and Social Determinants of Health Deficits by Minoritized Identity (RQ 2)

Mean scores for different SDOH deficits (economic, home, neighborhood, adversity, discrimination, and barriers to mental health care) are provided in Table 3. With only a few exceptions, participants who identified with minoritized groups (sexual, gender, race/ethnicity, disability) had significantly higher average scores across each type of SDOH than peers without that identity.

3.3 | Relationship Between Dose of Exposure to Suicidal Ideation and Personal Thoughts of Suicide: Assessing Contagion Effects (RQ3)

Among all participants, those who knew one person with suicidal thoughts were 1.75 times ($p = 0.002$) more likely than those without such exposure to self-report recent thoughts of suicide (Table 4). Those who knew between 2 and 4 people who had thoughts of suicide were 1.81 times more likely to have their own recent thoughts of suicide ($p < 0.001$); these odds increase to 3.47 ($p < 0.001$) if the youth knew five or more people with thoughts of suicide (Table 4). There were also significant main effects of identity on recent thoughts of suicide with youth identifying as a sexual minority ($OR = 1.85$, $p < 0.001$), gender minority ($OR = 1.85$, $p < 0.001$) and those with a diagnosed disability or chronic medical condition ($OR = 1.59$, $p < 0.001$) having increased odds of recent thoughts of suicide.

Next the association between exposure and outcome (contagion) was examined separately by minoritized identity groups. Compared with participants with no exposure to suicidal thoughts and who were not a sexual minority, participants who identified as a sexual minority without suicide exposure were 3.51 times ($p < 0.001$) more likely to report their own recent thoughts of suicide (Table 4 and Figure 1). When further

TABLE 3 | Average rates of different structural and social determinants of health by participant demographic characteristics.

	Economic instability M (SD)	Poor home conditions M (SD)	Neighbor- hood disorder M (SD)	Lifetime non- victimization adversity M (SD)	Discrimination in daily life M (SD)	Barriers to mental health care M (SD)
All participants	0.49 (0.86)	0.51 (0.97)	0.36 (0.42)	2.78 (2.16)	1.40 (1.04)	2.81 (1.03)
Age						
Adolescent	0.45 (0.84)	0.47 (0.92)	0.35 (0.42)	2.65 (2.20)	1.48 (1.06)	2.75 (1.08)
Young adult	0.53 (0.87)	0.55 (1.01)	0.36 (0.43)	2.90 (2.11)	1.33 (1.01)	2.86 (0.97)
<i>p value</i>	< 0.001	0.02	0.89	0.001	< 0.001	< 0.001
Sex at birth						
Male	0.43 (0.80)	0.46 (0.91)	0.33 (0.41)	2.65 (2.12)	1.38 (1.07)	2.73 (1.01)
Female	0.54 (0.90)	0.57 (1.02)	0.39 (0.43)	2.89 (2.16)	1.41 (0.99)	2.87 (1.04)
Intersex	1.33 (1.18)	0.50 (1.27)	0.51 (0.56)	4.25 (3.02)	2.30 (1.23)	3.45 (1.02)
<i>p value</i>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Sexual identity						
Gay	0.55 (0.85)	0.58 (1.10)	0.32 (0.36)	2.83 (2.14)	1.59 (1.13)	3.04 (0.99)
Lesbian	0.50 (0.87)	0.82 (1.23)	0.48 (0.49)	3.43 (2.47)	1.80 (1.15)	3.14 (0.98)
Bisexual	0.62 (0.92)	0.62 (1.07)	0.38 (0.43)	3.47 (2.18)	1.56 (1.08)	2.95 (1.00)
Heterosexual	0.46 (0.84)	0.47 (0.91)	0.34 (0.41)	2.62 (2.08)	1.32 (0.99)	2.68 (1.02)
Queer	0.61 (0.91)	0.62 (1.05)	0.42 (0.41)	3.34 (2.28)	1.66 (1.03)	3.31 (0.82)
Polysexual, omnisexual, sapiosexual or pansexual	0.72 (1.02)	0.87 (1.24)	0.49 (0.48)	3.85 (2.32)	1.90 (1.24)	3.19 (0.99)
Demisexual	0.76 (1.01)	0.91 (1.38)	0.35 (0.36)	4.17 (2.39)	1.87 (1.23)	3.14 (0.88)
Asexual	0.39 (0.78)	0.47 (0.93)	0.38 (0.41)	2.88 (2.25)	1.43 (0.97)	3.21 (0.95)
Questioning/ unsure	0.48 (0.84)	0.45 (0.87)	0.42 (0.42)	2.55 (2.14)	1.55 (0.91)	3.27 (0.94)
Any sexual minority						
No	0.47 (0.84)	0.46 (0.91)	0.34 (0.41)	2.59 (2.08)	1.31 (1.00)	2.68 (1.02)
Yes	0.55 (0.89)	0.62 (1.07)	0.41 (0.44)	3.19 (2.25)	1.61 (1.09)	3.09 (0.99)
<i>p value</i>	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Gender identity						
Cisgender boy	0.41 (0.76)	0.44 (0.88)	0.32 (0.40)	2.62 (2.13)	1.35 (1.04)	2.71 (1.00)
Cisgender girl	0.53 (0.90)	0.53 (0.97)	0.37 (0.43)	2.73 (2.08)	1.34 (0.96)	2.80 (1.03)
Nonbinary	0.61 (0.90)	0.71 (1.19)	0.44 (0.43)	3.53 (2.29)	1.82 (1.11)	3.24 (0.98)
Transgender girl	0.49 (0.92)	0.61 (1.07)	0.33 (0.39)	3.39 (2.39)	1.98 (1.21)	3.01 (0.92)
Transgender boy	0.78 (1.01)	0.99 (1.29)	0.49 (0.45)	4.12 (2.31)	2.14 (1.13)	3.33 (1.03)
Genderqueer	0.62 (0.94)	0.71 (1.21)	0.49 (0.47)	3.81 (2.20)	2.07 (1.14)	3.36 (1.03)
Gender fluid	0.75 (1.04)	0.67 (1.12)	0.50 (0.47)	3.69 (2.22)	1.94 (1.17)	3.24 (1.10)
Agender	0.60 (0.99)	0.58 (1.03)	0.43 (0.42)	3.27 (2.31)	1.75 (1.26)	3.20 (0.98)
Questioning/ unsure	0.72 (0.95)	0.72 (1.08)	0.45 (0.45)	3.30 (2.14)	1.65 (1.17)	3.44 (0.98)

(Continues)

TABLE 3 | (Continued)

	Economic instability <i>M</i> (SD)	Poor home conditions <i>M</i> (SD)	Neighbor- hood disorder <i>M</i> (SD)	Lifetime non- victimization adversity <i>M</i> (SD)	Discrimination in daily life <i>M</i> (SD)	Barriers to mental health care <i>M</i> (SD)
Any gender minority						
No	0.47 (0.85)	0.49 (0.93)	0.35 (0.42)	2.67 (2.11)	1.34 (1.01)	2.74 (1.02)
Yes	0.61 (0.93)	0.71 (1.16)	0.44 (0.44)	3.55 (2.30)	1.85 (1.14)	3.25 (0.97)
<i>p</i> value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001
Race and ethnicity						
White	0.43 (0.80)	0.51 (0.97)	0.34 (0.40)	2.88 (2.19)	1.40 (1.02)	2.77 (1.01)
Black or African American	0.85 (1.08)	0.56 (0.95)	0.42 (0.48)	2.88 (2.16)	1.51 (1.13)	2.83 (1.12)
Asian	0.27 (0.66)	0.42 (0.85)	0.28 (0.36)	1.99 (1.79)	1.23 (0.99)	2.94 (0.99)
Two or more races	0.66 (1.00)	0.66 (1.04)	0.41 (0.44)	3.25 (2.63)	1.58 (1.21)	2.91 (1.05)
Hispanic or Latino	0.57 (0.89)	0.60 (1.03)	0.44 (0.48)	2.98 (2.17)	1.32 (1.02)	2.87 (1.03)
Race or ethnic minority						
No	0.40 (0.77)	0.48 (0.95)	0.32 (0.38)	2.77 (2.13)	1.42 (1.02)	2.74 (1.00)
Yes	0.59 (0.93)	0.55 (0.98)	0.40 (0.46)	2.80 (2.19)	1.38 (1.05)	2.87 (1.05)
<i>p</i> value	< 0.001	0.01	< 0.001	0.60	0.02	< 0.001
Diagnosed disability or chronic medical condition						
PTSD	0.88 (1.04)	0.78 (1.25)	0.54 (0.51)	4.93 (2.21)	1.97 (1.18)	2.83 (1.08)
ADHD	0.55 (0.89)	0.55 (1.04)	0.37 (0.43)	3.43 (2.38)	1.62 (1.09)	2.79 (1.03)
ODD	0.72 (0.97)	0.77 (1.21)	0.55 (0.53)	4.50 (2.47)	2.03 (1.09)	2.79 (1.02)
Autism or Aspergers	0.77 (0.99)	0.71 (1.09)	0.44 (0.45)	4.06 (2.50)	1.77 (1.23)	2.89 (1.06)
Intellectual disability	0.68 (1.10)	0.82 (1.17)	0.39 (0.40)	4.19 (2.63)	2.17 (1.22)	2.18 (1.26)
Learning disorder	0.77 (0.94)	0.84 (1.32)	0.46 (0.51)	3.84 (2.46)	1.72 (1.18)	2.83 (1.05)
Psychiatric disorder	0.79 (1.04)	0.76 (1.28)	0.46 (0.48)	4.60 (2.37)	1.96 (1.19)	2.90 (0.99)
Any of above diagnosed disabilities only	0.57 (0.91)	0.59 (1.09)	0.40 (0.45)	3.60 (2.35)	1.63 (1.11)	2.79 (1.04)
Chronic medical condition only	0.58 (0.93)	0.55 (1.01)	0.37 (0.40)	3.59 (1.81)	1.53 (1.03)	2.87 (0.97)
Any disability or chronic medical condition						
No	0.43 (0.81)	0.46 (0.88)	0.33 (0.41)	2.16 (1.87)	1.25 (0.97)	2.80 (1.03)

(Continues)

TABLE 3 | (Continued)

	Economic instability M (SD)	Poor home conditions M (SD)	Neighbor- hood disorder M (SD)	Lifetime non- victimization adversity M (SD)	Discrimination in daily life M (SD)	Barriers to mental health care M (SD)
Yes	0.57 (0.91)	0.58 (1.07)	0.39 (0.44)	3.60 (2.23)	1.60 (1.09)	2.81 (1.02)
<i>p</i> value	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.04

Note: *p* values are provided for the aggregate constructs for sexual identity, gender identity, race and ethnicity, and disability or chronic medical condition, but not the individual subtypes for ease of table viewing.

Abbreviations: ADHD = attention deficits hyper-activity disorder, M = mean, ODD = oppositional defiant disorder; PTSD = posttraumatic stress disorder; SD = standard deviation.

looking at how many people they knew with thoughts of suicide by sexual identity, knowing more people was related to stronger odds of a participant's own thoughts of suicide. This was true for both sexual minority and non-sexual minority youth, however, the odds at each dose were consistently higher for sexual minority youth. For example, knowing five or more people was related to a 7.55 ($p < 0.001$) increase in odds of one's own thoughts of suicide for sexual minority youth and 4.43 ($p < 0.001$) increased odds for non-sexual minority youth. The same pattern was found across gender identity (Figure 2) and disability (Figure 3) groups.

The pattern varied, however, when looking at exposure to suicidal thoughts and racial/ethnic minority identity such that there were not significantly elevated odds of recent thoughts of suicide among the "no suicide exposure" group among youth with a racial or ethnic minority identity (Table 4 and Figure 4). This relationship was significant when race and ethnic minority youth knew 2-4 people (aOR = 2.52, $p = 0.004$) and five or more people (aOR = 4.48, $p < 0.001$). For White youth, if they knew one person (aOR = 2.12, $p = 0.004$) or 2-4 people (aOR = 2.52, $p < 0.001$) they had a two-fold increase in odds of personal thoughts of suicide and a 4.48 increased odds ($p < 0.001$) if they knew five or more people.

3.4 | The Main Effect of SDOH on Personal Thoughts of Suicide in the Context of Different Minoritized Identities (RQ4)

SDOH had significant main effects on personal thoughts of suicide, specifically non-victimization adversity (OR = 1.14, $p < 0.001$), discrimination (OR = 1.13, $p < 0.001$), and barriers to mental health care (OR = 1.22, $p < 0.001$) (Table 4). Inclusion of SDOH also changed the relationships between minoritized identity and dosage of exposure to personal thoughts of suicide such that odds ratios either became non-significant or were attenuated. Among all youth, while also adjusting for minoritized identities, the inclusion of SDOH constructs eliminated the significant relationship between exposure to one person with suicidal thoughts (OR = 1.30, $p = 0.19$) and exposure to 2-4 people with suicidal thoughts (OR = 1.33, $p = 0.12$). Knowing five or more people with suicidal thoughts was still significantly related to personal thoughts of suicide, but the odds ratio decreased from 3.47 (without adjusting for SDOH) to 2.17 (with adjusting for SDOH).

There were different patterns across identity groups, however. Further adjusting for SDOH attenuated the relationships between exposure and odds of a participant's own personal thoughts of suicide at each threshold of exposure for sexual minority youth, but all relationships remained significant. For non-sexual minority youth, knowing one person or 2-4 people became nonsignificant. Knowing five or more people with suicidal thoughts remained significant but was attenuated (OR = 7.55 to OR = 4.56 for sexual minority youth and OR = 4.43 to OR = 2.53 for nonsexual minority youth). Similar patterns were noted for the dose of exposure to suicidal thoughts and gender identity and also those with a disability or chronic medical conditions.

When examining this by racial and ethnic identity, we saw a similar overall reduction in odds when taking into account SDOH deficits. The inclusion of SDOH constructs into the model eliminated the significant relationship for knowing one person with suicidal thoughts (OR = 1.47, $p = 0.17$) and attenuated the relationships for racial and ethnic minority youth knowing 2-4 people (OR = 1.69, $p = 0.04$) and five or more people (OR = 2.52, $p = 0.001$) with personal thoughts of suicide (Table 4). The relationship between dose of exposure to suicidal thoughts and personal suicidal thoughts showed a decrease in odds, but remained significant for White youth when SDOH was included in the model.

4 | Discussion

Findings from this national cohort of almost 5000 youth indicate that most know someone struggling with thoughts of suicide, moreover, this is often not an isolated experience with 32.3% knowing 2-4 people and 22.5% knowing five or more people. Exposure to other people's suicidal thoughts is associated with one's own recent thoughts of suicide, consistent with previous work on contagion effects. Further, the current study adds to emerging findings about the importance of dose of exposure as this relationship is magnified based on the number of people they know expressing suicide thoughts. This adds to the existing literature documenting the connected dynamics of mental health symptomatology within social networks (Martínez et al. 2023; Seong et al. 2021). While gatekeeper training has become popular for encouraging community responses to prevent suicide behaviors, the current study reminds us that exposure to others' risk carries potential costs for

TABLE 4 | Exposure to someone else's suicidal thoughts and personal thoughts of suicide in the past 2 weeks by different minoritized identities—with and without accounting for SDOH.

	Model 1: SI exposure and minoritized identity			Model 2: Plus SDOH		
	Odds ratio	95% CI	p value	Odds ratio	95% CI	p value
All participants						
No SI exposure (ref)	1.0	—	—	1.0	—	—
1 person	1.75	1.22, 2.53	0.002	1.30	0.88, 1.93	0.19
2–4 people	1.81	1.29, 2.52	< 0.001	1.33	0.93, 1.91	0.12
5 or more people	3.47	2.46, 4.90	< 0.001	2.17	1.49, 3.17	< 0.001
Social identity						
Age	0.95	0.91, 0.99	0.02	0.95	0.91, 1.00	0.05
Female assigned at birth	0.81	0.65, 0.99	0.04	0.82	0.66, 1.03	0.09
Intersex at birth	1.68	0.40, 7.07	0.48	1.40	0.35, 5.65	0.63
Sexual minority identity	1.85	1.45, 2.36	< 0.001	1.87	1.44, 2.42	< 0.001
Gender minority identity	1.85	1.41, 2.43	< 0.001	1.53	1.14, 2.05	0.004
Race or ethnic minority identity	1.13	0.91, 1.40	0.26	0.98	0.78, 1.23	0.85
Diagnosed disability or chronic medical condition	1.59	1.28, 1.99	< 0.001	1.25	0.97, 1.61	0.08
SDOH						
Economic instability	—	—	—	1.10	0.95, 1.28	0.20
Poor home conditions	—	—	—	1.01	0.90, 1.13	0.83
Neighborhood disorder	—	—	—	0.75	0.57, 0.99	0.04
Non-victimization adversity	—	—	—	1.14	1.07, 1.21	< 0.001
Discrimination	—	—	—	1.27	1.13, 1.42	> 0.001
Barriers to mental health care	—	—	—	1.37	1.22, 1.54	< 0.001
Pseudo R^2	0.09			0.13		
SI exposure + Sexual minority						
Neither (ref)	1.0	—	—	1.0	—	—
No SI exposure + sex minority	3.51	1.95, 6.32	< 0.001	2.87	1.46, 5.61	0.002
One person + not sex minority	2.33	1.44, 3.77	0.001	1.56	0.94, 2.59	0.09
One person + sex minority	3.36	1.98, 5.70	< 0.001	2.55	1.46, 4.46	0.001
2–4 people + not sex minority	2.22	1.41, 3.50	0.001	1.56	0.97, 2.50	0.07
2–4 people + sex minority	4.11	2.56, 6.59	< 0.001	2.78	1.70, 4.57	> 0.001
5+ people + not sex minority	4.43	2.75, 7.13	< 0.001	2.53	1.53, 4.19	< 0.001

(Continues)

TABLE 4 | (Continued)

	Model 1: SI exposure and minoritized identity			Model 2: Plus SDOH		
	Odds ratio	95% CI	p value	Odds ratio	95% CI	p value
5+ people + sex minority	7.55	4.71, 12.08	< 0.001	4.56	2.79, 7.46	< 0.001
SI exposure + Gender minority						
Neither (ref)	1.0	—	—	1.0	—	—
No SI exposure + gender minority	3.23	1.53, 6.79	0.002	2.17	0.97, 4.83	0.06
One person + not gender minority	1.93	1.29, 2.87	0.001	1.41	0.92, 2.16	0.11
One person + gender minority	2.48	1.25, 4.90	0.009	1.27	0.67, 2.41	0.46
2–4 people + not gender minority	1.94	1.34, 2.81	< 0.001	1.37	0.92, 2.05	0.12
2–4 people + gender minority	3.23	1.98, 5.28	< 0.001	2.12	1.23, 3.63	0.006
5+ people + not gender minority	3.56	2.41, 5.26	< 0.001	2.19	1.44, 3.33	< 0.001
5+ people + gender minority	7.44	4.65, 11.88	< 0.001	3.72	2.21, 6.26	< 0.001
SI exposure + Race/Ethnic minority						
Neither (ref)	1.0	—	—	1.0	—	—
No SI exposure + race/ethnic minority	1.52	0.88, 2.63	0.13	1.48	0.81, 2.72	0.20
One person + not race/ethnic minority	2.31	1.40, 3.84	0.001	1.82	1.06, 3.12	0.03
One person + race/ethnic minority	2.12	1.27, 3.53	0.004	1.47	0.85, 2.56	0.17
2–4 people + not race/ethnic minority	2.05	1.29, 3.25	0.002	1.64	1.01, 2.68	0.05
2–4 people + race/ethnic minority	2.52	1.59, 4.00	< 0.001	1.69	1.02, 2.81	0.04
5+ people + not race/ethnic minority	4.18	2.65, 6.60	< 0.001	2.86	1.75, 4.67	< 0.001
5+ people + race/ethnic minority	4.48	2.73, 7.36	< 0.001	2.52	1.48, 4.30	0.001
SI exposure × disability/medical condition						
Neither (ref)	1.0	—	—	1.0	—	—
No SI exposure + disability	1.75	0.99, 3.10	0.05	1.39	0.74, 2.64	0.31
One person + no disability	1.83	1.15, 2.92	0.01	1.45	0.88, 2.38	0.14
One person + disability	2.93	1.76, 4.89	< 0.001	1.56	0.91, 2.66	0.10
2–4 people + no disability	1.84	1.20, 2.82	0.005	1.34	0.85, 2.10	0.21
2–4 people + disability	3.08	1.97, 4.84	< 0.001	1.82	1.13, 2.94	0.01
5+ people + no disability	3.89	2.46, 6.16	< 0.001	2.33	1.43, 3.81	0.001
5+ people + disability	5.54	3.56, 8.62	< 0.001	2.81	1.75, 4.50	< 0.001

Note: Each model adjusts for age (continuous), female assigned at birth, intersex assigned at birth, sexual minority identity, gender minority identity, racial or ethnic minority identity, and disability or medical condition. ref = reference category, SDOH = social determinants of health, SI = suicidal ideation. Model 1 $n = 4687$, Model 2 $n = 4325$.

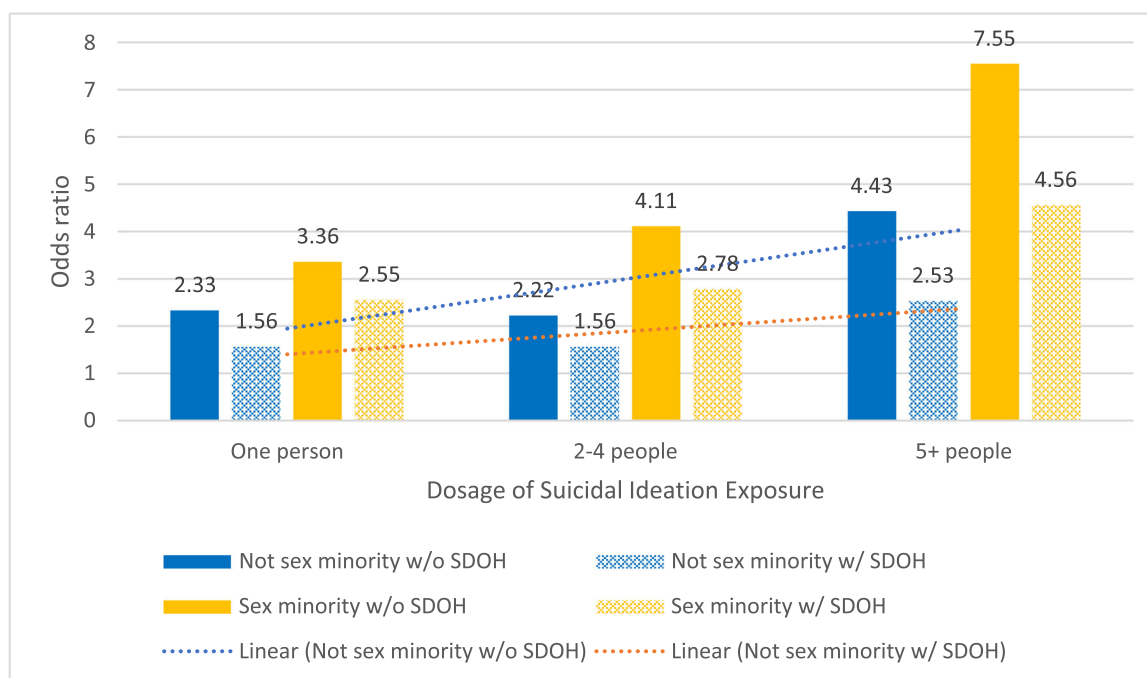


FIGURE 1 | Graphical display of changes in odds of personal suicidal ideation given the inclusion of SDOH for sex minority and not sex minority youth.

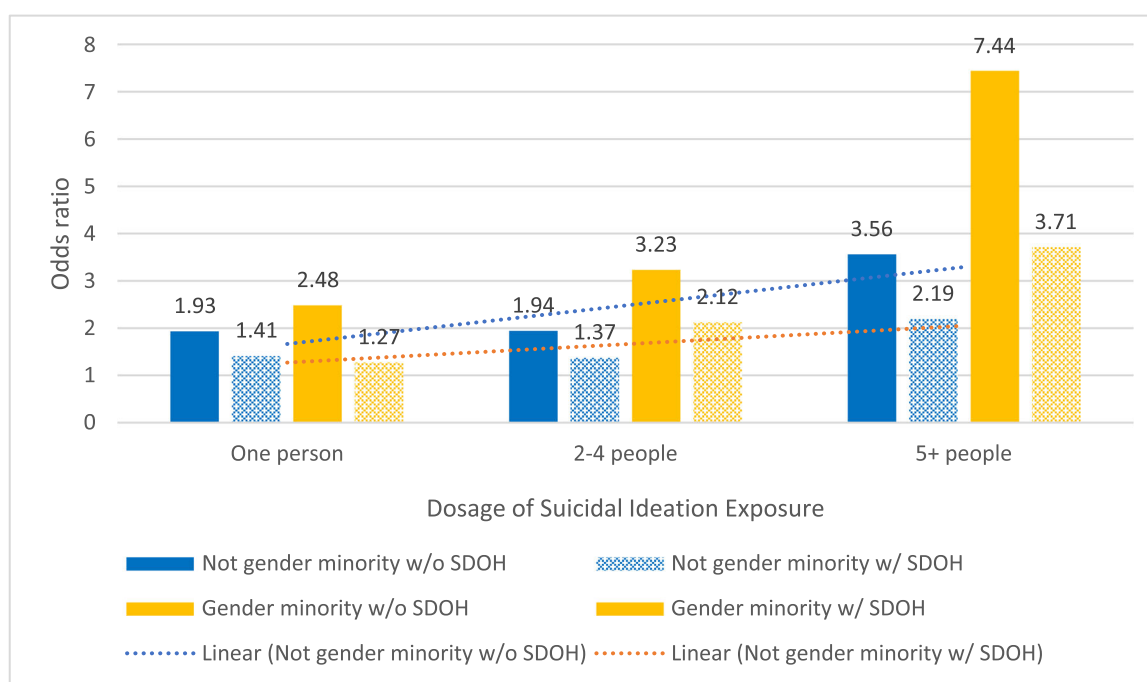


FIGURE 2 | Graphical display of changes in odds of personal suicidal ideation given the inclusion of SDOH for gender minority and not gender minority youth.

those exposed. Prevention efforts are needed that support these social network members so that they can effectively help others and themselves (Wyman et al. 2022).

The current study also supports theories of Minority Stress and SDOH. The impact of exposure on one's own mental health, however, is not distributed equally among youth. Rather, as

previous researchers found (Mitchell et al. 2021), identification with an identity group that experiences marginalization and systemic oppression increases, sometimes exponentially, both exposure and one's own risk for suicide thoughts. Prevention programs and services need to be tailored to reach youth with different lived experiences (Alvidrez and Barksdale 2022). To this end, potentially modifiable SDOH variables, including

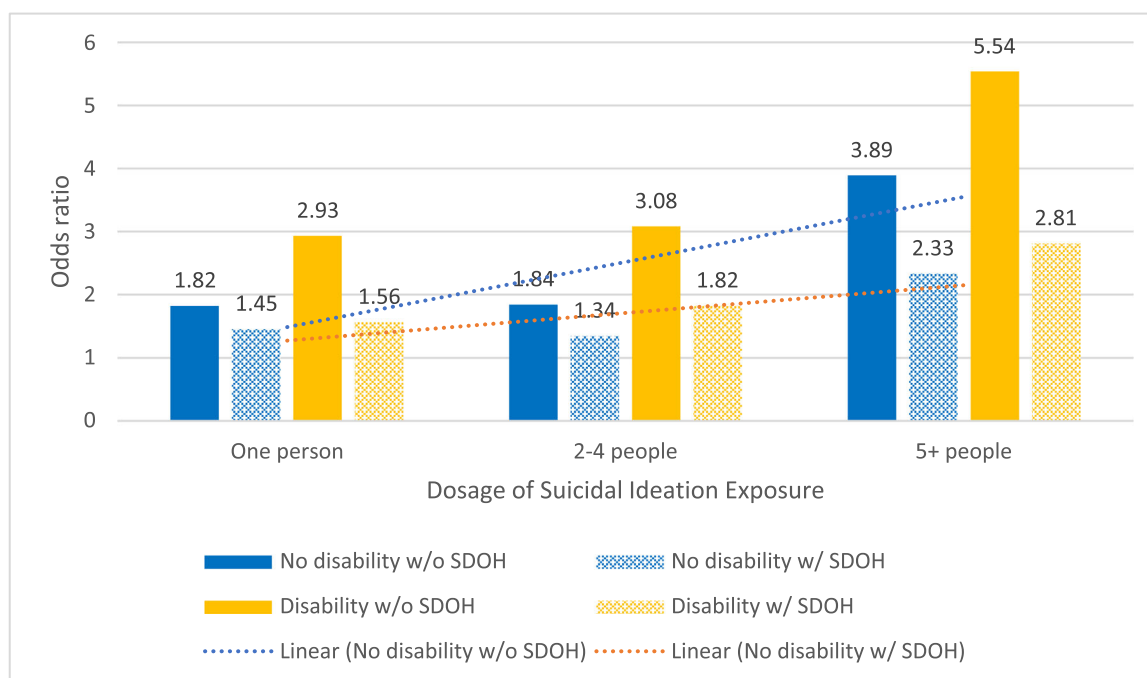


FIGURE 3 | Graphical display of changes in odds of personal suicidal ideation given the inclusion of SDOH for youth with and without a disability.

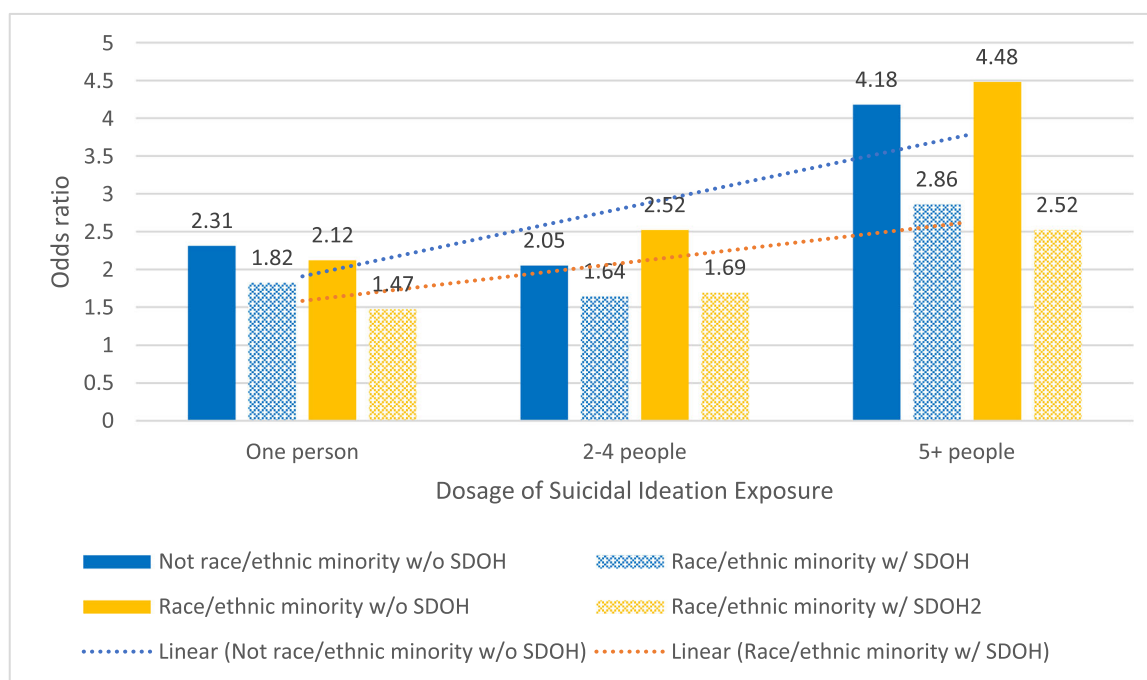


FIGURE 4 | Graphical display of changes in odds of personal suicidal ideation given the inclusion of SDOH for race/ethnic minority and not race/ethnic minority youth.

adversity, discrimination, and built environments, seem to attenuate the relationship between exposure to someone else's behavior and one's own suicidal ideation across minoritized identities. We also found that SDOH did not fully change effects of exposure on outcomes. Further research incorporating other variables such as belonging and burdensomeness (Cero et al. 2015) are needed to more fully understand correlates of suicidal ideation among young people.

The findings about exposure to suicidal thoughts and SDOH present an opportunity for both assessment and intervention. Clinical mental health assessments, including those designed to detect early warning signs of suicidal behavior might be enhanced with questions about exposure to other people's suicidal behavior. Practitioners engaged in suicide prevention programs that engage social networks of youth and their trusted adults to be active bystanders and gatekeepers may assist in developing

strategies for addressing suicide exposures in ways that reduce the risk exposure may pose to their own mental health (Wyman et al. 2022). This is consistent with the growing literature on the importance of peer interventions in suicide prevention (Bowersox et al. 2021).

We also found that including specific SDOH constructs to a model adds to our understanding of the relationships between exposure and recent thoughts of suicide, especially discrimination and adversity and access to mental health services. The finding that discrimination is important to understanding thoughts of suicide is consistent with Meyer's Minority Stress Theory, (Meyer 2003) which asserts that experiences of prejudice among oppressed identity group communities such as LGBTQ+ individuals, creates stress that in turn leads to greater mental health concerns (de Lange et al. 2022; Green et al. 2022). The significance of accumulated adversity experiences between exposure to other's suicidal thoughts and one's own thoughts of suicide supports the extensive body of research on cumulative adverse childhood experiences (Dube et al. 2003; Felitti et al. 1998) and poly-victimization (Finkelhor et al. 2007) documenting the mental and physical health impact of such events. Both have implications for intervention innovations that are responsive to stigma and discrimination and that integrate trauma-informed treatments. For example, Shipherd and colleagues present a trauma and minority stress theory-informed treatment planning model for LGBTQ+ community members (Shipherd et al. 2019). That barriers to mental health access also played a significant role in the relationship between suicide exposure and personal thoughts of suicide underscores the importance of policies and resource distribution to make evidence-based mental health care and suicide prevention more available to youth.

There are some limitations to the current study. While exposure to different forms of suicidal behavior has some common risk factors, research also documents that they are different from one another. The current study focused on exposure to someone else's thoughts of suicide. Future research is needed that examines exposure to different types of self-directed violence as well as details of exposure, including attempts to help and how such attempts may impact one's mental health. Further, it was beyond the scope of the current analyses to examine how patterns of findings might differ for subgroups with multiple minoritized social identities. For example, examining how SDOH may operate differently for Black bisexual boys or transgender Asian youth with a diagnosed disability. Indeed, this is a key area for future research, as discussed in reflections on how best to measure and analyze intersectional identities (Else-Quest and Hyde 2016).

Our data, gathered from an online survey, suggest this is a particularly symptomatic sample. Prior research collected via social media sources found Facebook samples to have higher rates of depression and anxiety symptoms (Batterham 2014). Indeed, even after applying weights to help the data behave as if it is more representative of the US population, we saw higher rates of thoughts of suicide in the *past 2 weeks* (26.2%), for example, compared to the weighted average *lifetime* international prevalence of 20.4% (15.9% in North America) identified as part of a systematic review and meta-analysis (Van Meter

et al. 2023). The larger study from which this data was drawn was designed to over-sample large numbers of harder-to-reach populations, like specific sub-groups of sexual and gender minority youth, to increase our understanding of the unique needs of such vulnerable groups. Indeed, past research has documented how social media recruitment can help facilitate access to LGBTQ2+ populations (Mitchell et al. 2021). Online recruitment for research likely provides added privacy and anonymity that are not always available using other recruitment sources and methods (Sanchez et al. 2020). This data, in turn, maybe offer a more diverse and complete perspective on their experiences which may not be possible using more traditional methods.

The current study focused mainly on SDOH as risk factors. A key next step to help reduce mental health disparities for youth is to focus on aspects of one's environment, including access to nutritious food, access to clean air, steady employment, recreational areas, and safe and stable housing, that may be protective and promote wellness (Oyegoke et al. 2024). Indeed, SDOH Theory encompasses many different aspects of economic, social, political, natural and built environments and a comprehensive study of all of these was beyond the scope of the current study. Further, the current study was a first step to examine SDOH and minoritized identity groups like gender and race in tandem. There is rich variability in the lived experiences of young people within any specific race or ethnic community or within different gender identity groups. Future research examining within group variation is needed. The current data is also cross-sectional and thus the direction of effects cannot be established. It may be that young people who have thoughts of suicide may choose social network members who have engaged in similar behaviors. Longitudinal analyses are needed. Finally, there are limitations to some measures. For example, information gathered about disability specifically asked about receiving a diagnosis from a doctor or other professional but were self-reported which could have influenced the accuracy of responses. Several primary variables of interest were also measured by single item responses. Given the age range of the sample, some items related to SDOH, especially economic indicators, may be affected by age in accuracy given that younger participants may have less awareness of this information.

This study makes an important contribution to our understanding of both disparities in thoughts of suicide among different minoritized groups as well as the importance of considering SDOH in this relationship. The findings underscore that the impact of exposure to someone else's suicidal thoughts is not distributed equally among youth and that exposure dose and SDOH, like discrimination, neighborhood disorder, and access to healthcare resources, add to our understanding of contagion effects. Solutions that move beyond the current focus on individual change to impact change at the community level are a critical next step to reducing disparities in thoughts of suicide, particularly among minoritized groups.

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Conflicts of Interest

The authors declare no conflicts of interest.

IRB Statement

This protocol was reviewed and approved by the University of New Hampshire's Institutional Review Board.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Peer Review

The peer review history for this article is available at <https://www.webofscience.com/api/gateway/wos/peer-review/10.1002/mhs2.70029>.

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