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International Study of Definitions of English-Language Terms for Suicidal Behaviors ©: Study Results

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Abstract

***Objectives*:** Explore avenues to achieve international consensus on nomenclatures of suicidal behaviours.

Design: An online survey.

Setting: International.

***Participants*:** Sample consisted of 126 participants from 63 countries (or territories) including 40 IASP national representatives and 80 IASP regular members. Three more countries were identified – respectively - by two people designated by the WPA and one by the WONCA. Another three participants were eventually identified by the staff of Australian Institute for Suicide Research and Prevention's (AISRAP). Thirty of the participating countries or territories were LMICs, represented by 37 individuals. The thirty-three other countries were HICs, represented by 89 individuals.

Primary and secondary outcome measures: Definitions of English-language terms for suicidal behaviours.

***Results*:** The definition of 'suicide' resulting from the present survey evidenced a preference for involving an act initiated and carried out by the actor itself. The definition of 'suicide attempt' resulted most often restricted to acts with intent to die, whereas 'self-harm' more broadly referred to acts with varying motives, including the wish to die. The meaning of 'suicidal ideation', 'death wishes', and 'suicide plan' was shared almost universally among respondents. 'Aborted' and 'interrupted suicide attempt' were not meant to be included in the definition of 'preparatory suicidal behaviour'. There were a number of differences between representatives from HICs and LMICs.

***Conclusion*:** This international opinion survey provided the basis for a tentative nomenclature of suicidal behaviour shared trans-culturally. Future developments of this nomenclature should be tested in larger samples of professionals, with particular attention to intercultural and interdisciplinary representativeness for which the involvement of LMICs may be a challenge.

'Strengths and limitations of this study'

This study is the first attempt to assemble opinions from a wide range of countries and professional backgrounds on the subject of definitions of suicidal behaviours. The main limitations are the relatively low participation rate and the fact that it was restricted to the English language.

Key words: definition, terminology, nomenclature, classification, suicide, suicidal behaviour

Introduction

According to official mortality statistics, 793,000 people worldwide died by suicide in 2016; 79% of these cases were from low-and-middle-income (LMIC) countries,[1] whilst most research outputs on suicidal behaviour are produced in high-income countries (HIC).

One important limitation to the generalization of suicide research outputs is the absence of international consensus on terminologies and definitions, making it difficult to compare interpretations and categories of suicidal behaviour among studies originating in different parts of the world. For this reason, the International Association for Suicide Prevention (IASP) has constituted a Special Interest Group for the development of an internationally applicable nomenclature of suicidal behaviours.[2]

This article presents the results of the International Study of Definitions of English-Language Terms for Suicidal Behaviors (ISDELTSB), which aimed to assemble a minimum set of commonly understood and widely used terms and definitions to describe suicidal phenomena. The study was based on a survey of people with knowledge of suicide topics from different nations, including a number of non-English speaking countries.[3] As discussed elsewhere,[4] most definitions and terms of common use originate from HIC. However, since LMICs are increasingly producing research efforts, it would be important to obtain a clearer picture of the definitions and terms used around the world.

Thus, the aim of the study was to identify possible areas of consensus among international health professionals, compare the differences between the LMICs and HICs, and discuss opportunities for improving standardized use of English-language terms.

Methodology

The ISDELTSB methodology was based on a survey of members of international organisations having interest in the study and prevention of suicide, namely the IASP, the World Psychiatric Association (WPA), and the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians' (WONCA), with an effort to recruit from the widest possible range of countries. An initial sample was built with one representative per country.[3] These individuals were expected to provide answers that were representative of the views of professionals working in their country. However, the initial call to national delegates of IASP and members of the other associations resulted in a small number of recruits. It was therefore decided to widen the study sample by inviting all IASP members to participate, assuming that their interest in suicide prevention could be paralleled by a degree of knowledge in the field of suicide higher than that of lay people. Consequently, each participating country had either one 'expert' (i.e. an IASP national representative, or a member of WPA or WONCA), or at least one IASP member. All procedures were approved by the Griffith University's Human Research Ethics Committee (2017/601).

The survey questionnaire proposed a variety of terms and definitions commonly found in the literature. Details about the questionnaire are available in an open access journal.[3]

Sample characteristics

Data was collected in 2018. Initially, participants comprised only IASP national representatives; among the 62 existing national delegates of the association, 40 agreed to join the study. Three more countries were identified – respectively - by two people designated by the WPA and one by the WONCA. Another three participants were eventually identified by the staff of Australian Institute for Suicide Research and Prevention's (AISRAP) among those countries with no IASP delegate. In this way, representatives from 46 countries took part to the study. To further increase the number of participants, invitation to

join the study was extended to all members of IASP. Out of 408 IASP regular members (excluding national delegates), 80 agreed to take part in the study, bringing to 126 the final number of participants (80 'new' participants plus the 46 previously recruited). With this operation, the number of countries with at least one representative rose to 63 (countries or territories). The list and the map of participating countries are available in Supplementary Tables 1 and 2.

Thirty of the participating countries or territories were LMICs represented by 37 individuals. The thirty-three other countries were HICs represented by 89 individuals. English language was spoken in 23 out of 63 countries. Sixty-one participants were from a country in which no English is spoken, whilst 65 participants were from a country in which English is the official language or one of the official languages. Concerning professional background of participants, 30% were medical doctors, 29% were psychologists, 10% were epidemiologists, and 31% were from 'other' professions (e.g., social worker, student, sociologist, public health professional, teacher etc).

Statistical analyses were performed using IBM SPSS Version 25.0. Analyses used odds ratios (OR) with 95% confidence intervals (95%CI) with respect to the national income in the respondent's country. Fisher's exact tests if the expected number of responses were below 6. There was limited missing data, which was left out from the analyses.

Results

Definition of suicide

Agreement on the definition of suicide was assessed as first. For each of the main components of the definition of suicide - i.e., outcome, intent, knowledge, and agency[4] - a set of statements was provided, and different suggestions were made to complete the statements. Respondents had to choose the suggestion with which they agreed. The choices of respondents are shown in Figure 1 by the income of countries' (LMICs vs. HICs).

- Please, insert Figure 1

In terms of outcome, majority (81.6%; 1 missing) agreed that, “Suicide is an act that necessarily leads to death”. Regarding intent, five non-mutually exclusive statements were proposed (Figure 1). More than half of respondents agreed with the last statement (5: “Suicide is an act that may be done without explicit intent to die”). However, respondents agreed more frequently with statements 2-4 (2: “Suicide is an act that may be done with an intent other than an explicit intent to die”; 3: “Suicide is an act that may be done with an ambiguous or unclear intent”; 4: “Suicide is an act that may be done with an intent to take the risk of dying”). Respondents from HIC were more likely to choose statement 3 (OR:2.35; 95%CI: 1.03-5.36), but also in the LMIC group almost 60% of respondents agreed with this statement.

In terms of knowledge of the consequences of the act, four statements were proposed. More than half the respondents agreed with the statement: “Suicide is an act that can be performed with the knowledge of a fatal result, but the person is not certain of that result”, regardless of national income. Regarding agency, more than half (60%; 1 missing) of respondents agreed with the statement, “Suicide is an act that is initiated by oneself, but not necessarily carried out by oneself to the end of the action”.

Definition of non-fatal forms of suicidal behaviours

For non-fatal suicidal behaviours, a vignette method was used and a set of 16 basic clinical scenarios was proposed. For each vignette, a list of terms was proposed from which respondents had to choose a single answer. The percentages of agreement with particular terms for vignettes 1-16 according to respondents’ countries’ national income are presented in Figures 2 and 3.

Vignette 1 asked respondents how they would name the act of a person who harmed him- or her-self with the intention to die but survived. The majority of respondents (92.1%) named the act as a 'suicide attempt' (Figure 2). Vignette 2 described a person who harmed him- or her-self without any intention to die and survived. The answers were not unanimous; however, the highest agreement was reached for the term 'self-harm' (27.8%), followed by non-suicidal self-injury' (NSSI; 19%) and 'deliberate self-harm (17.5%). Vignette 3 described a person who harmed him- or her-self without any intention to die but died. The highest level of agreement was reached for 'suicide' (24.0%), although 'accident' was also a frequent choice (17.6%).

- Please, insert Figure 2

Vignette 4 asked respondents to define the act of a person who harmed him- or her-self, but, for whatever reasons, could not state his or her intentions and the person survived. While a 'suicide attempt' was the most frequent choice for LMIC (37.8%), HICs chose 'self-harm' most frequently (21.8%; OR:0.40; 95%CI: 0.17-0.93; 2 missing). Vignette 5 described a person who harmed him- or her-self but *did not want* to state his or her intentions and the person survived. The closest levels of agreement between income groups were for 'suicide attempt' (27.4%) even though the HIC group chose 'self-harm' most frequently (26.4%).

Vignette 6 asked respondents to define the act of a person who died as a consequence of harming him or her-self, but his or her intentions in doing so could not be known or inferred. Two answers stood out: 'suicide' (42.1%) and 'undetermined death' (31.7%). Respondents from HICs were more likely to choose 'undetermined death' (HICs: 37.1% vs. LMICs: 54.1%; OR:2.53; 95%CI: 1.00-6.39), and respondents from LMICs 'suicide' (HICs: 37.1% vs. LMICs: 18.9%; OR:0.50; CI 95%: 0.23-1.09).

Vignette 7 described someone who occasionally thought of suicide when feeling distressed: all groups chose 'suicidal ideation' most frequently (64.8%). Vignette 8 described someone who continuously thought of suicide but had no suicidal intent. All groups chose 'suicidal ideation' most frequently (45.2%), followed by 'persistent suicidal ideation' (31%).

Figure 3 shows respondents' answers to vignettes 9 to 16 according to income and language groups. Vignette 9 described someone who hoped for death but had no thoughts of killing him- or her-self. Respondents chose 'death wishes' (57.6%) most frequently across all groups. Vignette 10 described someone who hoped for death by killing him- or her-self, and most respondents chose the 'suicidal ideation' (61.6%) followed by 'active suicidal ideation' (32%).

- Please, insert Figure 3

The following vignettes described behaviours that could be considered as being at the boundary between behaviour and ideation and could therefore be subject to debate. Vignette 11 asked respondents to choose a term for someone who stated suicidal intention without engaging in the behaviour. Although all groups most frequently decided that the person was experiencing 'suicidal ideation' (56.9% for all), HICs' respondents were more likely to choose 'suicidal ideation' than LMICs (HICs:63.6%, LMICs:40%; OR:2.63; 95%CI: 1.18-5.87; 3 missing),

Vignette 12 described someone who mimicked (i.e. acted in a way that had the appearance of) suicidal behaviour without sustaining any injuries. The two most frequently chosen answers were 'suicidal behaviour' (35.6%) and 'suicide threat' (19.5%). However, HICs' respondents were more likely to choose 'suicidal behaviour' (HICs: 63.6% vs. LMICs: 40%; OR:4.32; 95%CI: 1.52-12.26; 8 missing). Vignette 13 asked the respondent to define the behaviour of someone who had decided how and when to perform a suicidal act, but did not actively prepare anything. The 'suicide plan' was most commonly

chosen (67.5%). Vignette 14 described someone who prepared a suicidal act (e.g. assembled pills, bought a gun, attached a rope, visited a bridge), but did not initiate it and consequently did not sustain any injuries. The two most frequently chosen options were 'preparatory suicidal behaviour' (42.6%) and 'suicide plan' (34.4%). HICs' respondents were more likely to choose 'preparatory suicidal behaviour' (HICs: 48.9% vs. LMICs: 26.5%; OR:2.65; 95%CI: 1.11-6.33; 4 missing) and the LMIC group chose 'suicide plan' most frequently (HICs: 34.1% vs. LMICs: 35.3%).

Vignette 15 asked the respondent to define the behaviour of someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but stopped him- or her-self before sustaining any injury. The 'aborted suicide attempt' was the most commonly chosen option (33.1%) followed by the 'suicide attempt' (19%). The HIC group chose the 'aborted suicide attempt' most frequently (HICs: 37.9% vs. LMICs: 20.6%) whereas the LMIC group chose 'suicide attempt' (HICs: 14.9% vs. LMICs: 29.4%). Vignette 16 described someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but was stopped by someone else before sustaining any injuries. The majority agreed on the 'interrupted suicide attempt' (58.7%), followed by the 'suicide attempt' (27.3%).

Discussion

Previous attempts at developing a nomenclature for suicidal behaviours have been published (e.g., [5-7]), but none reached international consensus.[8] Several classifications of suicidal behaviours have also been developed and published, and some were based on the above-mentioned nomenclatures.[9] To date, the only classification validated by the WHO is a classification restricted to methods of self-harm.[10] To our knowledge, no previous survey has focused on reaching consensus on a nomenclature of suicidal behaviours. The results of the present study could give a contribution in this direction, while also looking at differences between HICs and LMICs regarding terminologies used.

The answers of survey participants regarding the four characteristics of the definition of suicide could delineate some level of consensus. Regarding outcome, all respondents agreed that *suicide is an act resulting in death.* This sets a clear distinction between suicide and non-fatal suicidal behaviours and corresponds to the majority of definitions of suicide found in the literature.[3]

Regarding intent, more than half of respondents agreed that suicide could be undertaken *without* explicit intent to die. Indeed, only a few definitions of suicide did not mention intent to die as a central characteristic of the act.[5,11,12] In De Leo et al.'s[13] definition, intent targeted "wanted changes" (p. 12). These authors argued that intent to die - assumed to be at least in minimal part present (greater than zero) - can be concurrent with other purposes, and that people attempting suicide may even be trying to improve their life or have other underlying motives, such as escaping from an unbearable situation. According to the answers to our survey, *suicide is an act in which intent may not be explicit but ambiguous and unclear, and involving the risk of dying.*

In literature, knowledge of potentially fatal outcome was often suggested as a requirement for the definition of suicide.[4,13] In the present survey, according to the vast majority of respondents, *suicide is an act carried out with the knowledge of a potentially fatal result.*

The respondents stressed the importance of distinguishing suicide from assisted suicide and euthanasia. Generally, they expressed the choice for a definition excluding the possibility of an outside agent. This appears in contradiction with most literature (e.g.,[4]). According to most respondents in this study, *suicide is an act initiated and carried out by oneself to the end of the action.* However, in our view, if widely accepted, this determination could lead to several problems, bringing to a substantial underestimation of suicide mortality. For instance, an act in which a person stands in front of a moving object (e.g., a train or a truck driven by another person) could hardly be considered as *assisted suicide*. Keeping in mind the limitations of the present survey (e.g., representativeness of the sample; clarity of vignettes; deepening of details, etc.), the indications coming from this area of our study seem to emphasize the importance of a shared set of definitions among scholars in the field of suicide. The

discrepancy detected at the level of definition of suicide among study participants is of relevance and underlines the appropriateness of research efforts in the definitional domain.

Evidence of intent to die is central to the definition of 'suicide attempt', a behaviour in which *a person harms him- or her-self, with the intention to die, and survives*, in agreement with existing literature.[5,6,14] The term 'suicide attempt' was deemed acceptable in a recent wide scale survey and recommended for academic and media use.[15] 'Self-harm' was the preferred term in cases in which there was no evidence of intent to die (i.e., vignette 2) and elicited less disagreement than 'suicide attempt' when intent could not be determined (i.e., vignettes 4 and 5). In the literature, 'self-harm' and 'deliberate self-harm' have been described either in absence of suicidal intent[7,16,17] or regardless of suicidal intent.[18,19] The term '*deliberate* self-harm' was not favoured in respondents' answers; their comments suggested that it could be stigmatizing. The term 'self-harm' could thus be defined as a *non-fatal act in which a person harms him- or her-self, and intent to die is either absent or not accessible to observation*. The question remains as to whether this term could be placed in an overarching position in a nomenclature, regardless of the level of intent to die (thus including 'suicide attempt'). Statement of intent differs depending on the person interviewed (e.g., patient, family, or clinician) and timing of the interview (e.g., intent to die could be masked or denied when the patient becomes aware of the possibility of being admitted to a locked inpatient unit). For example, Kapur et al.[20] argued against distinguishing acts of self-harm according to intent.

On the basis of this survey results, if intent to die has been stated by the patient, it may be more appropriate to consider the term 'suicide attempt' rather than 'self-harm'.

Regarding 'suicidal ideation', Silverman et al.[7] distinguished between 'no ideation' vs. 'undetermined degree' vs. 'some suicidal intent', and further subdivided the categories into 'casual', 'transient', 'passive', 'active', and 'persistent'. The responses to our survey suggest a rather inclusive definition of 'suicidal ideation': *Thinking of suicide with or without suicidal intent; hoping for death by killing oneself; and, stating the presence of suicidal intention without engaging in behaviour*. Further research may

consider sub-dividers such as *with/without suicidal intent, transient, reactive, persistent,* or *with communication.*

'Death wishes' were defined by respondents *as hoping for death without thoughts of killing oneself*, and were less inclusive than Balaguer et al.'s[21] 'wish to hasten death', which was an overarching category including suicidal ideation.

O'Carroll et al.[6] defined 'suicide threat' as *"any interpersonal action, verbal or nonverbal, stopping short of a directly self-harmful act that a reasonable person would interpret as communicating or suggesting that a suicidal act or other suicide-related behaviour might occur in the near future"* (p. 247). Silverman et al.[7] defined this term in a similar way. Vignette 12 was a case scenario designed to illustrate this definition. However, many participants did not respond to this vignette, and the significant disagreement between groups should lead to caution in interpreting results.

Based on responses to our survey, a 'suicide plan' could be defined as *having decided how and when to perform a suicidal act*. This definition is comparable to that of Silverman et al.,[7] which does not include preparatory behaviour. A suggested definition should thus exclude *active preparation*.

Despite some disagreement between respondents, 'preparatory suicidal behaviour' could be defined as *preparing for a suicidal act (e.g. collecting pills, buying a gun, attaching a rope, visiting a bridge), but without initiating it and thus not sustaining any injury*. This definition is similar to that given by Posner et al.[22] However, these authors also considered 'aborted' and 'interrupted suicide attempt' and thus a *preparatory act* was an umbrella term, which was not the case for our survey. Based on results, an 'aborted suicide attempt' could be defined as an act in which a person *initiates a suicidal act (e.g. stands or sits on the edge of a high bridge; ties a rope around his or her neck; etc.), but stops him/herself before sustaining any injury* (Vignette 15).

An 'interrupted suicide attempt' could be defined as *initiating a suicidal act (e.g. standing or sitting on the edge of a high bridge, tying a rope around one's neck), but being stopped by someone else before*

sustaining any injury (vignette 16). These definitions are indeed comparable to those reported by Posner et al.[22]

Differences between HICs and LMICs

It was expected that the level of national income would have an influence on preferred terminology of the respondents considering HICs have more resources for professionals working in suicidology, advanced health care systems, and more academic and research background than LMICs. Furthermore, there are notable cultural differences, which could have further impact on the terminology.

Our results identified some notable differences between respondents from LMICs and HICs. Respondents from HICs were more likely to agree that, in suicide, intent may be ambiguous or unclear. Differences in responses to vignette 4 (i.e., non-fatal suicidal behaviour, but person cannot state intentions) could suggest that respondents from LMICs did not distinguish non-fatal behaviours as precisely regarding intent as respondents from HICs, who were more likely to name the behaviour 'self-harm.' Interestingly in Vignette 6 (i.e. fatal suicidal behaviour with no evidence of intent), respondents from HICs were more likely to choose 'undetermined death' rather than 'suicide', which was somewhat in contradiction with an open definition of suicide regarding intent. Some differences were found for Vignette 11, 12 and 14, but none of these related to a pattern in which respondents form HICs had more precise terminology than respondents from LMICs. Overall, no clear differential pattern could be evidenced in responses given for the four characteristics of suicide, and respondents from LMICs had an equal range of terms to name the behaviours in the vignettes.

Strengths and limitations

Representatives of 63 countries (slightly less than a third of all 193 WHO member countries) participated in the ISDELTSB. If any nomenclature has to be internationally applicable, efforts should be dedicated to increasing the number of countries taking part in this type of research, especially among LMICs. It should be noted that seven out of 30 LMICs (23%) had a national suicide prevention

strategy, compared to 15 out of 33 HICs (45%). Yet, despite their relatively low number, participating countries account for two thirds of the world population and three quarters of all suicides.[23]

LMICs were represented by 37 participants and HICs by 89 participants, which implies a bias towards responses from HICs and the analysis showed a few notable differences. Nevertheless, the relatively high number of LMICs included in the study was achieved by using a recruitment approach based on institutionally- and self-defined expertise. The fact that there was no operational definition regarding expertise in suicidology is another limitation to our study. However, differences between the HICs are also very likely.

The initial idea of using one 'representative' per country (the IASP national delegate) was chosen to give comparable weight to all participating countries. The small dimension of this sample brought to an extension to individual members of IASP. However, the final number of participants remained quite low; the obtained results need to be replicated in studies with bigger samples.

As mentioned in the companion paper on methodology,[3] the questionnaire was not translated into different languages but presented in English. This has probably limited participation to the study; in addition, it may have led to discrepancies in understanding questions. We need to acknowledge that all conclusions should be taken with caution.

Implications for further research

Table 1 collates the most frequently chosen terms together, with their matching definition. The resulting nomenclature can be considered as an attempt at promoting consensus in a wide range of cultural settings. It tries to encompass the whole range of suicidal behaviours and ideation. However, as mentioned above, not everything comes as crystal clear. For example, suicide was frequently interpreted as an act performed to completion by the actor itself, not involving a third agent. Intent to die appears as necessary to define a suicide attempt, but intent can be vague or unclear for a suicide.

There are terms that may receive an overarching character. For instance, 'self-harm' may include behaviours in which there is no intent to die and those in which intent is unknown.

The 'preparatory suicidal behaviour' category could include both 'aborted' and 'interrupted suicide attempt' or, as suggested in our survey, could also be distinct, owing to differences in the moment in which the behaviour stops (i.e. after preparations are finished or after the suicidal act is initiated).

The nomenclature presented in Table 1 should thus be considered as a working base to advance in the direction of a universal classification of suicidal behaviours.

- Please insert Table 1

Conclusion

The development of an internationally applicable nomenclature and classification of suicidal behaviours would be a long and complex process. The IASP Special Interest Group on Nomenclature would be ideally positioned to carry out this task with the help of a large and motivated international membership. Using the results of an international opinion survey, a tentative nomenclature of suicidal behaviour is proposed. Indications from this survey may be utilized by the Special Interest Group. Future developments could then be tested in large samples of professionals (e.g., clinicians, researchers), with particular attention to intercultural and interdisciplinary representativeness. One of the challenges of this process would be the involvement of LMICs, keeping in mind that online surveys like ours have only moderate success in representing LMICs.[24]

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Conflicts of interest

No conflicts to declare

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Table 1. Nomenclature of suicidal behaviours after the ISDELTSB

Designating term or expression	Definition
Suicide	An act resulting in death which is initiated and carried out by an individual to the end of the action, with the knowledge of a potentially fatal result, and in which intent may be ambiguous or unclear, may involve the risk of dying, or may not involve explicit intent to die.
Suicide attempt	An act in which a person harms him- or her-self, with the intention to die, and survives.
Self-harm	A non-fatal act in which a person harms him- or her-self intentionally, with varying motives including the wish to die.
Suicidal ideation	To think of suicide with or without suicidal intent, or hope for death by killing oneself, or state suicidal intention without engaging in behaviour.
Death wishes	To hope for death without thoughts of killing oneself.
Suicide plan	To have decided how and when to perform a suicidal act, but without active preparation.
Preparatory suicidal behaviour	To prepare a suicidal act (e.g. assemble pills, buy a gun, attach a rope, visit a bridge), but without initiating it and thus not sustaining any injury.
Aborted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but stops him/herself before sustaining any injury.
Interrupted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but is stopped by someone else before sustaining any injuries.

Figure 1. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

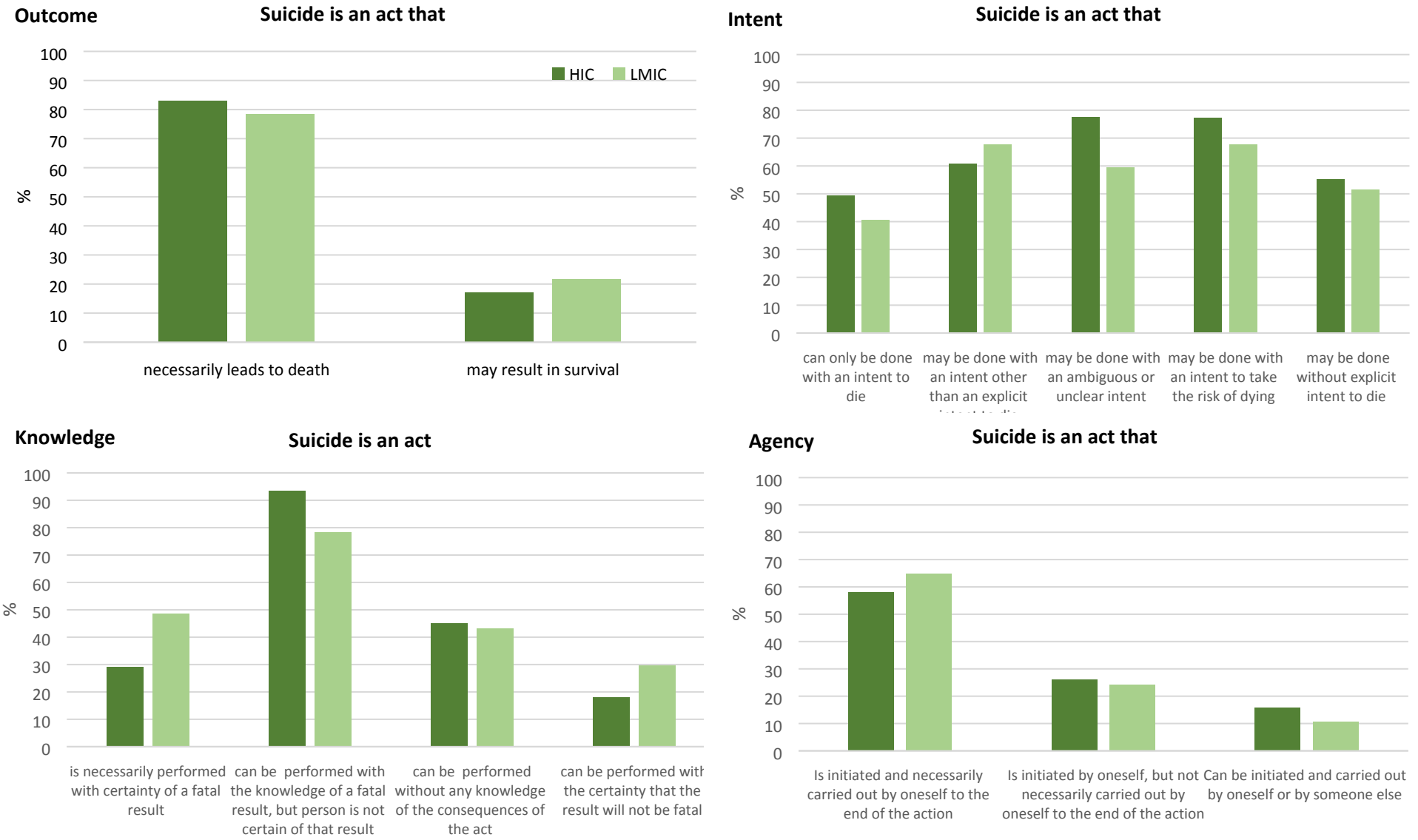


Figure 2. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

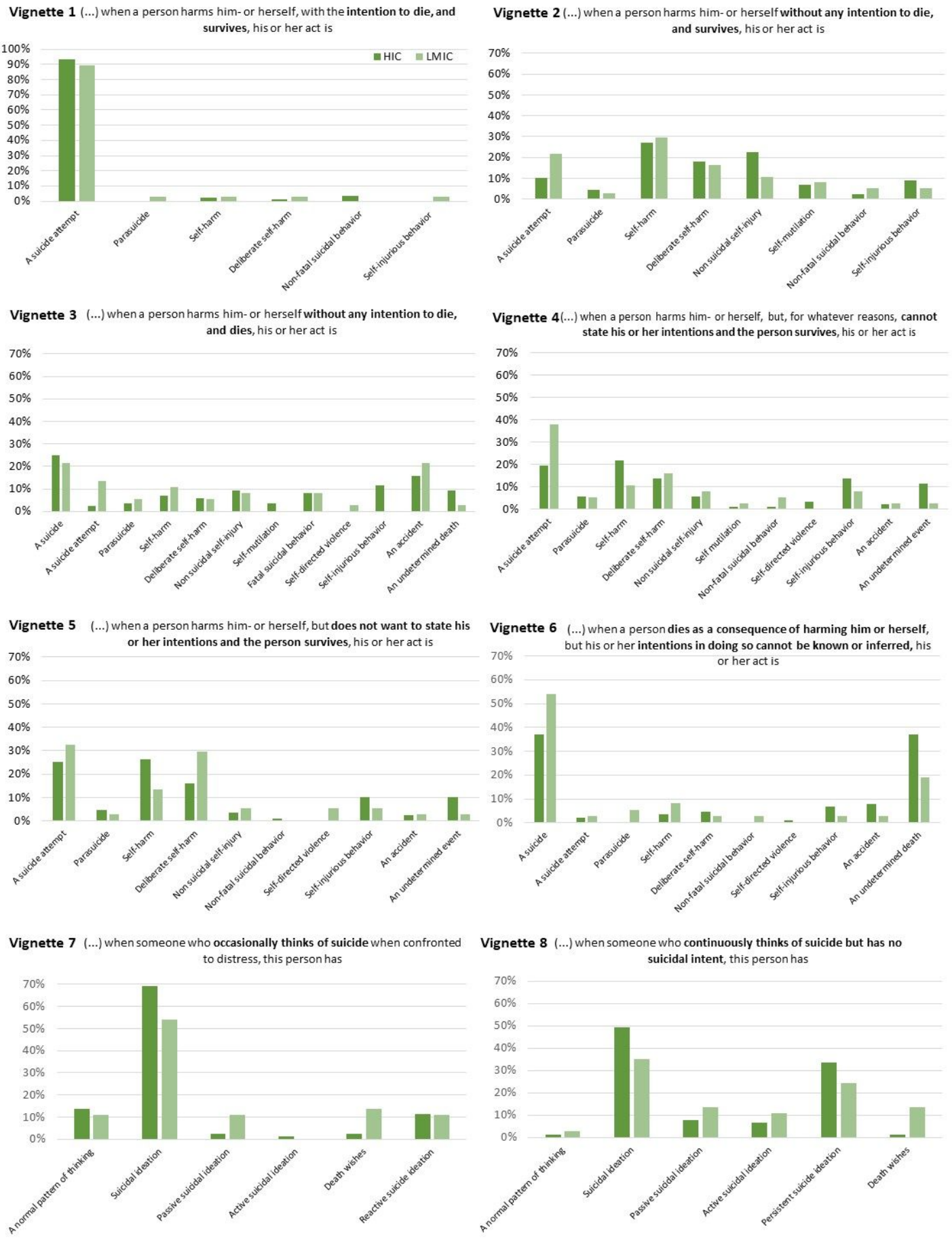
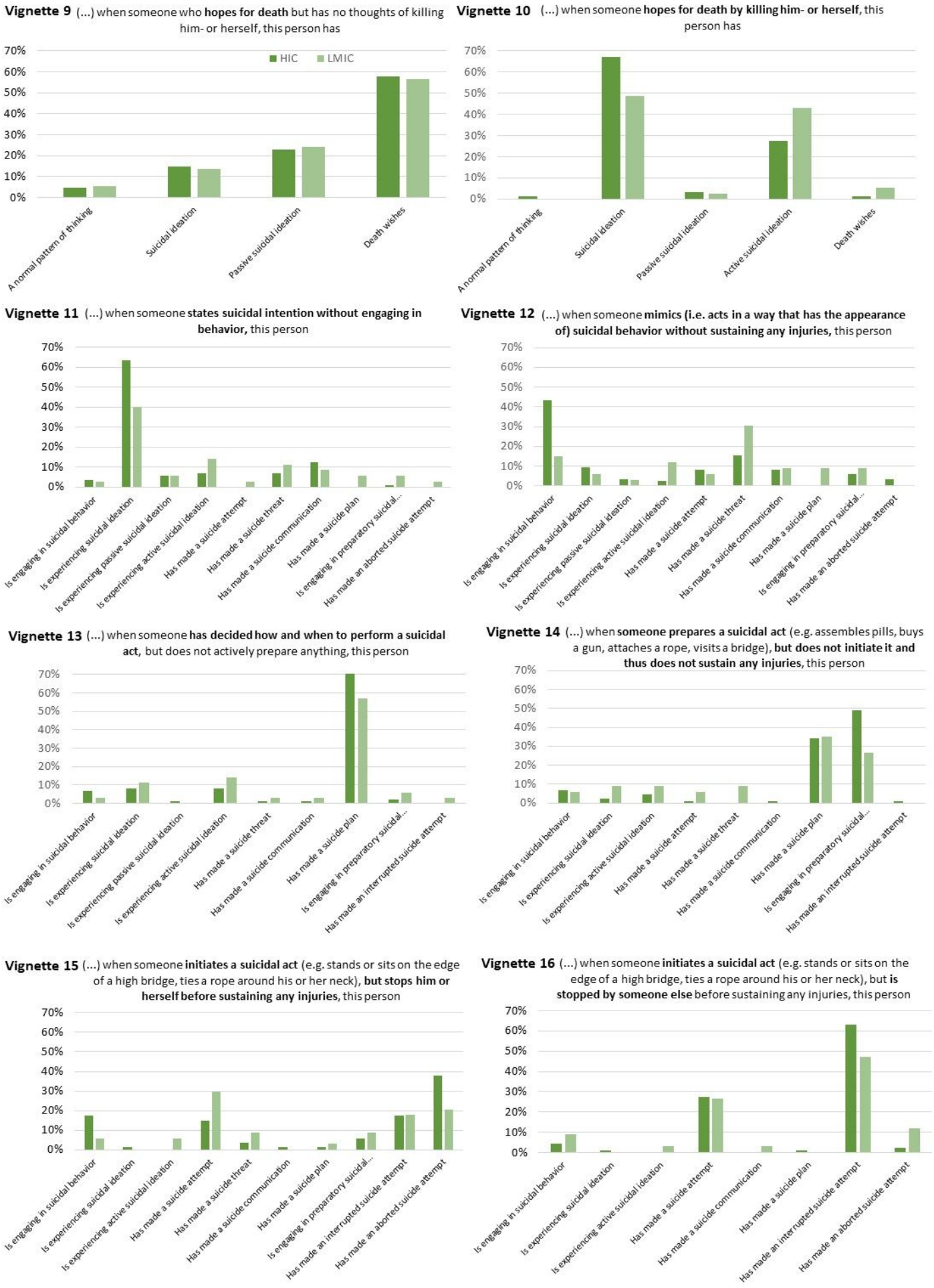


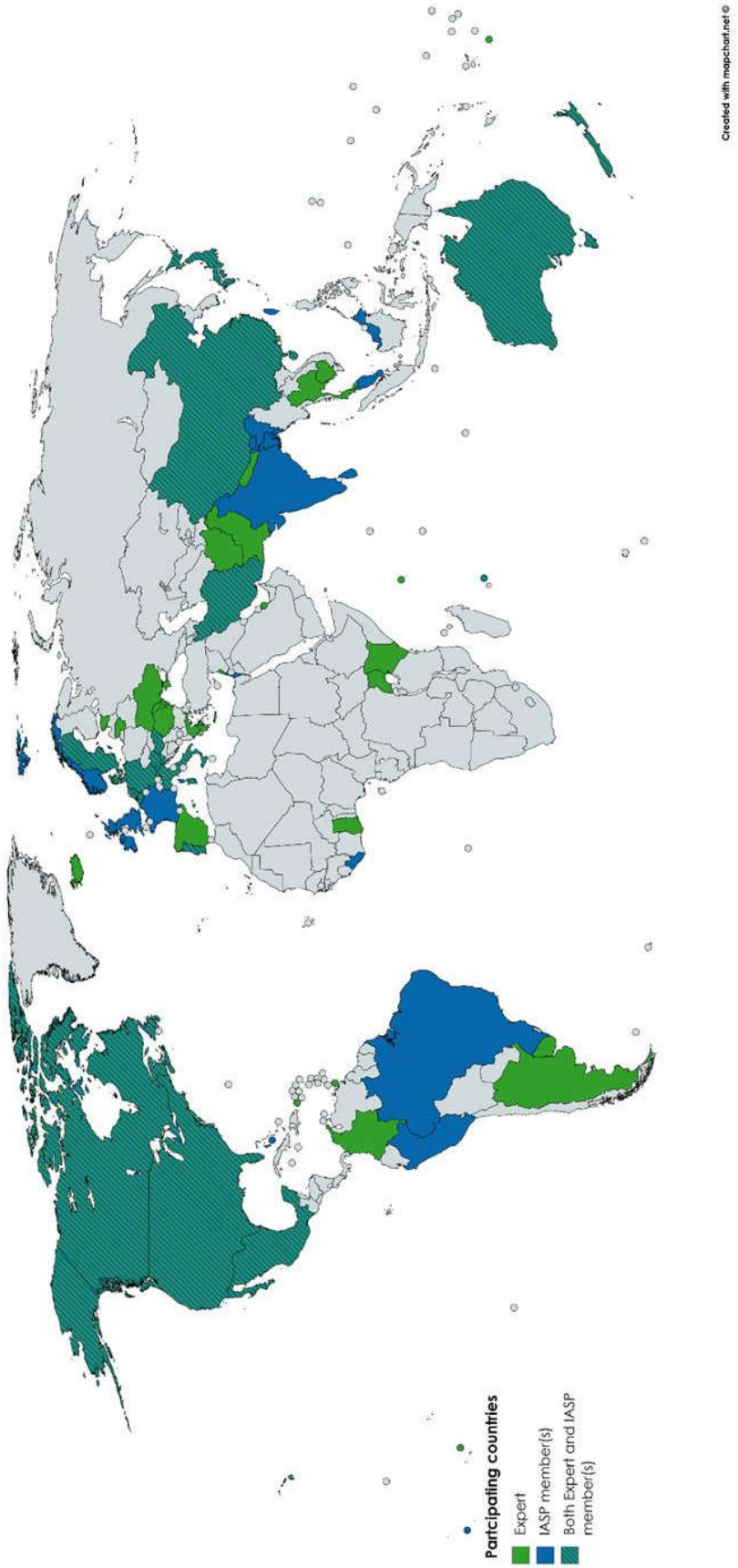
Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



SEM 1: Number of respondents by country/territory that participated to the International Study of Definitions and Terms for Suicidal Behaviors ©

Countries/territories	'experts'	IASP members
Africa		
Ghana	1	0
Kenya	1	0
Liberia	0	1
Mauritius	1	1
Seychelles	1	0
Uganda	1	0
America		
Argentina	1	0
Brazil	0	4
Canada	1	5
Colombia	1	0
Mexico	1	1
Peru	0	1
Puerto Rico	1	0
The Bahamas	0	1
Trinidad and Tobago	1	0
Uruguay	1	0
USA	1	8
Asia		
Afghanistan	1	0
Bangladesh	0	1
Bhutan	0	1
Cambodia	1	0
China	1	1
Hong Kong	1	0
India	0	2
Iran	1	1
Israel	0	1
Japan	1	1
Lebanon	1	0
Malaysia	0	1
Nepal	1	0
Pakistan	1	0
Qatar	1	0
Singapore	0	1
Sri Lanka	0	1
Taiwan	0	1
Thailand	1	0
Europe		
Austria	1	1
Belgium	1	1
Denmark	1	2

Estonia	1	0
France	0	2
Germany	1	1
Greece	1	0
Hungary	1	1
Iceland	1	0
Ireland	0	3
Italy	1	1
Lithuania	1	0
Moldova	1	0
Netherlands	1	2
Norway	0	3
Portugal	1	1
Romania	1	0
Slovenia	1	1
Spain	1	0
Sweden	1	1
UK	0	4
Ukraine	1	0
Oceania		
Australia	1	15
New Zealand	1	6
Cook Islands	0	1
French Polynesia	1	0
Tonga	1	0
Total	46	80



SEM 2: International Study of Definitions and Terms for Suicidal Behaviors © participating countries

STROBE Statement

	Item No.	Recommendation	Page No.
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Method			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5-6
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5*
Bias	9	Describe any efforts to address potential sources of bias	5-6
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	6
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5

		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5-6
		(b) Indicate number of participants with missing data for each variable of interest	6-10
		© *Cohort study*—Summarise follow-up time (eg, average and total amount)	NA
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	
		Cross-sectional study—Report numbers of outcome events or summary measures	6-10
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-10
		(*b*) Report category boundaries when continuous variables were categorized	6-10
		© If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-10
Key results	18	Summarise key results with reference to study objectives	10-12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14-15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	16
Generalisability	21	Discuss the generalisability (external validity) of the study results	15-16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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International Study of Definitions of English-Language Terms for Suicidal Behaviors ©: Study Results

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International Study of Definitions of English-Language Terms for Suicidal Behaviors ©: Study Results

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Abstract

***Objectives*:** Explore international consensus on nomenclatures of suicidal behaviours and analyse differences in terminology between High Income Countries (HICs) and Low-Middle Income Countries (LMICs).

Design: An online survey of the members of the International Organisation for Suicide Prevention (IASP) explored the four dimensions of the definition of suicidal behaviour (i.e. outcome, intent, knowledge and agency) using a set of single answer questions and vignettes.

Setting: International.

***Participants*:** Sample consisted of 126 participants from 63 countries/ territories including 40 IASP national representatives (65% response rate) and 80 IASP regular members (20% response rate). Three more countries were identified – respectively - by two people designated by the WPA and one by the WONCA. Another three participants were eventually identified by the Australian Institute for Suicide Research and Prevention. Thirty of the participating countries/territories were LMICs, represented by 37 individuals, and 33 were HICs, including 89 individuals.

Outcome measures: Definitions of English-language terms for suicidal behaviours.

***Results*:** The definition of 'suicide' resulting from the survey evidenced a preference for involving an act initiated and carried out by the actor itself. The definition of 'suicide attempt' resulted most often restricted to acts with intent to die, whereas 'self-harm' more broadly referred to acts with varying motives, including the wish to die. The meaning of 'suicidal ideation', 'death wishes', and 'suicide plan' was shared almost universally among respondents. 'Aborted' and 'interrupted suicide attempt' were not meant to be included in the definition of 'preparatory suicidal behaviour'. There were a number of differences between representatives from HICs and LMICs.

***Conclusion*:** This international opinion survey provided the basis for a tentative nomenclature of suicidal behaviour shared trans-culturally. Future developments of this nomenclature should be tested in larger samples of professionals, with attention to intercultural and interdisciplinary representativeness for which the involvement of LMICs may be a challenge.

'Strengths and limitations of this study'

This study is the first attempt to assemble opinions from a wide range of countries and professional backgrounds on the subject of definitions of suicidal behaviours. The main limitations are the relatively low participation rate, the fact that it was restricted to the English language, and the differential in representation between HICs and LMICs.

Key words: definition, terminology, nomenclature, classification, suicide, suicidal behaviour

Introduction

An important limitation to the generalization of suicide research outcomes is the absence of international consensus on terminologies and definitions, making it difficult to compare interpretations and categories of suicidal behaviour among studies originating in different parts of the world. Attempts at developing a nomenclature for suicidal behaviours (e.g.,[1-3]) have not reached international consensus.[4] Several classifications of suicidal behaviours have also been developed and some were based on the noted nomenclatures.[5] To date, the only classification validated by the World Health Organization (WHO) is a classification restricted to methods of self-harm.[6] To our knowledge, there are no previous surveys focussing on reaching consensus on a nomenclature of suicidal behaviours. Therefore, the International Association for Suicide Prevention (IASP) has constituted a Special Interest Group for the development of an internationally applicable nomenclature of suicidal behaviours.[7]

According to official mortality statistics, 793,000 people worldwide died by suicide in 2016; 79% of these cases were from low-and-middle-income (LMIC) countries,[8] whilst most research outputs on suicidal behaviour are produced in high-income countries (HIC). Furthermore, most definitions and terms of common use originate from HIC.[9] However, since LMICs are increasingly producing research efforts, it would be important to obtain a clearer picture of the definitions and terms used around the world.

This article presents the results of the International Study of Definitions of English-Language Terms for Suicidal Behaviors (ISDELTSB), which aimed to assemble a minimum set of commonly understood and widely used terms and definitions to describe suicidal phenomena.[10] Furthermore, we explore differences in preferred terminologies between HICs and LMICs.

Methodology

The ISDELTSB methodology was based on a survey of members of international organisations having interest in the study and prevention of suicide, namely the IASP, the World Psychiatric Association (WPA), and the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians' (WONCA), with an effort to recruit from the widest possible range of countries. An initial sample was built with one representative per country.[10] These individuals were expected to provide answers that were representative of the views of professionals working in their country. However, the initial call to national delegates of IASP and members of the other associations resulted in a small number of recruits. It was therefore decided to widen the study sample by inviting all IASP members to participate, assuming that their interest in suicide prevention could be paralleled by a degree of knowledge in the field of suicide higher than that of lay people. Consequently, each participating country had either one 'expert' (i.e., an IASP national representative, or a member of WPA or WONCA), or at least one IASP member. All procedures were approved by the Griffith University's Human Research Ethics Committee (2017/601).

The survey questionnaire proposed a variety of terms and definitions commonly found in the literature. Details about the questionnaire and other details about methodology are presented in an open access journal.[10]

Sample characteristics

Data were collected in 2018. Initially, as said, participants comprised only IASP national representatives; among the 62 existing national delegates of the association, 40 agreed to join the study. Three more countries were identified – respectively - by two people designated by the WPA and one by the WONCA. Another three participants were eventually identified by the staff of Australian Institute for Suicide Research and Prevention's (AISRAP) among those countries with no IASP delegate.

In this way, representatives from 46 countries took part to the study. To further increase the number of participants, invitation to join the study was extended to all members of IASP. Out of 408 IASP regular members (excluding national delegates), 80 agreed to take part in the study, bringing to 126 the final number of consenting participants (80 'new' participants plus the 46 previously recruited). With this operation, the number of countries with at least one representative rose to 63 (countries or territories). The list and the map of participating countries are available in Supplementary Table (ST) 1 and Supplementary Figure (SF) 1.

Thirty of the participating countries or territories were LMICs, represented by 37 individuals. The thirty-three other countries were HICs, represented by 89 individuals. English language was spoken in 23 out of 63 countries. Sixty-one participants were from a country in which no English is spoken, whilst 65 participants were from a country in which English is the official language or one of the official languages. Concerning professional background of participants, 30% were medical doctors, 29% were psychologists, 10% were epidemiologists, and 31% were from 'other' professions (e.g., social worker, student, sociologist, public health professional, teacher etc).

Patient and public involvement

No patient involved.

Statistical analyses

Statistical analyses were performed using IBM SPSS Version 25.0. Our focus was on the most used terms. Analyses used odds ratios (OR) with 95% confidence intervals (95%CI) to compare HICs vs. LMICs. There was limited missing data (0-6.3%), which was left out from the analyses of specific item. To enable country-based analyses, we conducted sensitivity analyses by calculating weights for countries where there were more than one respondent, which allowed also more even comparison between HICs and LMICs.

Results

Definition of suicide

Agreement on the definition of suicide was assessed by providing a set of statements for each of the main components of the definition of suicide - i.e., outcome, intent, knowledge, and agency.[4] Respondents had to choose the suggestion with which they agreed. The choices of respondents by LMICs vs. HICs are shown in Figure 1.

- Please, insert Figure 1

Majority (81.6%; 1 missing) agreed that, "Suicide is an act that necessarily leads to death". Regarding intent, five non-mutually exclusive statements were proposed (Figure 1). More than half of respondents agreed with the last statement (5: "Suicide is an act that may be done without explicit intent to die"). However, respondents agreed more frequently with statements 2-4 (2: "Suicide is an act that may be done with an intent other than an explicit intent to die"; 3: "Suicide is an act that may be done with an ambiguous or unclear intent"; 4: "Suicide is an act that may be done with an intent to take the risk of dying"). Respondents from HIC were more likely to choose statement 3 (OR:2.35; 95%CI: 1.03-5.36), but also in the LMIC group almost 60% of respondents agreed with this statement.

In terms of knowledge of the consequences of the act, four statements were proposed. More than half the respondents agreed with the statement: "Suicide is an act that can be performed with the knowledge of a fatal result, but the person is not certain of that result", regardless of national income. Regarding agency, more than half (60%; 1 missing) of respondents agreed with the statement, "Suicide is an act that is initiated by oneself, but not necessarily carried out by oneself to the end of the action".

Definition of non-fatal forms of suicidal behaviours

For non-fatal suicidal behaviours, a vignette method was used and a set of 16 basic clinical scenarios was proposed. For each vignette, a list of terms was proposed from which respondents had to choose a single answer. The percentages of agreement with particular terms for vignettes 1-16 according to respondents' countries' national income are presented in Figures 2 and 3.

Vignette 1 asked respondents how they would name the act of a person who harmed him- or her-self with the intention to die but survived. The majority of respondents (92.1%) named the act as a 'suicide attempt' (Figure 2). Vignette 2 described a person who harmed him- or her-self without any intention to die and survived. The answers were not unanimous; however, the highest agreement was reached for the term 'self-harm' (27.8%), followed by non-suicidal self-injury' (NSSI; 19%) and 'deliberate self-harm (17.5%). Vignette 3 described a person who harmed him- or her-self without any intention to die but died. The highest level of agreement was reached for 'suicide' (24.0%), although 'accident' was also a frequent choice (17.6%).

- Please, insert Figure 2

Vignette 4 asked respondents to define the act of a person who harmed him- or her-self, but, for whatever reasons, could not state his or her intentions and the person survived. While a 'suicide attempt' was the most frequent choice for LMIC (37.8%), HICs chose 'self-harm' most frequently (21.8%; OR:0.40; 95%CI: 0.17-0.93; 2 missing). Vignette 5 described a person who harmed him- or her-self but *did not want* to state his or her intentions and the person survived. The closest levels of agreement between income groups were for 'suicide attempt' (27.4%) even though the HIC group chose 'self-harm' most frequently (26.4%).

Vignette 6 asked respondents to define the act of a person who died as a consequence of harming him or her-self, but his or her intentions in doing so could not be known or inferred. Two answers stood out: 'suicide' (42.1%) and 'undetermined death' (31.7%). Respondents from HICs were more likely to choose 'undetermined death' (HICs: 37.1% vs. LMICs: 18.9%; OR:2.53; 95%CI: 1.00-6.39), and respondents from LMICs 'suicide' (HICs: 37.1% vs. LMICs: 54.1%; OR:0.50; CI 95%: 0.23-1.09).

Vignette 7 described someone who occasionally thought of suicide when feeling distressed: all groups chose 'suicidal ideation' most frequently (64.8%). Vignette 8 described someone who continuously thought of suicide but had no suicidal intent. All groups chose 'suicidal ideation' most frequently (45.2%), followed by 'persistent suicidal ideation' (31%).

Figure 3 shows respondents' answers to vignettes 9 to 16 according to income level. Vignette 9 described someone who hoped for death but had no thoughts of killing him- or her-self. Respondents chose 'death wishes' (57.6%) most frequently across all groups. Vignette 10 described someone who hoped for death by killing him- or her-self, and most respondents chose the 'suicidal ideation' (61.6%) followed by 'active suicidal ideation' (32%).

- Please, insert Figure 3

The following vignettes described behaviours that could be considered as being at the boundary between behaviour and ideation and could therefore be subject to debate. Vignette 11 asked respondents to choose a term for someone who stated suicidal intention without engaging in the behaviour. Although all groups most frequently decided that the person was experiencing 'suicidal ideation' (56.9% for all), HICs' respondents were more likely to choose 'suicidal ideation' than LMICs (HICs:63.6%, LMICs:40%; OR:2.63; 95%CI: 1.18-5.87; 3 missing).

Vignette 12 described someone who mimicked (i.e. acted in a way that had the appearance of) suicidal behaviour without sustaining any injuries. The two most frequently chosen answers were 'suicidal behaviour' (35.6%) and 'suicide threat' (19.5%). However, HICs' respondents were more likely to choose 'suicidal behaviour' (HICs: 63.6% vs. LMICs: 40%; OR:4.32; 95%CI: 1.52-12.26; 8 missing). Vignette 13 asked the respondent to define the behaviour of someone who had decided how and when to perform a suicidal act, but did not actively prepare anything. The 'suicide plan' was most commonly chosen (67.5%). Vignette 14 described someone who prepared a suicidal act (e.g. assembled pills, bought a gun, attached a rope, visited a bridge), but did not initiate it and consequently did not sustain any injuries. The two most frequently chosen options were 'preparatory suicidal behaviour' (42.6%) and 'suicide plan' (34.4%). HICs' respondents were more likely to choose 'preparatory suicidal behaviour' (HICs: 48.9% vs. LMICs: 26.5%; OR:2.65; 95%CI: 1.11-6.33; 4 missing) and the LMIC group chose 'suicide plan' most frequently (HICs: 34.1% vs. LMICs: 35.3%).

Vignette 15 asked the respondent to define the behaviour of someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but stopped him- or her-self before sustaining any injury. The 'aborted suicide attempt' was the most commonly chosen option (33.1%) followed by the 'suicide attempt' (19%). The HIC group chose the 'aborted suicide attempt' most frequently (HICs: 37.9% vs. LMICs: 20.6%; OR:2.65; 95%CI: 1.11-6.33; 5 missing) whereas the LMIC group chose 'suicide attempt' (HICs: 14.9% vs. LMICs: 29.4%; OR: 2.36; 95%CI: 0.92-6.02; 5 missing). Vignette 16 described someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but was stopped by someone else before sustaining any injuries. The majority agreed on the 'interrupted suicide attempt' (58.7%), followed by the 'suicide attempt' (27.3%).

Sensitivity analyses

Change into country-based analysis did not show changes in the most commonly chosen item; in general, the change remained within +/- 10% (ST 2 & 3). Comparisons between HICs and LMICs showed

some changes in the order. For Vignettes 5 and 6, the most commonly chosen item by HICs changed into the same as in LMICs and for Vignette 3 and 14, the LMICs most predominant item became more similar to HICs (SF 2-4).

Discussion

To our knowledge, the ISDELTSB is the first empirical study aiming to assemble a minimum set of commonly understood and widely used terms and definitions to describe suicidal phenomena. The results of the present study could give a contribution in this direction, while also looking at differences between HICs and LMICs regarding terminologies used. The answers of survey participants regarding the four characteristics of the definition of suicide could delineate some level of consensus. Regarding outcome, all respondents agreed that *suicide is an act resulting in death.* This sets a clear distinction between suicide and non-fatal suicidal behaviours and corresponds to the majority of definitions of suicide found in the literature.[10]

Regarding intent, more than half of respondents agreed that suicide could be undertaken *without* explicit intent to die. Indeed, only a few definitions of suicide did not mention intent to die as a central characteristic of the act.[1,11,12] In De Leo et al.'s[6] definition, intent targeted "wanted changes" (p. 12). These authors argued that intent to die - assumed to be at least in minimal part present (greater than zero) - can be concurrent with other purposes, and that people attempting suicide may even be trying to improve their life or have other underlying motives, such as escaping from an unbearable situation. According to the answers to our survey, *suicide is an act in which intent may not be explicit but ambiguous and unclear, and involving the risk of dying.*

In literature, knowledge of potentially fatal outcome was often suggested as a requirement for the definition of suicide.[9,13] In the present survey, according to the vast majority of respondents, *suicide is an act carried out with the knowledge of a potentially fatal result.*

The respondents stressed the importance of distinguishing suicide from assisted suicide and euthanasia. Generally, they expressed the choice for a definition excluding the possibility of an outside agent. This appears in contradiction with most literature (e.g.,[9]). According to most respondents in this study, *suicide is an act initiated and carried out by oneself to the end of the action.* However, in our view, if widely accepted, this determination could lead to several problems, bringing to a substantial underestimation of suicide mortality. For instance, an act in which a person stands in front of a moving object (e.g., a train or a truck driven by another person) could hardly be considered as *assisted suicide*. Keeping in mind the limitations of the present survey (e.g., representativeness of the sample; clarity of vignettes; deepening of details, etc.), the indications coming from this area of our study seem to emphasize the importance of a shared set of definitions among scholars in the field of suicide. The discrepancy detected at the level of definition of suicide among study participants is of relevance and underlines the appropriateness of research efforts in the definitional domain. Indeed, if we identify what varies and explain why, we should equally succeed in identifying what does not, i.e., shared terms and definitions. Further research should thus use the same methodology and focus on a wider sample of professionals working in the field.

Evidence of intent to die is central to the definition of 'suicide attempt', a behaviour in which *a person harms him- or her-self, with the intention to die, and survives*, in agreement with existing literature.[1,2,14] The term 'suicide attempt' was deemed acceptable in a wide scale survey and recommended for academic and media use.[15] 'Self-harm' was the preferred term in cases in which there was no evidence of intent to die (i.e., vignette 2) and elicited less disagreement than 'suicide attempt' when intent could not be determined (i.e., vignettes 4 and 5). In the literature, 'self-harm' and 'deliberate self-harm' have been described either in absence of suicidal intent[3,16,17] or regardless of suicidal intent.[18,19] The term '*deliberate* self-harm' was not favoured in respondents' answers; their comments suggested that it could be stigmatizing. The term 'self-harm' could thus be defined as a *non-fatal act in which a person harms him- or her-self, and intent to die is either absent or not accessible to observation*. The question remains as to whether this term could be placed in an overarching position in a nomenclature,

regardless of the level of intent to die (thus including 'suicide attempt'). Statement of intent differs depending on the person interviewed (e.g., patient, family, or clinician) and timing of the interview (e.g., intent to die could be masked or denied when the patient becomes aware of the possibility of being admitted to a locked inpatient unit). For example, Kapur et al.[20] argued against distinguishing acts of self-harm according to intent.

On the basis of this survey results, if intent to die has been stated by the patient, it may be more appropriate to consider the term 'suicide attempt' rather than 'self-harm', even if it seems to contradict the definition of suicide coming out from this survey. One could have imaged another term for fatal suicidal behaviour where evidence is not clear (e.g., 'fatal self-harm'); however, respondents did not suggest any specific term for this specific situation.

Regarding 'suicidal ideation', Silverman et al.[7] distinguished between 'no ideation' vs. 'undetermined degree' vs. 'some suicidal intent', and further subdivided the categories into 'casual', 'transient', 'passive', 'active', and 'persistent'. The responses to our survey suggest a rather inclusive definition of 'suicidal ideation': *Thinking of suicide with or without suicidal intent; hoping for death by killing oneself; and, stating the presence of suicidal intention without engaging in behaviour*. Further research may consider sub-dividers such as *with/without suicidal intent, transient, reactive, persistent,* or *with communication.*

'Death wishes' were defined by respondents *as hoping for death without thoughts of killing oneself*, and were less inclusive than Balaguer et al.'s[21] 'wish to hasten death', which was an overarching category including suicidal ideation.

O'Carroll et al.[6] defined 'suicide threat' as *"any interpersonal action, verbal or nonverbal, stopping short of a directly self-harmful act that a reasonable person would interpret as communicating or suggesting that a suicidal act or other suicide-related behaviour might occur in the near future"* (p. 247). Silverman et al.[7] defined this term in a similar way. Vignette 12 was a case scenario designed to

illustrate this definition. However, many participants did not respond to this vignette, and the significant disagreement between groups should lead to caution in interpreting results.

Based on responses to our survey, a 'suicide plan' could be defined as *having decided how and when to perform a suicidal act*. This definition is comparable to that of Silverman et al.,[7] which does not include preparatory behaviour. A suggested definition should thus exclude *active preparation*.

Despite some disagreement between respondents, 'preparatory suicidal behaviour' could be defined as *preparing for a suicidal act (e.g. collecting pills, buying a gun, attaching a rope, visiting a bridge), but without initiating it and thus not sustaining any injury*. This definition is similar to that given by Posner et al.[22] However, these authors also considered 'aborted' and 'interrupted suicide attempt' and thus a *preparatory act* was an umbrella term, which was not the case for our survey. Based on results, an 'aborted suicide attempt' could be defined as an act in which a person *initiates a suicidal act (e.g. stands or sits on the edge of a high bridge; ties a rope around his or her neck; etc.), but stops him/herself before sustaining any injury* (Vignette 15).

An 'interrupted suicide attempt' could be defined as *initiating a suicidal act (e.g. standing or sitting on the edge of a high bridge, tying a rope around one's neck), but being stopped by someone else before sustaining any injury* (vignette 16). These definitions are indeed comparable to those reported by Posner et al.[22]

Differences between HICs and LMICs

Access to resources (e.g., local research activity) could have an influence on terminology. Therefore, it was expected that the level of national income has an influence on preferred terminology of the respondents considering HICs have more resources for professionals working in suicidology, advanced health care systems, and more academic and research background than LMICs. Furthermore, there are notable cultural differences (e.g. religious), which could have further impact on the terminology. Nevertheless, lack of previous empirical studies did not enable to propose a clear testable hypothesis.

However, our results identified some notable differences between respondents from LMICs and HICs. Respondents from HICs were more likely to agree that, in suicide, intent may be ambiguous or unclear. Differences in responses to vignette 4 (i.e., non-fatal suicidal behaviour, but person cannot state intentions) could suggest that respondents from LMICs did not distinguish non-fatal behaviours as precisely regarding intent as respondents from HICs, who were more likely to name the behaviour 'self-harm.' Interestingly in Vignette 6 (i.e. fatal suicidal behaviour with no evidence of intent), respondents from HICs were more likely to choose 'undetermined death' rather than 'suicide', which was somewhat in contradiction with an open definition of suicide regarding intent. Some differences were found for Vignette 11, 12 and 14, but none of these related to a pattern in which respondents form HICs had more precise terminology than respondents from LMICs. Overall, no clear differential pattern could be evidenced in responses given for the four characteristics of suicide, and respondents from LMICs had an equal range of terms to name the behaviours in the vignettes.

Strengths and limitations

Representatives of 63 countries (slightly less than a third of all 193 WHO member countries) participated in the ISDELTSB. If any nomenclature has to be internationally applicable, efforts should be dedicated to increasing the number of countries taking part in this type of research, especially among LMICs. It should be noted that seven out of 30 LMICs (23%) had a national suicide prevention strategy, compared to 15 out of 33 HICs (45%). Yet, despite their relatively low number, participating countries account for two thirds of the world population and three quarters of all suicides.[23]

LMICs were represented by 37 participants and HICs by 89 participants, which implies a bias towards responses from HICs and the analysis showed a few notable differences. However, we conducted additional sensitivity analyses, which gave similar results. Nevertheless, the relatively high number of LMICs included in the study was achieved by using a recruitment approach based on institutionally- and self-defined expertise. The fact that there was no operational definition regarding expertise in

suicidology is another limitation to our study. However, differences between the HICs are also very likely.

The initial idea of using one 'representative' per country (the IASP national delegate) was chosen to give comparable weight to all participating countries. The small dimension of this sample brought to an extension to individual members of IASP. However, the final number of participants remained quite low; the obtained results need to be replicated in studies with bigger samples.

As mentioned in the companion paper on methodology,[3] the questionnaire was not translated into different languages but presented in English. This has probably limited participation to the study; in addition, it may have led to discrepancies in understanding questions. We need to acknowledge that all conclusions should be taken with caution.

Implications for further research

Table 1 collates the most frequently chosen terms together, with their matching definition. The resulting nomenclature can be considered as an attempt at promoting consensus in a wide range of cultural settings. It tries to encompass the whole range of suicidal behaviours and ideation. However, as mentioned above, not everything comes as crystal clear. For example, suicide was frequently interpreted as an act performed to completion by the actor itself, not involving a third agent. Intent to die appears as necessary to define a suicide attempt, but intent can be vague or unclear for a suicide. There are terms that may receive an overarching character. For instance, 'self-harm' may include behaviours in which there is no intent to die and those in which intent is unknown.

The 'preparatory suicidal behaviour' category could include both 'aborted' and 'interrupted suicide attempt' or, as suggested in our survey, could also be distinct, owing to differences in the moment in which the behaviour stops (i.e. after preparations are finished or after the suicidal act is initiated).

The nomenclature presented in Table 1 should thus be considered as a working base to advance in the direction of a universal classification of suicidal behaviours.

- Please insert Table 1

Conclusion

The development of an internationally applicable nomenclature and classification of suicidal behaviours would be a long and complex process. The IASP Special Interest Group on Nomenclature would be ideally positioned to carry out this task with the help of a large and motivated international membership. Using the results of an international opinion survey, a tentative nomenclature of suicidal behaviour is proposed. Indications from this survey may be utilized by the Special Interest Group. Future developments could then be tested in large samples of professionals (e.g., clinicians, researchers), with particular attention to intercultural and interdisciplinary representativeness. One of the challenges of this process would be the involvement of LMICs, keeping in mind that online surveys like ours have only moderate success in representing LMICs.[24]

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Conflicts of interest

No conflicts to declare.

Author contributorship

DDL originated the study idea and design, designed and critically reviewed the questionnaire, interpreted data and drafted the manuscript. BG helped design the study, designed the questionnaire, analysed and interpreted data and drafted the manuscript. MS, AB, JM, EA, KH, MP and LV contributed to the methodology, reviewed the questionnaire, interpretation of data and critically reviewed the manuscript. KA, AMCH and MH contributed to the interpretation of data and critically reviewed the manuscript. KK helped design the study, helped design and critically reviewed the questionnaire, analysed and interpreted data and critically reviewed the manuscript.

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Table 1. Nomenclature of suicidal behaviours after the ISDELTSB

Designating term or expression	Definition
Suicide	An act resulting in death which is initiated and carried out by an individual to the end of the action, with the knowledge of a potentially fatal result, and in which intent may be ambiguous or unclear, may involve the risk of dying, or may not involve explicit intent to die.
Suicide attempt	An act in which a person harms him- or her-self, with the intention to die, and survives.
Self-harm	A non-fatal act in which a person harms him- or her-self intentionally, with varying motives including the wish to die.
Suicidal ideation	To think of suicide with or without suicidal intent, or hope for death by killing oneself, or state suicidal intention without engaging in behaviour.
Death wishes	To hope for death without thoughts of killing oneself.
Suicide plan	To have decided how and when to perform a suicidal act, but without active preparation.
Preparatory suicidal behaviour	To prepare a suicidal act (e.g. assemble pills, buy a gun, attach a rope, visit a bridge), but without initiating it and thus not sustaining any injury.
Aborted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but stops him/herself before sustaining any injury.
Interrupted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but is stopped by someone else before sustaining any injuries.

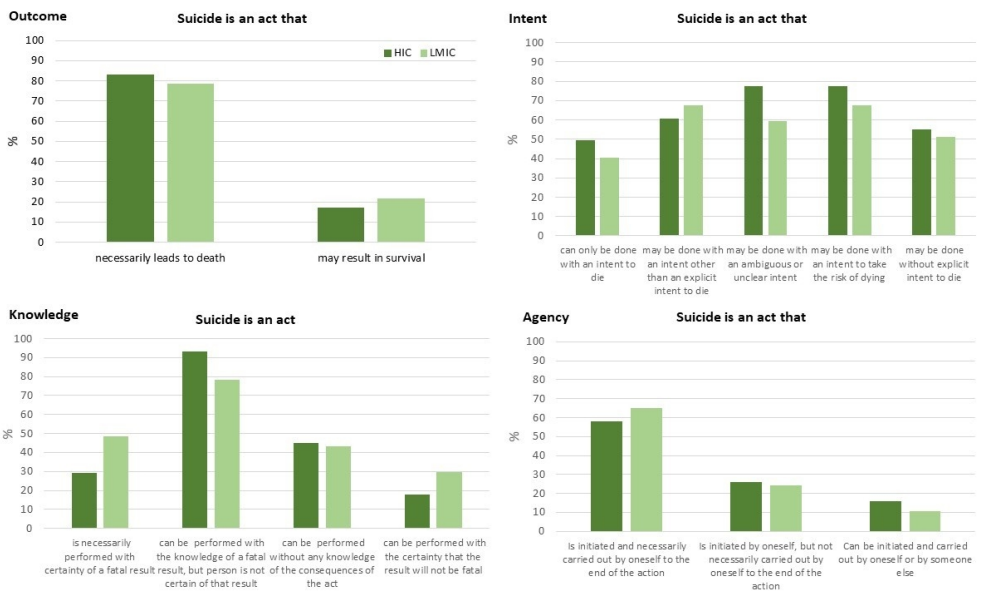


Figure 1. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

254x153mm (120 x 120 DPI)

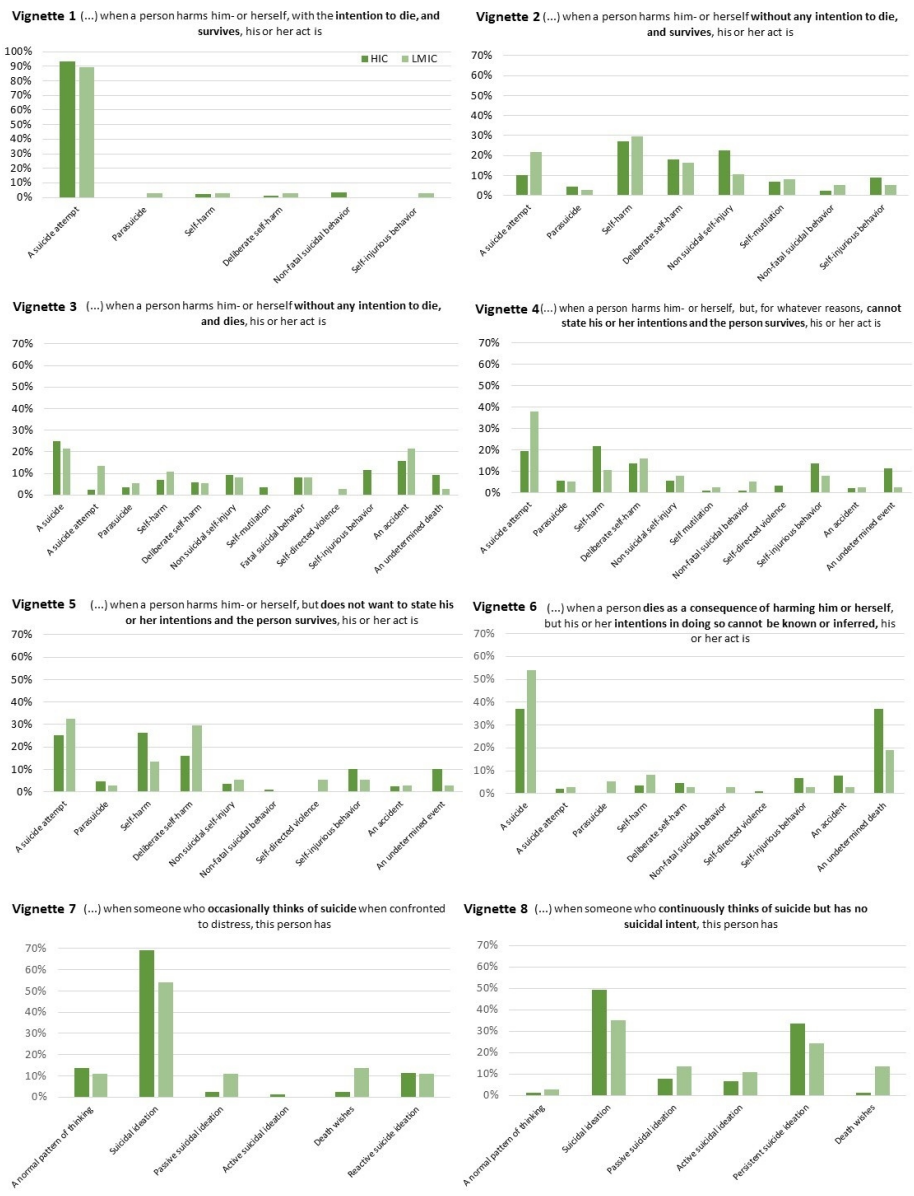


Figure 2. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

237x308mm (120 x 120 DPI)

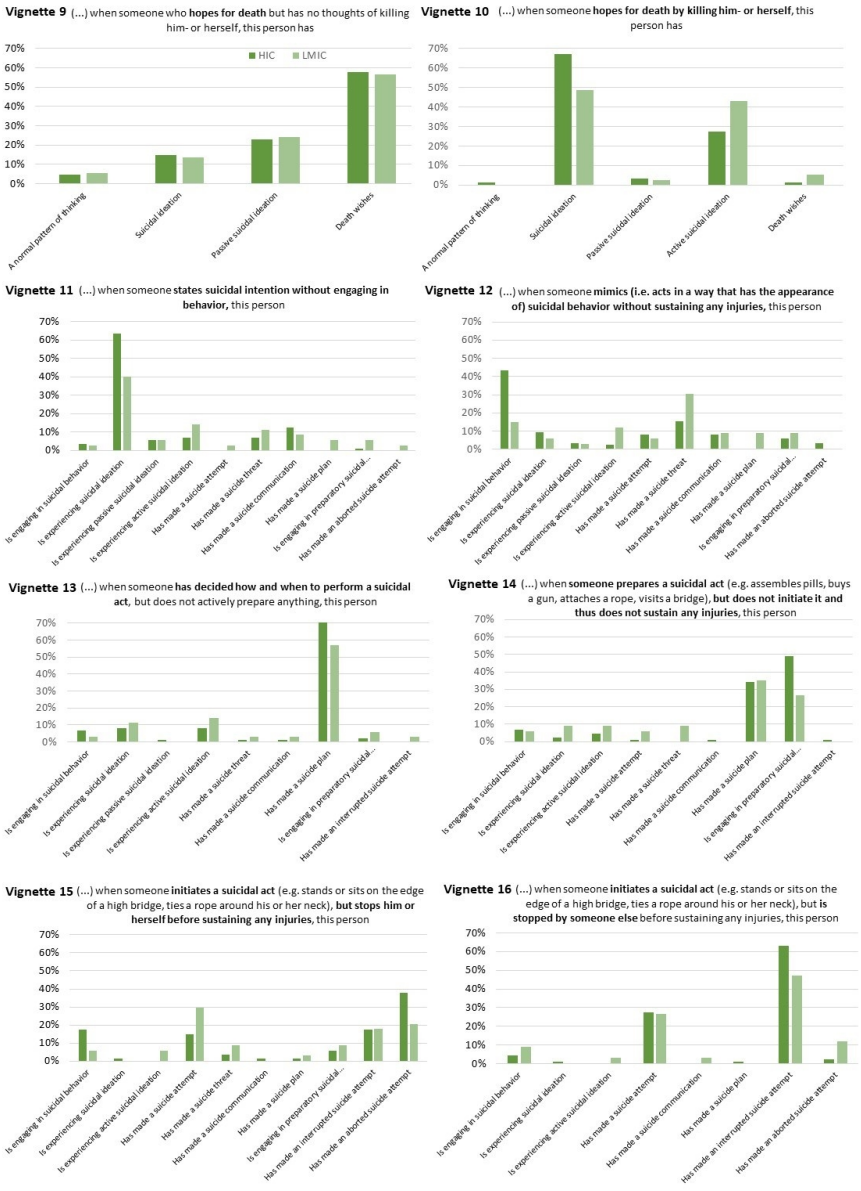


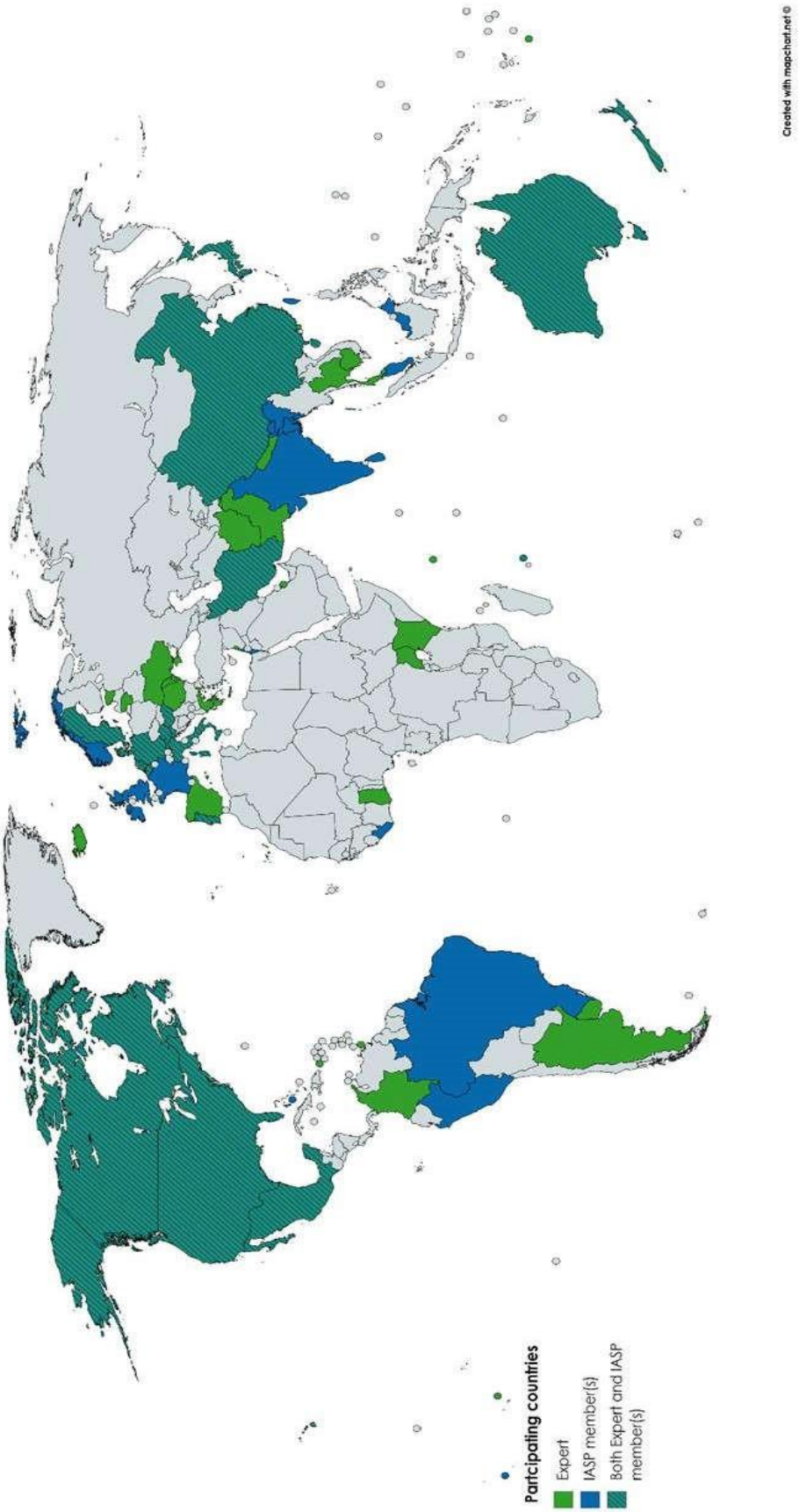
Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

236x324mm (120 x 120 DPI)

Supplementary Table 1. Number of respondents by country/territory that participated to the International Study of Definitions and Terms for Suicidal Behaviors ©

Countries/territories	'experts'	IASP members
Africa		
Ghana	1	0
Kenya	1	0
Liberia	0	1
Mauritius	1	1
Seychelles	1	0
Uganda	1	0
America		
Argentina	1	0
Brazil	0	4
Canada	1	5
Colombia	1	0
Mexico	1	1
Peru	0	1
Puerto Rico	1	0
The Bahamas	0	1
Trinidad and Tobago	1	0
Uruguay	1	0
USA	1	8
Asia		
Afghanistan	1	0
Bangladesh	0	1
Bhutan	0	1
Cambodia	1	0
China	1	1
Hong Kong	1	0
India	0	2
Iran	1	1
Israel	0	1
Japan	1	1
Lebanon	1	0
Malaysia	0	1
Nepal	1	0
Pakistan	1	0
Qatar	1	0
Singapore	0	1
Sri Lanka	0	1
Taiwan	0	1
Thailand	1	0
Europe		

Austria	1	1
Belgium	1	1
Denmark	1	2
Estonia	1	0
France	0	2
Germany	1	1
Greece	1	0
Hungary	1	1
Iceland	1	0
Ireland	0	3
Italy	1	1
Lithuania	1	0
Moldova	1	0
Netherlands	1	2
Norway	0	3
Portugal	1	1
Romania	1	0
Slovenia	1	1
Spain	1	0
Sweden	1	1
UK	0	4
Ukraine	1	0
Oceania		
Australia	1	15
New Zealand	1	6
Cook Islands	0	1
French Polynesia	1	0
Tonga	1	0
Total	46	80



Supplementary Figure 1: Participating countries in the International Study of Definitions and Terms of Behavior

Supplementary Table 2. Individual and country-based results by main components of suicide definition

	Individual based		Country based*		
	N	%	N	%	
Outcome (one item)					
Suicide is an act that necessarily leads to death	102	81.6%	52	81.7%	
... may result in survival	23	18.4%	11	18.2%	
Missing	1		0		
Intent (five separate items)					
Suicide is an act that can only be done with an intent to die	59	46.8%	26	41.7%	
Suicide is an act that may be done with an intent other than an explicit intent to die	79	62.7%	44	69.4%	
Suicide is an act that may be done with an ambiguous or unclear intent	91	72.2%	46	73.2%	
Suicide is an act that may be done with an intent to take the risk of dying	93	74.4%	49	77.5%	(missing=1)
Suicide is an act that may be done without explicit intent to die	68	54.0%	34	53.9%	
Knowledge (four separate items)					
Suicide is an act that is necessarily performed with certainty of a fatal result	44	34.9%	26	41.2%	
Suicide is an act that can be performed with the knowledge of a fatal result, but person is not certain of that result	112	88.9%	55	87.1%	
Suicide is an act that can be performed without any knowledge of the consequences of the act	56	44.4%	26	41.9%	
Suicide is an act that can be performed with the certainty that the result will not be fatal	27	21.4%	16	26.1%	
Agency (one item)					
Suicide is an act that is initiated and necessarily carried out by oneself to the end of the action	75	60.0%	40	64.2%	
… is initiated by oneself, but not necessarily carried out by oneself to the end of the action	32	25.6%	15	24.3%	
… can be initiated and carried out by oneself or by someone else	18	14.4%	8	12.3%	
Missing	1		1		

*sensitivity analyses (calculated using weights)

Supplementary Table 3. Individual and country-based results of Vignettes

	Individual based		Country based*	
Vignette 1. In your country, when professionals (e.g. clinicians, researchers) talk about a person harms him- or herself, with the intention to die, and survives, his or her act is				
	N	%	N	%
A suicide attempt	116	92.1%	57	90.9%
Parasuicide	1	0.8%	1	1.6%
Self-harm	3	2.4%	2	3.7%
Deliberate self-harm	2	1.6%	1	0.9%
Non-fatal suicidal behavior	3	2.4%	1	1.3%
Self-injurious behavior (including self-poisoning/overdosing with medication)	1	0.8%	1	1.6%
Vignette 2. (...) when a person harms him- or herself without any intention to die, and survives, his or her act is				
	N	%	N	%
A suicide attempt	17	13.5%	11	17.7%
Parasuicide	5	4.0%	4	5.8%
Self-harm	35	27.8%	19	29.6%
Deliberate self-harm	22	17.5%	9	14.0%
Non suicidal self-injury	24	19.0%	8	12.2%
Self-mutilation	9	7.1%	4	6.9%
Non-fatal suicidal behavior	4	3.2%	3	4.0%
Self-injurious behavior (including self-poisoning/overdosing with medication)	10	7.9%	6	9.8%
Vignette 3. (...) when a person harms him- or herself without any intention to die, and dies, his or her act is				
	N	%	N	%
A suicide	30	24.0%	17	26.7%
A suicide attempt	7	5.6%	5	7.8%
Parasuicide	5	4.0%	3	5.1%
Self-harm	10	8.0%	5	8.4%
Deliberate self-harm	7	5.6%	3	4.8%
Non suicidal self-injury	11	8.8%	4	6.8%
Self-mutilation	3	2.4%	2	2.4%
Fatal suicidal behavior	10	8.0%	5	8.4%
Self-directed violence	1	0.8%	1	1.6%
Self-injurious behavior (including self-poisoning/overdosing with medication)	10	8.0%	3	5.4%
An accident	22	17.6%	11	17.5%
An undetermined death (open verdict)	9	7.2%	3	4.8%
Missing	1		0	
Vignette 4. (…) when a person harms him- or herself, but, for whatever reasons, cannot state his or her intentions and the person survives, his or her act is				
	N	%	N	%
A suicide attempt	31	25.0%	20	32.2%
Parasuicide	7	5.6%	4	7.1%
Self-harm	23	18.5%	9	15.3%
Deliberate self-harm	18	14.5%	8	13.4%
Non suicidal self-injury	8	6.5%	3	5.3%
Self mutilation	2	1.6%	1	2.2%
Non-fatal suicidal behavior	3	2.4%	1	1.4%
Self-directed violence	3	2.4%	1	1.8%

Self-injurious behavior (including self-poisoning/overdosing with medication)	15	12.1%	6	9.6%
An accident	3	2.4%	3	4.8%
An undetermined event	11	8.9%	4	6.8%
Missing	2		1	

Vignette 5. (...) when a person harms him- or herself, but does not want to state his or her intentions and the person survives, his or her act is

	N	%	N	%
A suicide attempt	34	27.4%	21	34.3%
Parasuicide	5	4.0%	3	4.8%
Self-harm	28	22.6%	12	19.1%
Deliberate self-harm	25	20.2%	12	19.9%
Non suicidal self-injury	5	4.0%	2	3.6%
Non-fatal suicidal behavior	1	0.8%	0	0.1%
Self-directed violence	2	1.6%	1	1.6%
Self-injurious behavior (including self-poisoning/overdosing with medication)	11	8.9%	4	5.9%
An accident	3	2.4%	3	4.8%
An undetermined event	10	8.1%	4	5.7%
Missing	2		1	

Vignette 6. (...) when a person dies as a consequence of harming him or herself, but his or her intentions in doing so cannot be known or inferred, his or her act is

	N	%	N	%
A suicide	53	42.1%	33	52.3%
A suicide attempt	3	2.4%	2	3.3%
Parasuicide	2	1.6%	2	3.2%
Self-harm	6	4.8%	3	4.3%
Deliberate self-harm	5	4.0%	3	4.3%
Non-fatal suicidal behavior	1	0.8%	1	1.6%
Self-directed violence	1	0.8%	1	0.8%
Self-injurious behavior (including self-poisoning/overdosing with medication)	7	5.6%	2	2.7%
An accident	8	6.3%	4	6.2%
An undetermined death (open verdict)	40	31.7%	13	21.4%

Vignette 7. (...) when someone who occasionally thinks of suicide when confronted to distress, this person has

	N	%	N	%
A normal pattern of thinking	16	12.8%	8	12.8%
Suicidal ideation	81	64.8%	40	63.0%
Passive suicidal ideation	6	4.8%	4	5.7%
Active suicidal ideation	1	0.8%	0	0.1%
Death wishes	7	5.6%	5	7.8%
Reactive suicide ideation	14	11.2%	6	10.2%
Missing	1		0	

Vignette 8. (...) when someone who continuously thinks of suicide but has no suicidal intent, this person has

	N	%	N	%
A normal pattern of thinking	2	1.6%	1	1.6%
Suicidal ideation	57	45.2%	29	46.2%
Passive suicidal ideation	12	9.5%	7	11.6%
Active suicidal ideation	10	7.9%	6	9.1%
Persistent suicide ideation	39	31.0%	15	24.1%
Death wishes	6	4.8%	5	7.4%

Vignette 9. (...) when someone who hopes for death but has no thoughts of killing him- or herself, this person has				
	N	%	N	%
A normal pattern of thinking	6	4.8%	4	5.8%
Suicidal ideation	18	14.4%	7	11.6%
Passive suicidal ideation	29	23.2%	15	23.1%
Death wishes	72	57.6%	37	59.3%
Missing	1		0	

Vignette 10. (...) when someone hopes for death by killing him- or herself, this person has				
	N	%	N	%
A normal pattern of thinking	1	0.8%	1	1.6%
Suicidal ideation	77	61.6%	37	59.0%
Passive suicidal ideation	4	3.2%	2	2.5%
Active suicidal ideation	40	32.0%	21	33.4%
Death wishes	3	2.4%	2	3.4%
Missing	1		0	

Vignette 11. (...) when someone states suicidal intention without engaging in behavior, this person				
	N	%	N	%
Is engaging in suicidal behavior	4	3.3%	2	2.6%
Is experiencing suicidal ideation	70	56.9%	32	52.2%
Is experiencing passive suicidal ideation	7	5.7%	2	3.6%
Is experiencing active suicidal ideation	11	8.9%	6	9.9%
Has made a suicide attempt	1	0.8%	1	1.6%
Has made a suicide threat	10	8.1%	6	10.3%
Has made a suicide communication	14	11.4%	8	12.5%
Has made a suicide plan	2	1.6%	1	2.0%
Is engaging in preparatory suicidal behavior	3	2.4%	2	3.6%
Has made an aborted suicide attempt	1	0.8%	1	1.6%
Missing	3		2	

Vignette 12. (...) when someone mimics (i.e. acts in a way that has the appearance of) suicidal behavior without sustaining any injuries, this person				
	N	%	N	%
Is engaging in suicidal behavior	42	35.6%	18	30.2%
Is experiencing suicidal ideation	10	8.5%	3	5.7%
Is experiencing passive suicidal ideation	4	3.4%	2	2.9%
Is experiencing active suicidal ideation	6	5.1%	5	8.6%
Has made a suicide attempt	9	7.6%	5	7.9%
Has made a suicide threat	23	19.5%	15	25.8%
Has made a suicide communication	10	8.5%	3	5.9%
Has made a suicide plan	3	2.5%	2	3.4%
Is engaging in preparatory suicidal behavior	8	6.8%	4	6.3%
Has made an aborted suicide attempt	3	2.5%	2	2.6%
Missing	8		5	

Vignette 13. (...) when someone has decided how and when to perform a suicidal act, but does not actively prepare anything, this person				
	N	%	N	%
Is engaging in suicidal behavior	7	5.7%	4	6.3%
Is experiencing suicidal ideation	11	8.9%	4	7.2%
Is experiencing passive suicidal ideation	1	0.8%	0	0.1%
Is experiencing active suicidal ideation	12	9.8%	6	10.6%
Has made a suicide threat	2	1.6%	1	2.2%
Has made a suicide communication	2	1.6%	1	2.0%

Has made a suicide plan	83	67.5%	40	65.2%
Is engaging in preparatory suicidal behavior	4	3.3%	3	4.6%
Has made an interrupted suicide attempt	1	0.8%	1	1.6%
Missing	3		2	

Vignette 14. (...) when someone prepares a suicidal act (e.g. assembles pills, buys a gun, attaches a rope, visits a bridge), but does not initiate it and thus does not sustain any injuries, this person

	N	%	N	%
Is engaging in suicidal behavior	8	6.6%	4	6.1%
Is experiencing suicidal ideation	5	4.1%	3	4.7%
Is experiencing active suicidal ideation	7	5.7%	4	5.8%
Has made a suicide attempt	3	2.5%	3	5.0%
Has made a suicide threat	3	2.5%	2	3.3%
Has made a suicide communication	1	0.8%	1	0.8%
Has made a suicide plan	42	34.4%	20	33.8%
Is engaging in preparatory suicidal behavior	52	42.6%	24	39.8%
Has made an interrupted suicide attempt	1	0.8%	1	0.8%
Missing	4		3	

Vignette 15. (...) when someone initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but stops him or herself before sustaining any injuries, this person

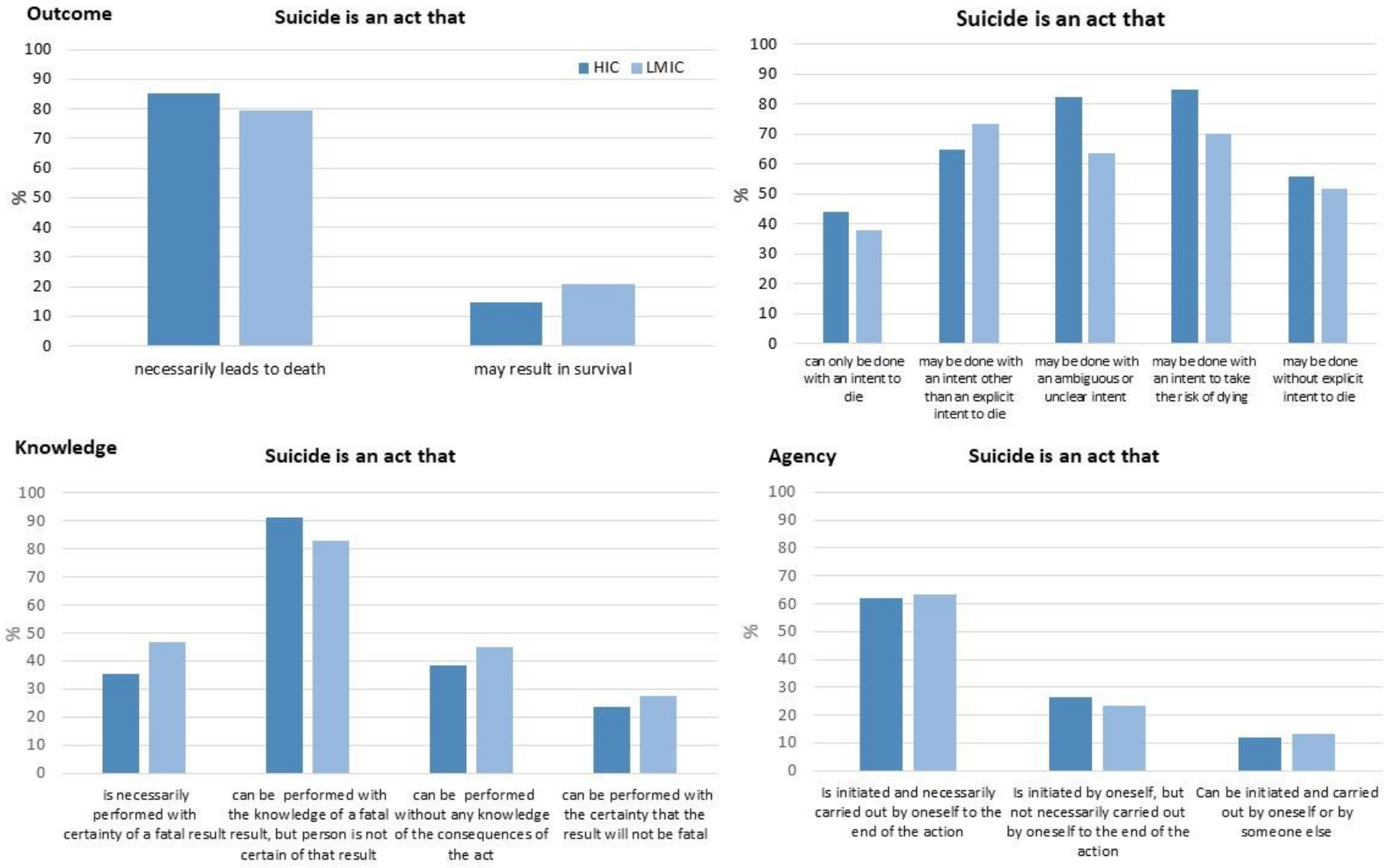
	N	%	N	%
Is engaging in suicidal behavior	17	14.0%	6	9.9%
Is experiencing suicidal ideation	1	0.8%	0	0.6%
Is experiencing active suicidal ideation	2	1.7%	2	3.3%
Has made a suicide attempt	23	19.0%	16	26.2%
Has made a suicide threat	6	5.0%	3	5.1%
Has made a suicide communication	1	0.8%	0	0.4%
Has made a suicide plan	2	1.7%	2	3.3%
Is engaging in preparatory suicidal behavior	8	6.6%	3	5.7%
Has made an interrupted suicide attempt	21	17.4%	10	16.0%
Has made an aborted suicide attempt	40	33.1%	18	29.7%
Missing	5		3	

Vignette 16. (...) when someone initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but is stopped by someone else before sustaining any injuries, this person

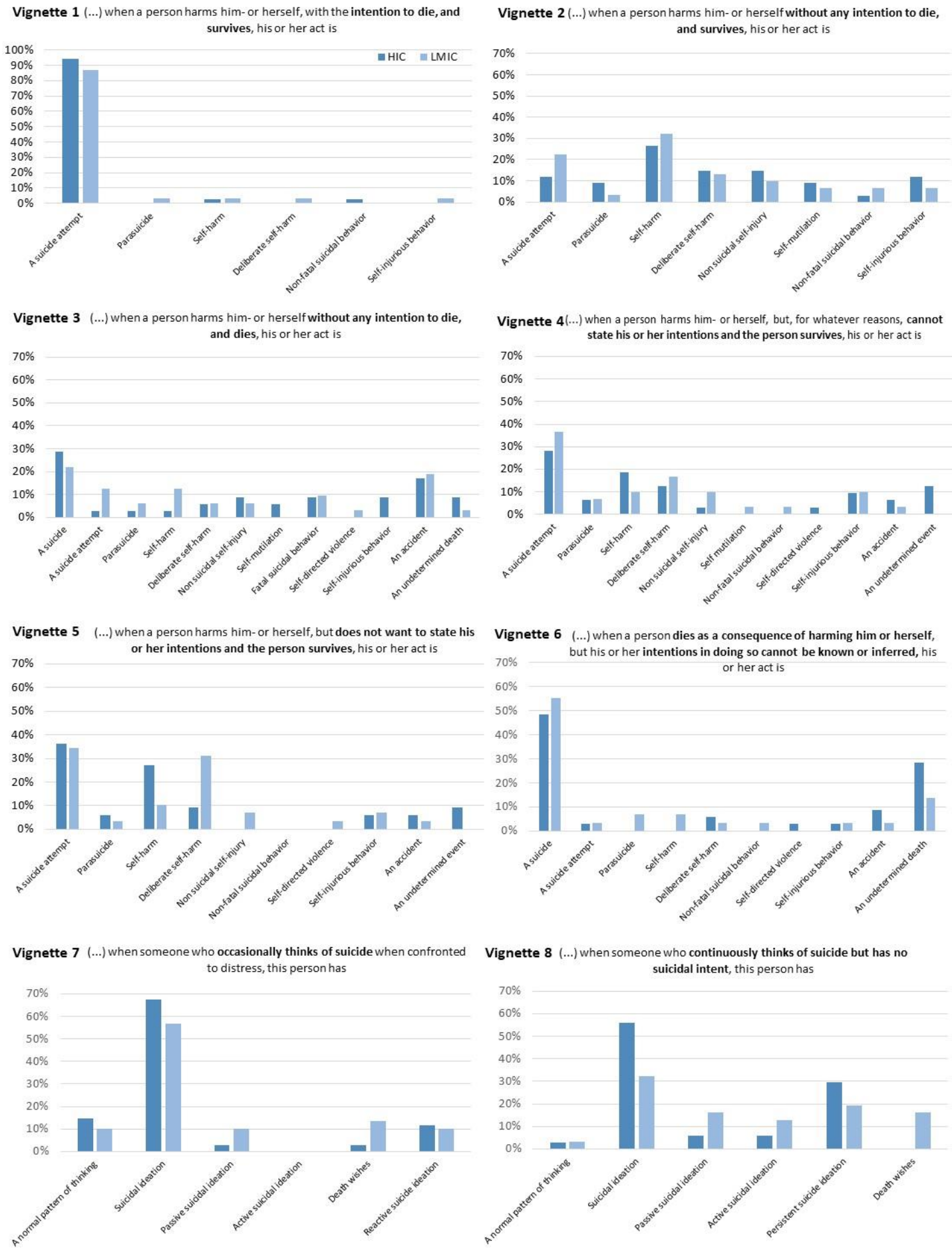
	N	%	N	%
Is engaging in suicidal behavior	7	5.8%	4	6.4%
Is experiencing suicidal ideation	1	0.8%	0	0.6%
Is experiencing active suicidal ideation	1	0.8%	1	1.7%
Has made a suicide attempt	33	27.3%	19	32.2%
Has made a suicide communication	1	0.8%	1	1.7%
Has made a suicide plan	1	0.8%	0	0.4%
Has made an interrupted suicide attempt	71	58.7%	31	51.2%
Has made an aborted suicide attempt	6	5.0%	4	6.1%
Missing	5		3	

*sensitivity analyses (calculated using weights)

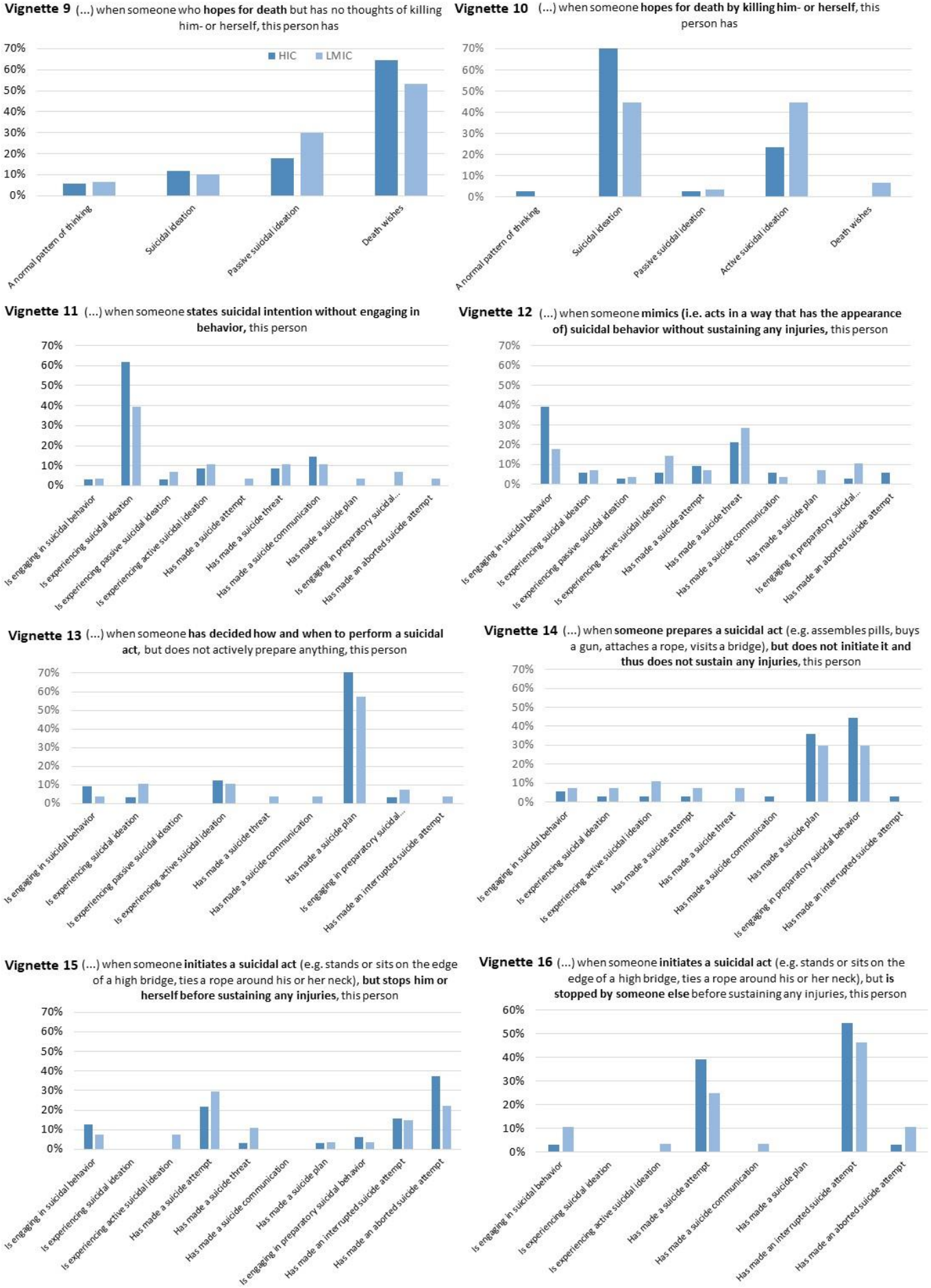
Supplementary Figure 2. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



Supplementary Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



Supplementary Figure 4. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



STROBE Statement

	Item No.	Recommendation	Page No.
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Method			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5-6
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5*
Bias	9	Describe any efforts to address potential sources of bias	5-6
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	6
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5

		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5-6
		(b) Indicate number of participants with missing data for each variable of interest	6-10
		© *Cohort study*—Summarise follow-up time (eg, average and total amount)	NA
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	
		Cross-sectional study—Report numbers of outcome events or summary measures	6-10
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-10
		(*b*) Report category boundaries when continuous variables were categorized	6-10
		© If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-10
Key results	18	Summarise key results with reference to study objectives	10-12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14-15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	16
Generalisability	21	Discuss the generalisability (external validity) of the study results	15-16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

International Study of Definitions of English-Language Terms for Suicidal Behaviors ©: A survey exploring preferred terminology

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Primary Subject Heading:	Mental health
Secondary Subject Heading:	Mental health
Keywords:	Suicide & self-harm < PSYCHIATRY, EPIDEMIOLOGY, MENTAL HEALTH

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International Study of Definitions of English-Language Terms for Suicidal Behaviors ©: A survey exploring preferred terminology

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Abstract

***Objectives*:** Explore international consensus on nomenclatures of suicidal behaviours and analyse differences in terminology between high-income countries (HICs) and low- and middle-income countries (LMICs).

Design: An online survey of members of the International Organisation for Suicide Prevention (IASP) used multiple-choice questions and vignettes to assess the four dimensions of the definition of suicidal behaviour: outcome, intent, knowledge and agency.

Setting: International.

***Participants*:** Respondents included 126 individuals, 37 from 30 LMICs and 89 from 33 HICs. They included 40 IASP national representatives (65% response rate), IASP regular members (20% response rate), and 6 respondents from 6 additional countries identified by other organizations.

Outcome measures: Definitions of English-language terms for suicidal behaviours.

***Results*:** The recommended definition of 'suicide' describes a fatal act initiated and carried out by the actors themselves. The definition of 'suicide attempt' was restricted to non-fatal acts with intent to die, whereas definition of 'self-harm' more broadly referred to acts with varying motives, including the wish to die. Almost all respondents agreed about the definitions of 'suicidal ideation', 'death wishes', and 'suicide plan'. 'Aborted suicide attempt' and 'interrupted suicide attempt' were not considered components of 'preparatory suicidal behaviour'. There were several differences between representatives from HICs and LMICs.

***Conclusion*:** This international opinion survey provided the basis for developing a transcultural nomenclature of suicidal behaviour. Future developments of this nomenclature should be tested in larger samples of professionals, including LMICs may be a challenge.

'Strengths and limitations of this study'

- The strength of the study is the inclusion of a range of countries and professional backgrounds.
- The main limitations are the relatively low participation rate and restriction to the English language.
- There was a differential representation from HICs and LMICs.

Key words: definition, terminology, nomenclature, classification, suicide, suicidal behaviour

Introduction

An important limitation to the generalization of suicide research outcomes is the absence of international consensus on terminologies and definitions, making it difficult to compare interpretations and categories of suicidal behaviour among studies originating in different parts of the world. Attempts at developing a nomenclature for suicidal behaviours (e.g.,[1-3]) have not reached international consensus.[4] Several classifications of suicidal behaviours have also been developed and some were based on the noted nomenclatures.[5] To date, the only classification validated by the World Health Organization (WHO) is a classification restricted to methods of self-harm.[6] To our knowledge, there are no previous surveys focussing on reaching consensus on a nomenclature of suicidal behaviours. Therefore, the International Association for Suicide Prevention (IASP) has constituted a Special Interest Group for the development of an internationally applicable nomenclature of suicidal behaviours.[7]

According to official mortality statistics, 793,000 people worldwide died by suicide in 2016; 79% of these cases were from low-and-middle-income (LMIC) countries,[8] whilst most research outputs on suicidal behaviour are produced in high-income countries (HIC). Furthermore, most definitions and terms of common use originate from HIC.[9] However, since LMICs are increasingly producing research on suicide and its prevention, it would be important to obtain a clearer picture of the definitions and terms used around the world.

This article presents the results of the International Study of Definitions of English-Language Terms for Suicidal Behaviors (ISDELTSB), which aimed to assemble a minimum set of commonly understood and widely used terms and definitions to describe suicidal phenomena.[10] Furthermore, we explore differences in preferred terminologies between HICs and LMICs.

Methodology

The ISDELTSB methodology was based on a survey of members of international organisations having interest in the study and prevention of suicide, namely the IASP, the World Psychiatric Association (WPA), and the World Organization of National Colleges, Academies and Academic Associations of General Practitioners/Family Physicians' (WONCA), with an effort to recruit from the widest possible range of countries. An initial sample was built with one representative per country.[10] These individuals were expected to provide answers that were representative of the views of professionals working in their country. However, the initial call to national delegates of IASP and members of the other associations resulted in a small number of responses. It was therefore decided to widen the study sample by inviting all IASP members to participate, assuming that their interest in suicide prevention could be paralleled by a degree of knowledge in the field of suicide higher than that of lay people. Consequently, each participating country had either one 'expert' (i.e., an IASP national representative, or a member of WPA or WONCA), or at least one IASP member. All procedures were approved by the Griffith University's Human Research Ethics Committee (2017/601).

The survey questionnaire proposed a variety of terms and definitions commonly found in the literature. Details about the questionnaire and other details about methodology are presented in an open access journal.[10]

Sample characteristics

Data were collected in 2018. Initially, as said, respondents comprised only IASP national representatives; among the 62 existing national delegates of the association, 40 agreed to join the study. Three more countries were identified – respectively - by two people designated by the WPA and one by the WONCA. Another three participants were eventually identified by the staff of Australian Institute for Suicide Research and Prevention's (AISRAP) among those countries with no IASP delegate.

In this way, representatives from 46 countries took part to the study. To further increase the number of participants, invitation to join the study was extended to all members of IASP. Out of 408 IASP regular members (excluding national delegates), 80 agreed to take part in the study. The final number of consenting respondents was 126 from 63 countries or territories, 37 from 30 LMICs and 89 from 33 HICs. The list and the map of participating countries are available in Supplementary Table (ST) 1 and Supplementary Figure (SF) 1.

English language was an official language or one of the official languages in 23 out of 63 countries; 61 respondents were from a country in which English was not an official language and 65 were from a country where it was not. Concerning professional background of participants, 30% were medical doctors, 29% were psychologists, 10% were epidemiologists, and 31% were from 'other' professions (e.g., social worker, student, sociologist, public health professional, teacher etc).

Patient and public involvement

No patients involved.

Statistical analyses

Statistical analyses were performed using IBM SPSS Version 25.0. Our focus was on the most frequently used terms. Analyses computed odds ratios (OR) with 95% confidence intervals (95%CI) to compare HICs vs. LMICs. There were limited missing data (0-6.3%), which were left out from the analyses of specific items. To enable country-based analyses, we conducted sensitivity analyses by calculating weights for countries where there were more than one respondent, which also allowed a more even comparison between HICs and LMICs.

Results

Definition of suicide

Agreement on the definition of suicide was assessed by providing a set of statements for each of the main components of the definition: outcome, intent, knowledge, and agency.[4] Respondents had to choose the suggestion with which they agreed. The choices of respondents by LMICs vs. HICs are shown in Figure 1.

- Please, insert Figure 1

Majority (81.6%; 1 missing) agreed that, "Suicide is an act that necessarily leads to death". Regarding intent, five non-mutually exclusive statements were proposed (Figure 1). More than half of respondents agreed with the last statement (5: "Suicide is an act that may be done without explicit intent to die"). However, respondents agreed more frequently with statements 2-4 (2: "Suicide is an act that may be done with an intent other than an explicit intent to die"; 3: "Suicide is an act that may be done with an ambiguous or unclear intent"; 4: "Suicide is an act that may be done with an intent to take the risk of dying"). Respondents from HIC were more likely to choose statement 3 (OR:2.35; 95%CI: 1.03-5.36), but also in the LMIC group almost 60% of respondents agreed with this statement.

In terms of knowledge of the consequences of the act, four statements were proposed. More than half the respondents agreed with the statement: "Suicide is an act that can be performed with the knowledge of a fatal result, but the person is not certain of that result", regardless of national income. Regarding agency, more than half (60%; 1 missing) of respondents agreed with the statement, "Suicide is an act that is initiated by oneself, but not necessarily carried out by oneself to the end of the action".

Definition of non-fatal forms of suicidal behaviours

For non-fatal suicidal behaviours, a vignette method was used and a set of 16 basic clinical scenarios was proposed. For each vignette, a list of terms was proposed from which respondents had to choose a single answer. The percentages of agreement with particular terms for vignettes 1-16 according to respondents' countries' national income are presented in Figures 2 and 3.

Vignette 1 asked respondents how they would name the act of a person who harmed him- or her-self with the intention to die but survived. The majority of respondents (92.1%) named the act as a 'suicide attempt' (Figure 2). Vignette 2 described a person who harmed him- or her-self without any intention to die and survived. The answers were not unanimous; however, the highest agreement was reached for the term 'self-harm' (27.8%), followed by non-suicidal self-injury' (NSSI; 19%) and 'deliberate self-harm (17.5%). Vignette 3 described a person who harmed him- or her-self without any intention to die but died. The highest level of agreement was reached for 'suicide' (24.0%), although 'accident' was also a frequent choice (17.6%).

- Please, insert Figure 2

Vignette 4 asked respondents to define the act of a person who harmed him- or her-self, but, for whatever reasons, could not state his or her intentions and the person survived. While a 'suicide attempt' was the most frequent choice for LMIC (37.8%), HICs chose 'self-harm' most frequently (21.8%; OR:0.40; 95%CI: 0.17-0.93; 2 missing). Vignette 5 described a person who harmed him- or her-self but *did not want* to state his or her intentions and the person survived. The closest levels of agreement between income groups were for 'suicide attempt' (27.4%) even though the HIC group chose 'self-harm' most frequently (26.4%).

Vignette 6 asked respondents to define the act of a person who died as a consequence of harming him or her-self, but his or her intentions in doing so could not be known or inferred. Two answers stood

out: 'suicide' (42.1%) and 'undetermined death' (31.7%). Respondents from HICs were more likely to choose 'undetermined death' (HICs: 37.1% vs. LMICs: 18.9%; OR:2.53; 95%CI: 1.00-6.39), and respondents from LMICs 'suicide' (HICs: 37.1% vs. LMICs: 54.1%; OR:0.50; CI 95%: 0.23-1.09).

Vignette 7 described someone who occasionally thought of suicide when feeling distressed: all groups chose 'suicidal ideation' most frequently (64.8%). Vignette 8 described someone who continuously thought of suicide but had no suicidal intent. All groups chose 'suicidal ideation' most frequently (45.2%), followed by 'persistent suicidal ideation' (31%).

Figure 3 shows respondents' answers to vignettes 9 to 16 according to income level. Vignette 9 described someone who hoped for death but had no thoughts of killing him- or her-self. Respondents chose 'death wishes' (57.6%) most frequently across all groups. Vignette 10 described someone who hoped for death by killing him- or her-self, and most respondents chose the 'suicidal ideation' (61.6%) followed by 'active suicidal ideation' (32%).

- Please, insert Figure 3

The following vignettes described behaviours that could be considered as being at the boundary between behaviour and ideation and could therefore be subject to debate. Vignette 11 asked respondents to choose a term for someone who stated suicidal intention without engaging in the behaviour. Although all groups most frequently decided that the person was experiencing 'suicidal ideation' (56.9% for all), HICs' respondents were more likely to choose 'suicidal ideation' than LMICs (HICs:63.6%, LMICs:40%; OR:2.63; 95%CI: 1.18-5.87; 3 missing).

Vignette 12 described someone who mimicked (i.e. acted in a way that had the appearance of) suicidal behaviour without sustaining any injuries. The two most frequently chosen answers were 'suicidal

behaviour' (35.6%) and 'suicide threat' (19.5%). However, HICs' respondents were more likely to choose 'suicidal behaviour' (HICs: 63.6% vs. LMICs: 40%; OR:4.32; 95%CI: 1.52-12.26; 8 missing). Vignette 13 asked the respondent to define the behaviour of someone who had decided how and when to perform a suicidal act, but did not actively prepare anything. The 'suicide plan' was most commonly chosen (67.5%). Vignette 14 described someone who prepared a suicidal act (e.g. assembled pills, bought a gun, attached a rope, visited a bridge), but did not initiate it and consequently did not sustain any injuries. The two most frequently chosen options were 'preparatory suicidal behaviour' (42.6%) and 'suicide plan' (34.4%). HICs' respondents were more likely to choose 'preparatory suicidal behaviour' (HICs: 48.9% vs. LMICs: 26.5%; OR:2.65; 95%CI: 1.11-6.33; 4 missing) and the LMIC group chose 'suicide plan' most frequently (HICs: 34.1% vs. LMICs: 35.3%).

Vignette 15 asked the respondent to define the behaviour of someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but stopped him- or her-self before sustaining any injury. The 'aborted suicide attempt' was the most commonly chosen option (33.1%) followed by the 'suicide attempt' (19%). The HIC group chose the 'aborted suicide attempt' most frequently (HICs: 37.9% vs. LMICs: 20.6%; OR:2.65; 95%CI: 1.11-6.33; 5 missing) whereas the LMIC group chose 'suicide attempt' (HICs: 14.9% vs. LMICs: 29.4%; OR: 2.36; 95%CI: 0.92-6.02; 5 missing). Vignette 16 described someone who initiated a suicidal act (e.g. stood or sat on the edge of a high bridge, tied a rope around his or her neck), but was stopped by someone else before sustaining any injuries. The majority agreed on the 'interrupted suicide attempt' (58.7%), followed by the 'suicide attempt' (27.3%).

Sensitivity analyses

Changing the level of analysis from individual respondents to responses by country yielded no differences in in the most commonly chosen item; in general, the change remained within +/- 10% (ST 2 & 3). Comparisons between HICs and LMICs showed some changes in the order. For Vignettes 5 and

6, the most frequently chosen item by HICs changed into the same as in LMICs and for Vignette 3 and 14, the LMICs most predominant item became more similar to HICs (SF 2-4).

Discussion

To our knowledge, the ISDELTSB is the first empirical study aiming to assemble a minimum set of consensus based and widely used terms and definitions to describe suicidal phenomena. The results of the present study could give a contribution in this direction, while also looking at differences between HICs and LMICs regarding terminologies used. The answers of survey participants regarding the four characteristics of the definition of suicide could delineate some level of consensus. Regarding outcome, all respondents agreed that *suicide is an act resulting in death.* This sets a clear distinction between suicide and non-fatal suicidal behaviours and corresponds to the majority of definitions of suicide found in the literature.[10]

Regarding intent, more than half of respondents agreed that suicide could be undertaken *without* explicit intent to die, despite the fact that, only a few definitions of suicide do not mention intent to die as a central characteristic of the act.[1,11,12] In De Leo et al.'s[6] definition, intent targeted "wanted changes" (p. 12). These authors argued that intent to die - assumed to be at least in minimal part present (i.e. greater than zero) - can be concurrent with other purposes, and that people attempting suicide may even be trying to improve their life or have other underlying motives, such as escaping from an unbearable situation. According to the answers to our survey, *suicide is an act in which intent may not be explicit but ambiguous and unclear, and involving the risk of dying.*

In the literature, knowledge of potentially fatal outcome was often suggested as a requirement for the definition of suicide.[9,13] In the present survey, according to the vast majority of respondents, *suicide is an act carried out with the knowledge of a potentially fatal result.*

The respondents stressed the importance of distinguishing suicide from assisted suicide and euthanasia. Generally, they expressed the choice for a definition excluding the possibility of an outside agent. This appears in contradiction with most literature (e.g.,[9]). According to most respondents in this study, *suicide is an act initiated and carried out by oneself to the end of the action.* However, in our view, if widely accepted, this determination could lead to several problems, contributing to a substantial underestimation of suicide mortality. For instance, an act in which a person stands in front of a moving object (e.g., a train or a truck driven by another person) could hardly be considered as *assisted suicide*. Keeping in mind the limitations of the present survey (e.g., representativeness of the sample; clarity of vignettes; deepening of details, etc.), the indications coming from this area of our study seem to emphasize the importance of a shared set of definitions among scholars in the field of suicide. The discrepancy detected at the level of definition of suicide among study participants is of relevance and underlines the appropriateness of research efforts in the definitional domain. Indeed, if we identify what varies and explain why, we should equally succeed in identifying what does not, i.e., shared terms and definitions. Further research should thus use the same methodology and focus on a wider sample of professionals working in the field.

Evidence of intent to die is central to the definition of 'suicide attempt', a behaviour in which *a person harms him- or her-self, with the intention to die, and survives*, and is in agreement with the existing literature.[1,2,14] The term 'suicide attempt' was deemed acceptable in a wide scale survey and recommended for academic and media use.[15] 'Self-harm' was the preferred term in cases in which there was no evidence of intent to die (i.e., vignette 2) and elicited less disagreement than 'suicide attempt' when intent could not be determined (i.e., vignettes 4 and 5). In the literature, 'self-harm' and 'deliberate self-harm' have been described either in absence of suicidal intent[3,16,17] or regardless of suicidal intent.[18,19] The term '*deliberate* self-harm' was not favoured in respondents' answers; their comments suggested that it could be stigmatizing. The term 'self-harm' could thus be defined as a *non-fatal act in which a person harms him- or her-self, and intent to die is either absent or not accessible to observation*. The question remains as to whether this term could be placed in an overarching position

in a nomenclature, regardless of the level of intent to die (thus including 'suicide attempt'). Statement of intent differs depending on the person interviewed (e.g., patient, family, or clinician) and timing of the interview (e.g., intent to die could be masked or denied when the patient becomes aware of the possibility of being admitted to a locked inpatient unit). For example, Kapur et al.[20] argued against distinguishing acts of self-harm according to intent.

Based on the current results, if intent to die has been stated by the patient, it may be more appropriate to consider the term 'suicide attempt' rather than 'self-harm', even if it seems to contradict the definition of suicide resulting from this survey. One might imagine another term for fatal suicidal behaviour in which evidence is not clear (e.g., 'fatal self-harm'); however, respondents did not suggest a term for this specific situation.

Regarding 'suicidal ideation', Silverman et al.[7] distinguished between 'no ideation' vs. 'undetermined degree' vs. 'some suicidal intent', and further subdivided the categories into 'casual', 'transient', 'passive', 'active', and 'persistent'. The responses to our survey suggest a rather inclusive definition of 'suicidal ideation': *Thinking of suicide with or without suicidal intent; hoping for death by killing oneself; and, stating the presence of suicidal intention without engaging in behaviour*. Further research may consider sub-dividers such as *with/without suicidal intent, transient, reactive, persistent,* or *with communication.*

'Death wishes' were defined by respondents *as hoping for death without thoughts of killing oneself*, and were less inclusive than Balaguer et al.'s[21] 'wish to hasten death', which was an overarching category including suicidal ideation.

O'Carroll et al.[6] defined 'suicide threat' as *"any interpersonal action, verbal or nonverbal, stopping short of a directly self-harmful act that a reasonable person would interpret as communicating or suggesting that a suicidal act or other suicide-related behaviour might occur in the near future"* (p. 247). Silverman et al.[7] defined this term in a similar way. Vignette 12 was a case scenario designed to

illustrate this definition. However, many participants did not respond to this vignette, and the significant disagreement between groups should lead to caution in interpreting results.

Based on responses to our survey, a 'suicide plan' could be defined as *having decided how and when to perform a suicidal act*. This definition is comparable to that of Silverman et al.,[7] which does not include preparatory behaviour. A suggested definition should thus exclude *active preparation*.

Despite some disagreement between respondents, 'preparatory suicidal behaviour' could be defined as *preparing for a suicidal act (e.g. collecting pills, buying a gun, attaching a rope, visiting a bridge), but without initiating it and thus not sustaining any injury*. This definition is similar to that given by Posner et al.[22] However, these authors also considered 'aborted' and 'interrupted suicide attempt' and thus a *preparatory act* was an umbrella term, which was not the case for our survey. Based on results, an 'aborted suicide attempt' could be defined as an act in which a person *initiates a suicidal act (e.g. stands or sits on the edge of a high bridge; ties a rope around his or her neck; etc.), but stops him/herself before sustaining any injury* (Vignette 15).

An 'interrupted suicide attempt' could be defined as *initiating a suicidal act (e.g. standing or sitting on the edge of a high bridge, tying a rope around one's neck), but being stopped by someone else before sustaining any injury* (vignette 16). These definitions are indeed comparable to those reported by Posner et al.[22]

Differences between HICs and LMICs

Access to resources (e.g., local research activity) could have an influence on terminology. Therefore, it was expected that the level of national income has an influence on preferred terminology of the respondents, considering the fact that HICs have more resources for professionals working in suicidology, advanced health care systems, and more academic and research background than LMICs. Furthermore, there are notable historical and cultural differences (e.g. religious), which could have

further impact on the terminology. Nevertheless, lack of previous empirical studies did not enable us to propose a clear testable hypothesis.

However, our results identified some notable differences between respondents from LMICs and HICs. Respondents from HICs were more likely to agree that, in suicide, intent may be ambiguous or unclear. Differences in responses to vignette 4 (i.e., non-fatal suicidal behaviour, but person cannot state intentions) could suggest that respondents from LMICs did not distinguish non-fatal behaviours as precisely regarding intent as respondents from HICs, who were more likely to name the behaviour 'self-harm.' Interestingly in Vignette 6 (i.e. fatal suicidal behaviour with no evidence of intent), respondents from HICs were more likely to choose 'undetermined death' rather than 'suicide', which was somewhat in contradiction with an open definition of suicide regarding intent. Some differences were found for Vignette 11, 12 and 14, but none of these related to a pattern in which respondents form HICs had more precise terminology than respondents from LMICs. Overall, no clear differential pattern could be evidenced in responses given for the four characteristics of suicide, and respondents from LMICs had an equal range of terms to name the behaviours in the vignettes.

Strengths and limitations

Representatives of 63 countries (slightly less than a third of all 193 WHO member countries) participated in the ISDELTSB. If any nomenclature has to be internationally applicable, efforts should be dedicated to increasing the number of countries taking part in this type of research, especially among LMICs. It should be noted that seven out of 30 LMICs (23%) had a national suicide prevention strategy, compared to 15 out of 33 HICs (45%). Yet, despite their relatively low number, participating countries account for two thirds of the world population and three quarters of all suicides.[23]

LMICs were represented by 37 and HICs by 89 respondents, which implies a bias towards responses from HICs and the analysis showed a few notable differences. However, we conducted additional

sensitivity analyses, which gave similar results. Nevertheless, the relatively high number of LMICs included in the study was achieved by using a recruitment approach based on institutionally- and self-defined expertise. The fact that there was no operational definition regarding expertise in suicidology is another limitation to our study. However, differences between the HICs are also very likely.

The initial idea of using one 'representative' per country (the IASP national delegate) was chosen to give comparable weight to all participating countries. Poor response to initial recruitment efforts led to our extending participation to individual members of IASP. However, the final number of participants remained quite low; the obtained results thus need to be replicated in studies with bigger samples.

As mentioned in the companion paper on methodology,[3] the questionnaire was not translated into different languages but presented in English. This has probably limited participation to the study; in addition, it may have led to discrepancies in understanding questions. We need to acknowledge that all conclusions should be taken with caution.

Implications for further research

Table 1 collates the most frequently chosen terms together, with their matching definition. The resulting nomenclature can be considered as an attempt at promoting consensus in a wide range of cultural settings. It tries to encompass the whole range of suicidal behaviours and ideation. However, as mentioned above, not everything comes as crystal clear. For example, suicide was frequently interpreted as an act performed to completion by the actor itself, not involving a third agent. Intent to die appears as necessary to define a suicide attempt, but intent can be vague or unclear for a suicide. There are terms that may receive an overarching character. For instance, 'self-harm' may include behaviours in which there is no intent to die and those in which intent is unknown.

The 'preparatory suicidal behaviour' category could include both 'aborted' and 'interrupted suicide attempt' or, as suggested in our survey, these may be treated as distinct, owing to differences in the moment in which the behaviour stops (i.e. after preparations are finished or after the suicidal act is initiated).

The nomenclature presented in Table 1 should thus be considered as a working base to advance in the direction of a universal classification of suicidal behaviours.

- Please insert Table 1

Conclusion

The development of an internationally applicable nomenclature and classification of suicidal behaviours would be a long and complex process. The IASP Special Interest Group on Nomenclature would be ideally positioned to carry out this task with the help of a large and motivated international membership. Using the results of an international opinion survey, a tentative nomenclature of suicidal behaviour is proposed. Indications from this survey may be utilized by the Special Interest Group. Future developments could then be tested in large samples of professionals (e.g., clinicians, researchers), with particular attention to intercultural and interdisciplinary representativeness. One of the challenges of this process would be the involvement of LMICs, keeping in mind that online surveys like ours have only moderate success in representing LMICs.[24]

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Conflicts of interest

No conflicts to declare.

Data availability

Data can be made available upon a reasonable request.

Author contributorship

DDL originated the study idea and design, designed and critically reviewed the questionnaire, interpreted data and drafted the manuscript. BG helped design the study, designed the questionnaire, analysed and interpreted data and drafted the manuscript. MS, AB, JM, EA, KH, MP and LV contributed to the methodology, reviewed the questionnaire, interpretation of data and critically reviewed the manuscript. KA, AMCH and MH contributed to the interpretation of data and critically reviewed the manuscript. KK helped design the study, helped design and critically reviewed the questionnaire, analysed and interpreted data and critically reviewed the manuscript.

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Table 1. Recommended nomenclature of suicidal behaviours after the ISDELTSB

Designating term or expression	Definition
Suicide	An act resulting in death which is initiated and carried out by an individual to the end of the action, with the knowledge of a potentially fatal result, and in which intent may be ambiguous or unclear, may involve the risk of dying, or may not involve explicit intent to die.
Suicide attempt	An act in which a person harms him- or her-self, with the intention to die, and survives.
Self-harm	A non-fatal act in which a person harms him- or her-self intentionally, with varying motives including the wish to die.
Suicidal ideation	To think of suicide with or without suicidal intent, or hope for death by killing oneself, or state suicidal intention without engaging in behaviour.
Death wishes	To hope for death without thoughts of killing oneself.
Suicide plan	To have decided how and when to perform a suicidal act, but without active preparation.
Preparatory suicidal behaviour	To prepare a suicidal act (e.g. assemble pills, buy a gun, attach a rope, visit a bridge), but without initiating it and thus not sustaining any injury.
Aborted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but stops him/herself before sustaining any injury.
Interrupted suicide attempt	An act in which a person initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but is stopped by someone else before sustaining any injuries.

Figure 1. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

Figure 2. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

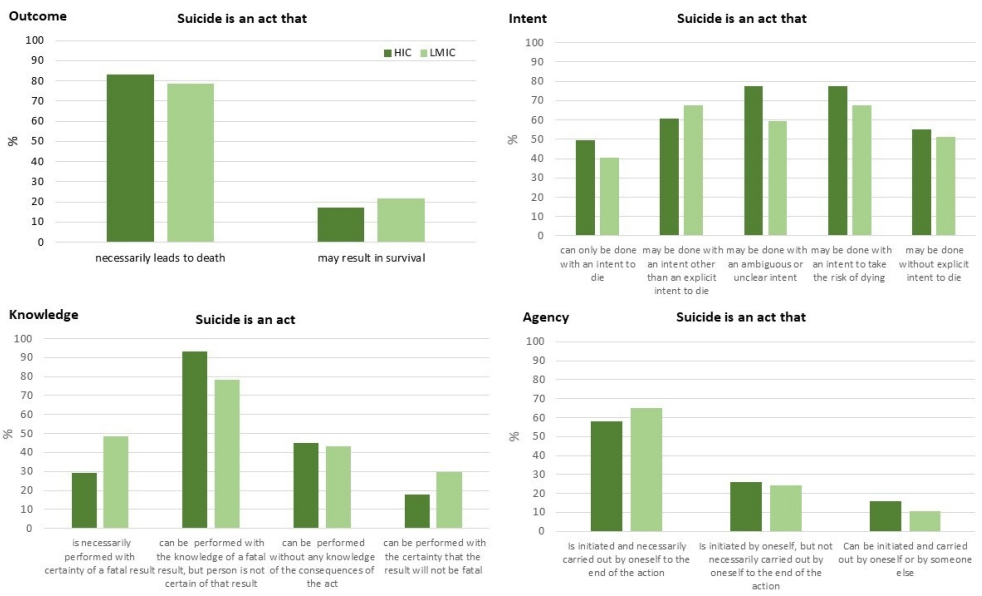


Figure 1. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

254x153mm (120 x 120 DPI)

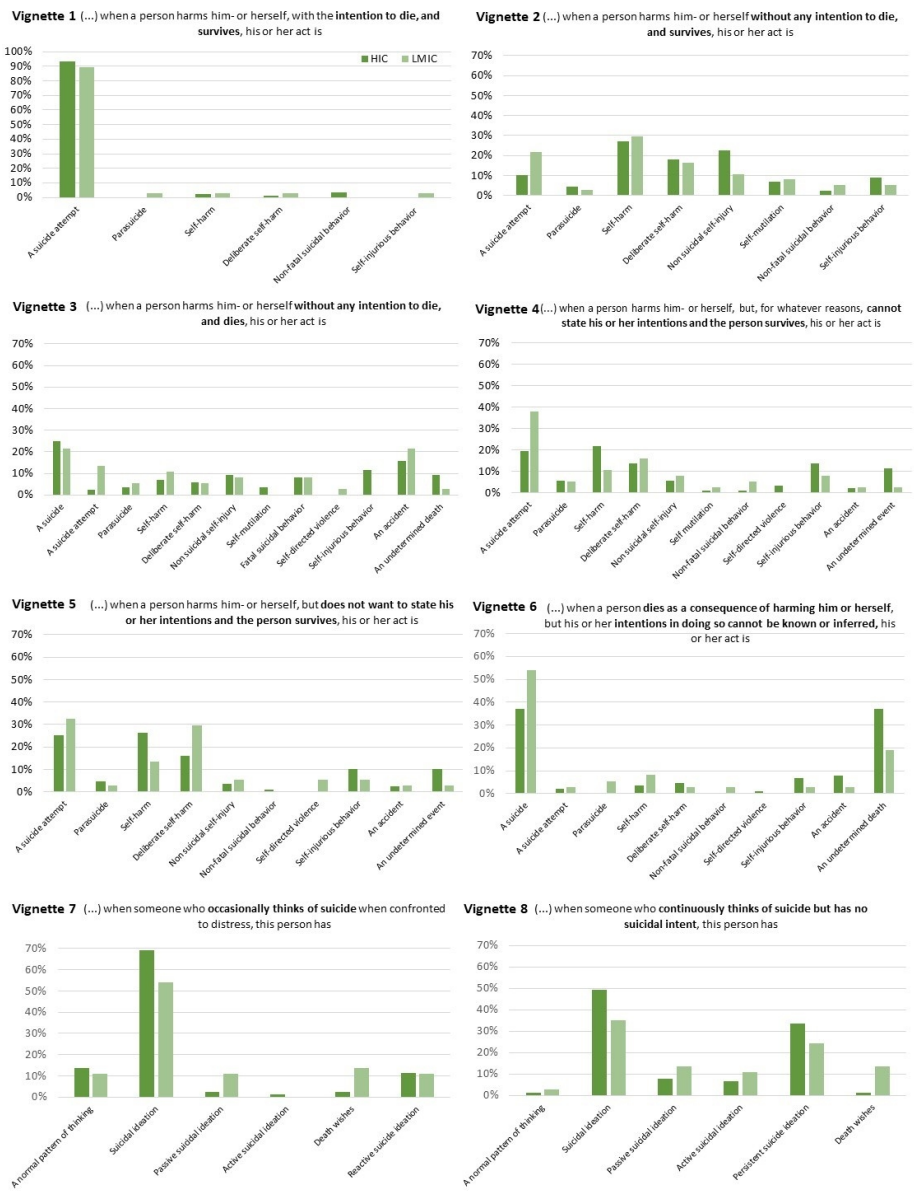


Figure 2. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

237x308mm (120 x 120 DPI)

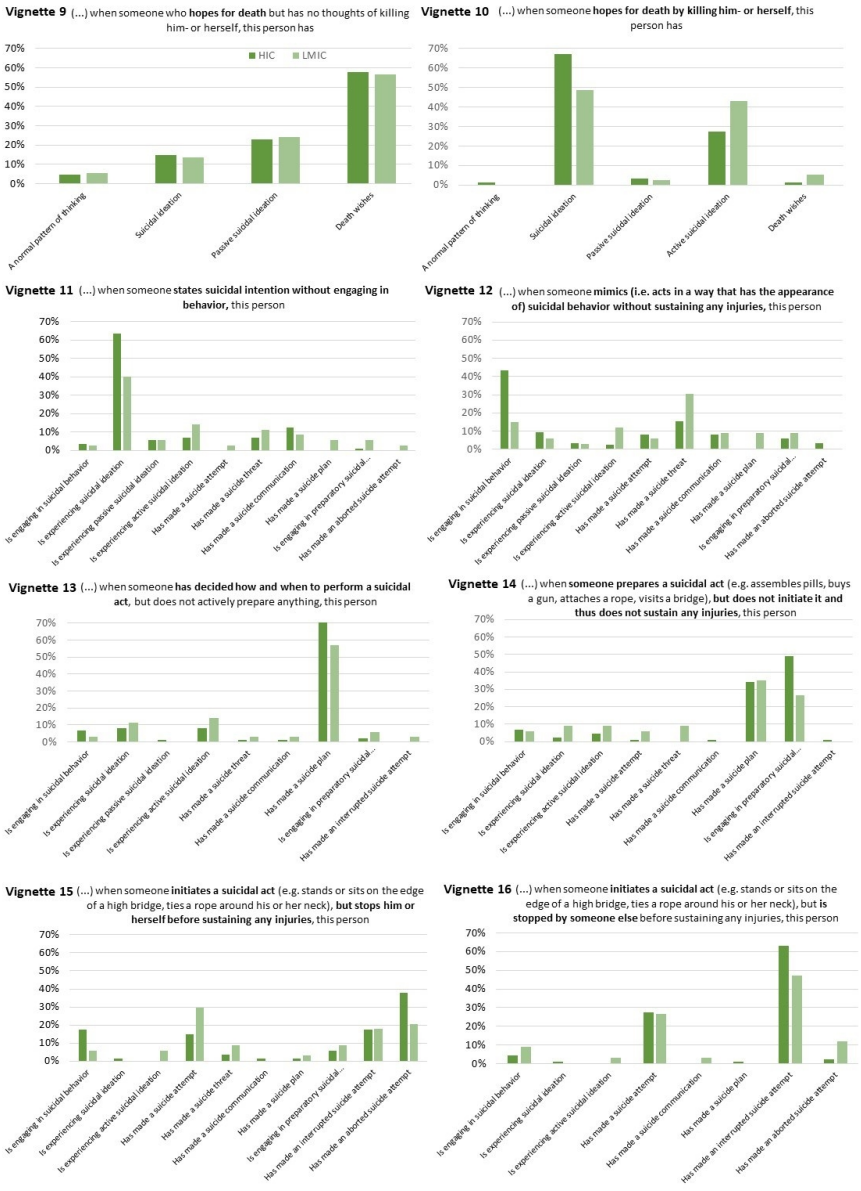


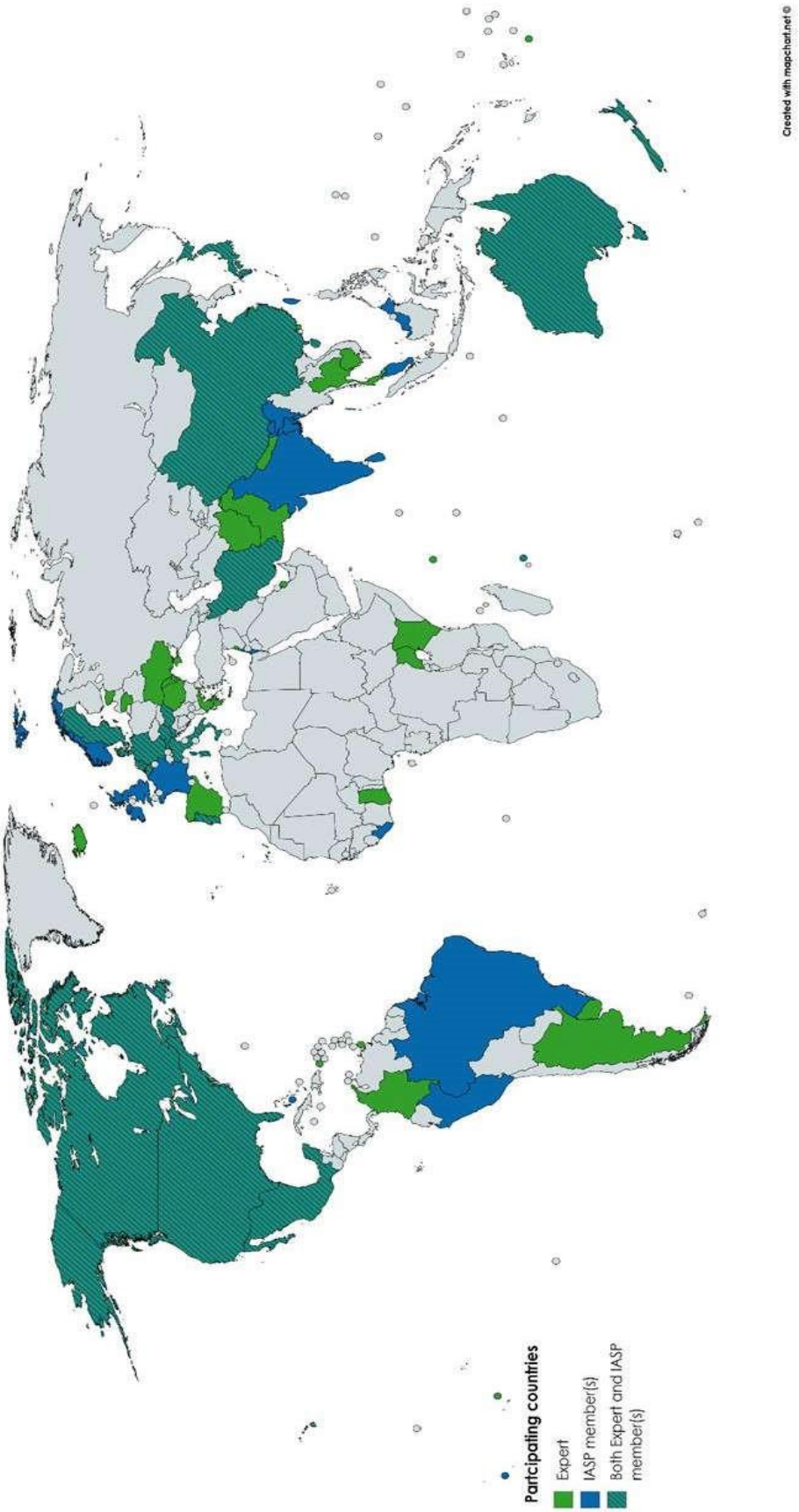
Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)

236x324mm (120 x 120 DPI)

Supplementary Table 1. Number of respondents by country/territory that participated to the International Study of Definitions and Terms for Suicidal Behaviors ©

Countries/territories	'experts'	IASP members
Africa		
Ghana	1	0
Kenya	1	0
Liberia	0	1
Mauritius	1	1
Seychelles	1	0
Uganda	1	0
America		
Argentina	1	0
Brazil	0	4
Canada	1	5
Colombia	1	0
Mexico	1	1
Peru	0	1
Puerto Rico	1	0
The Bahamas	0	1
Trinidad and Tobago	1	0
Uruguay	1	0
USA	1	8
Asia		
Afghanistan	1	0
Bangladesh	0	1
Bhutan	0	1
Cambodia	1	0
China	1	1
Hong Kong	1	0
India	0	2
Iran	1	1
Israel	0	1
Japan	1	1
Lebanon	1	0
Malaysia	0	1
Nepal	1	0
Pakistan	1	0
Qatar	1	0
Singapore	0	1
Sri Lanka	0	1
Taiwan	0	1
Thailand	1	0
Europe		

Austria	1	1
Belgium	1	1
Denmark	1	2
Estonia	1	0
France	0	2
Germany	1	1
Greece	1	0
Hungary	1	1
Iceland	1	0
Ireland	0	3
Italy	1	1
Lithuania	1	0
Moldova	1	0
Netherlands	1	2
Norway	0	3
Portugal	1	1
Romania	1	0
Slovenia	1	1
Spain	1	0
Sweden	1	1
UK	0	4
Ukraine	1	0
Oceania		
Australia	1	15
New Zealand	1	6
Cook Islands	0	1
French Polynesia	1	0
Tonga	1	0
Total	46	80



Supplementary Figure 1: Participating countries in the International Study of Definitions and Terms of Behavior

Supplementary Table 2. Individual and country-based results by main components of suicide definition

	Individual based		Country based*		
	N	%	N	%	
Outcome (one item)					
Suicide is an act that necessarily leads to death	102	81.6%	52	81.7%	
... may result in survival	23	18.4%	11	18.2%	
Missing	1		0		
Intent (five separate items)					
Suicide is an act that can only be done with an intent to die	59	46.8%	26	41.7%	
Suicide is an act that may be done with an intent other than an explicit intent to die	79	62.7%	44	69.4%	
Suicide is an act that may be done with an ambiguous or unclear intent	91	72.2%	46	73.2%	
Suicide is an act that may be done with an intent to take the risk of dying	93	74.4%	49	77.5%	(missing=1)
Suicide is an act that may be done without explicit intent to die	68	54.0%	34	53.9%	
Knowledge (four separate items)					
Suicide is an act that is necessarily performed with certainty of a fatal result	44	34.9%	26	41.2%	
Suicide is an act that can be performed with the knowledge of a fatal result, but person is not certain of that result	112	88.9%	55	87.1%	
Suicide is an act that can be performed without any knowledge of the consequences of the act	56	44.4%	26	41.9%	
Suicide is an act that can be performed with the certainty that the result will not be fatal	27	21.4%	16	26.1%	
Agency (one item)					
Suicide is an act that is initiated and necessarily carried out by oneself to the end of the action	75	60.0%	40	64.2%	
… is initiated by oneself, but not necessarily carried out by oneself to the end of the action	32	25.6%	15	24.3%	
… can be initiated and carried out by oneself or by someone else	18	14.4%	8	12.3%	
Missing	1		1		

*sensitivity analyses (calculated using weights)

Supplementary Table 3. Individual and country-based results of Vignettes

	Individual based		Country based*	
Vignette 1. In your country, when professionals (e.g. clinicians, researchers) talk about a person harms him- or herself, with the intention to die, and survives, his or her act is				
	N	%	N	%
A suicide attempt	116	92.1%	57	90.9%
Parasuicide	1	0.8%	1	1.6%
Self-harm	3	2.4%	2	3.7%
Deliberate self-harm	2	1.6%	1	0.9%
Non-fatal suicidal behavior	3	2.4%	1	1.3%
Self-injurious behavior (including self-poisoning/overdosing with medication)	1	0.8%	1	1.6%
Vignette 2. (...) when a person harms him- or herself without any intention to die, and survives, his or her act is				
	N	%	N	%
A suicide attempt	17	13.5%	11	17.7%
Parasuicide	5	4.0%	4	5.8%
Self-harm	35	27.8%	19	29.6%
Deliberate self-harm	22	17.5%	9	14.0%
Non suicidal self-injury	24	19.0%	8	12.2%
Self-mutilation	9	7.1%	4	6.9%
Non-fatal suicidal behavior	4	3.2%	3	4.0%
Self-injurious behavior (including self-poisoning/overdosing with medication)	10	7.9%	6	9.8%
Vignette 3. (...) when a person harms him- or herself without any intention to die, and dies, his or her act is				
	N	%	N	%
A suicide	30	24.0%	17	26.7%
A suicide attempt	7	5.6%	5	7.8%
Parasuicide	5	4.0%	3	5.1%
Self-harm	10	8.0%	5	8.4%
Deliberate self-harm	7	5.6%	3	4.8%
Non suicidal self-injury	11	8.8%	4	6.8%
Self-mutilation	3	2.4%	2	2.4%
Fatal suicidal behavior	10	8.0%	5	8.4%
Self-directed violence	1	0.8%	1	1.6%
Self-injurious behavior (including self-poisoning/overdosing with medication)	10	8.0%	3	5.4%
An accident	22	17.6%	11	17.5%
An undetermined death (open verdict)	9	7.2%	3	4.8%
Missing	1		0	
Vignette 4. (…) when a person harms him- or herself, but, for whatever reasons, cannot state his or her intentions and the person survives, his or her act is				
	N	%	N	%
A suicide attempt	31	25.0%	20	32.2%
Parasuicide	7	5.6%	4	7.1%
Self-harm	23	18.5%	9	15.3%
Deliberate self-harm	18	14.5%	8	13.4%
Non suicidal self-injury	8	6.5%	3	5.3%
Self mutilation	2	1.6%	1	2.2%
Non-fatal suicidal behavior	3	2.4%	1	1.4%
Self-directed violence	3	2.4%	1	1.8%

Self-injurious behavior (including self-poisoning/overdosing with medication)	15	12.1%	6	9.6%
An accident	3	2.4%	3	4.8%
An undetermined event	11	8.9%	4	6.8%
Missing	2		1	

Vignette 5. (...) when a person harms him- or herself, but does not want to state his or her intentions and the person survives, his or her act is

	N	%	N	%
A suicide attempt	34	27.4%	21	34.3%
Parasuicide	5	4.0%	3	4.8%
Self-harm	28	22.6%	12	19.1%
Deliberate self-harm	25	20.2%	12	19.9%
Non suicidal self-injury	5	4.0%	2	3.6%
Non-fatal suicidal behavior	1	0.8%	0	0.1%
Self-directed violence	2	1.6%	1	1.6%
Self-injurious behavior (including self-poisoning/overdosing with medication)	11	8.9%	4	5.9%
An accident	3	2.4%	3	4.8%
An undetermined event	10	8.1%	4	5.7%
Missing	2		1	

Vignette 6. (...) when a person dies as a consequence of harming him or herself, but his or her intentions in doing so cannot be known or inferred, his or her act is

	N	%	N	%
A suicide	53	42.1%	33	52.3%
A suicide attempt	3	2.4%	2	3.3%
Parasuicide	2	1.6%	2	3.2%
Self-harm	6	4.8%	3	4.3%
Deliberate self-harm	5	4.0%	3	4.3%
Non-fatal suicidal behavior	1	0.8%	1	1.6%
Self-directed violence	1	0.8%	1	0.8%
Self-injurious behavior (including self-poisoning/overdosing with medication)	7	5.6%	2	2.7%
An accident	8	6.3%	4	6.2%
An undetermined death (open verdict)	40	31.7%	13	21.4%

Vignette 7. (...) when someone who occasionally thinks of suicide when confronted to distress, this person has

	N	%	N	%
A normal pattern of thinking	16	12.8%	8	12.8%
Suicidal ideation	81	64.8%	40	63.0%
Passive suicidal ideation	6	4.8%	4	5.7%
Active suicidal ideation	1	0.8%	0	0.1%
Death wishes	7	5.6%	5	7.8%
Reactive suicide ideation	14	11.2%	6	10.2%
Missing	1		0	

Vignette 8. (...) when someone who continuously thinks of suicide but has no suicidal intent, this person has

	N	%	N	%
A normal pattern of thinking	2	1.6%	1	1.6%
Suicidal ideation	57	45.2%	29	46.2%
Passive suicidal ideation	12	9.5%	7	11.6%
Active suicidal ideation	10	7.9%	6	9.1%
Persistent suicide ideation	39	31.0%	15	24.1%
Death wishes	6	4.8%	5	7.4%

Vignette 9. (...) when someone who hopes for death but has no thoughts of killing him- or herself, this person has				
	N	%	N	%
A normal pattern of thinking	6	4.8%	4	5.8%
Suicidal ideation	18	14.4%	7	11.6%
Passive suicidal ideation	29	23.2%	15	23.1%
Death wishes	72	57.6%	37	59.3%
Missing	1		0	

Vignette 10. (...) when someone hopes for death by killing him- or herself, this person has				
	N	%	N	%
A normal pattern of thinking	1	0.8%	1	1.6%
Suicidal ideation	77	61.6%	37	59.0%
Passive suicidal ideation	4	3.2%	2	2.5%
Active suicidal ideation	40	32.0%	21	33.4%
Death wishes	3	2.4%	2	3.4%
Missing	1		0	

Vignette 11. (...) when someone states suicidal intention without engaging in behavior, this person				
	N	%	N	%
Is engaging in suicidal behavior	4	3.3%	2	2.6%
Is experiencing suicidal ideation	70	56.9%	32	52.2%
Is experiencing passive suicidal ideation	7	5.7%	2	3.6%
Is experiencing active suicidal ideation	11	8.9%	6	9.9%
Has made a suicide attempt	1	0.8%	1	1.6%
Has made a suicide threat	10	8.1%	6	10.3%
Has made a suicide communication	14	11.4%	8	12.5%
Has made a suicide plan	2	1.6%	1	2.0%
Is engaging in preparatory suicidal behavior	3	2.4%	2	3.6%
Has made an aborted suicide attempt	1	0.8%	1	1.6%
Missing	3		2	

Vignette 12. (...) when someone mimics (i.e. acts in a way that has the appearance of) suicidal behavior without sustaining any injuries, this person				
	N	%	N	%
Is engaging in suicidal behavior	42	35.6%	18	30.2%
Is experiencing suicidal ideation	10	8.5%	3	5.7%
Is experiencing passive suicidal ideation	4	3.4%	2	2.9%
Is experiencing active suicidal ideation	6	5.1%	5	8.6%
Has made a suicide attempt	9	7.6%	5	7.9%
Has made a suicide threat	23	19.5%	15	25.8%
Has made a suicide communication	10	8.5%	3	5.9%
Has made a suicide plan	3	2.5%	2	3.4%
Is engaging in preparatory suicidal behavior	8	6.8%	4	6.3%
Has made an aborted suicide attempt	3	2.5%	2	2.6%
Missing	8		5	

Vignette 13. (...) when someone has decided how and when to perform a suicidal act, but does not actively prepare anything, this person				
	N	%	N	%
Is engaging in suicidal behavior	7	5.7%	4	6.3%
Is experiencing suicidal ideation	11	8.9%	4	7.2%
Is experiencing passive suicidal ideation	1	0.8%	0	0.1%
Is experiencing active suicidal ideation	12	9.8%	6	10.6%
Has made a suicide threat	2	1.6%	1	2.2%
Has made a suicide communication	2	1.6%	1	2.0%

Has made a suicide plan	83	67.5%	40	65.2%
Is engaging in preparatory suicidal behavior	4	3.3%	3	4.6%
Has made an interrupted suicide attempt	1	0.8%	1	1.6%
Missing	3		2	

Vignette 14. (...) when someone prepares a suicidal act (e.g. assembles pills, buys a gun, attaches a rope, visits a bridge), but does not initiate it and thus does not sustain any injuries, this person

	N	%	N	%
Is engaging in suicidal behavior	8	6.6%	4	6.1%
Is experiencing suicidal ideation	5	4.1%	3	4.7%
Is experiencing active suicidal ideation	7	5.7%	4	5.8%
Has made a suicide attempt	3	2.5%	3	5.0%
Has made a suicide threat	3	2.5%	2	3.3%
Has made a suicide communication	1	0.8%	1	0.8%
Has made a suicide plan	42	34.4%	20	33.8%
Is engaging in preparatory suicidal behavior	52	42.6%	24	39.8%
Has made an interrupted suicide attempt	1	0.8%	1	0.8%
Missing	4		3	

Vignette 15. (...) when someone initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but stops him or herself before sustaining any injuries, this person

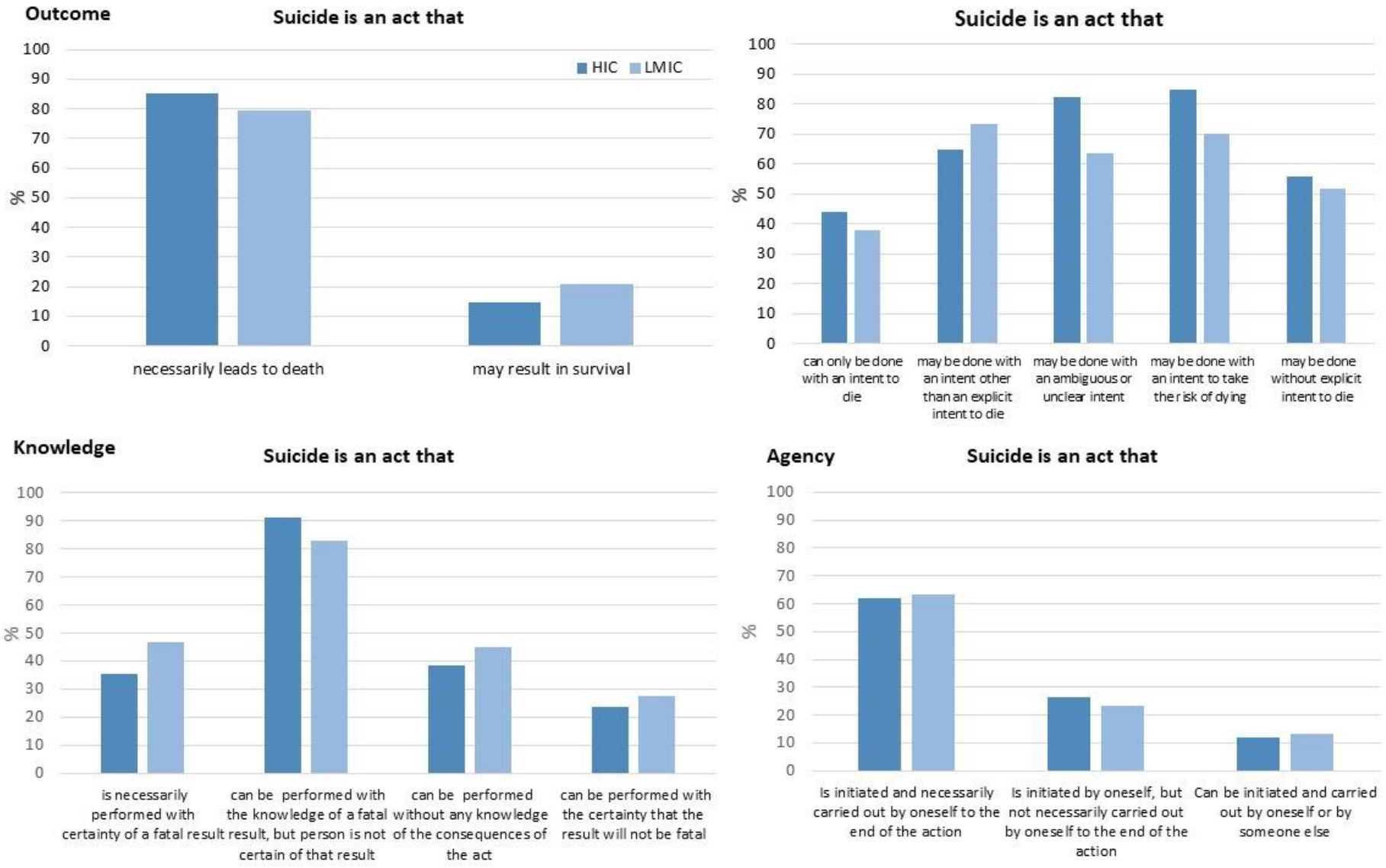
	N	%	N	%
Is engaging in suicidal behavior	17	14.0%	6	9.9%
Is experiencing suicidal ideation	1	0.8%	0	0.6%
Is experiencing active suicidal ideation	2	1.7%	2	3.3%
Has made a suicide attempt	23	19.0%	16	26.2%
Has made a suicide threat	6	5.0%	3	5.1%
Has made a suicide communication	1	0.8%	0	0.4%
Has made a suicide plan	2	1.7%	2	3.3%
Is engaging in preparatory suicidal behavior	8	6.6%	3	5.7%
Has made an interrupted suicide attempt	21	17.4%	10	16.0%
Has made an aborted suicide attempt	40	33.1%	18	29.7%
Missing	5		3	

Vignette 16. (...) when someone initiates a suicidal act (e.g. stands or sits on the edge of a high bridge, ties a rope around his or her neck), but is stopped by someone else before sustaining any injuries, this person

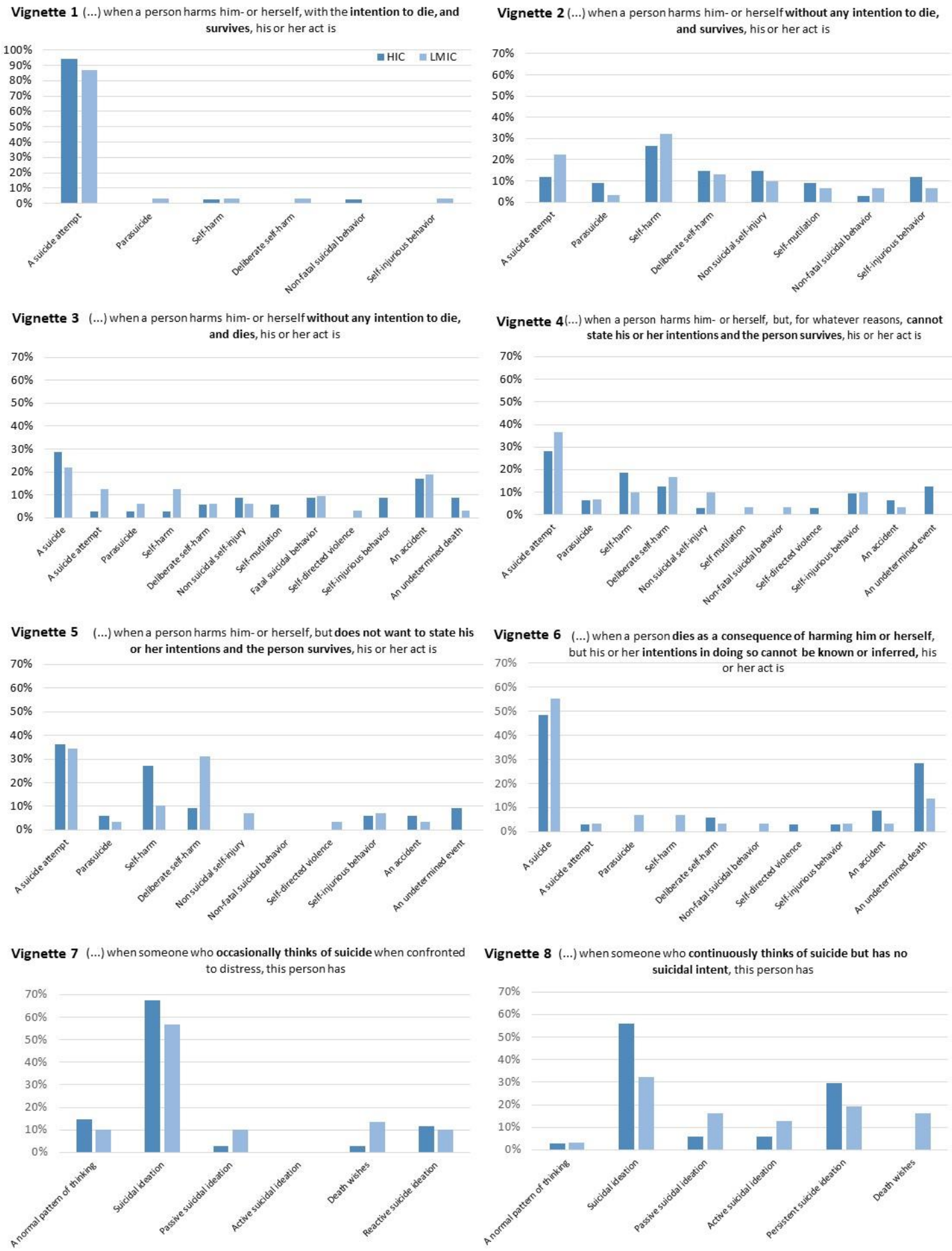
	N	%	N	%
Is engaging in suicidal behavior	7	5.8%	4	6.4%
Is experiencing suicidal ideation	1	0.8%	0	0.6%
Is experiencing active suicidal ideation	1	0.8%	1	1.7%
Has made a suicide attempt	33	27.3%	19	32.2%
Has made a suicide communication	1	0.8%	1	1.7%
Has made a suicide plan	1	0.8%	0	0.4%
Has made an interrupted suicide attempt	71	58.7%	31	51.2%
Has made an aborted suicide attempt	6	5.0%	4	6.1%
Missing	5		3	

*sensitivity analyses (calculated using weights)

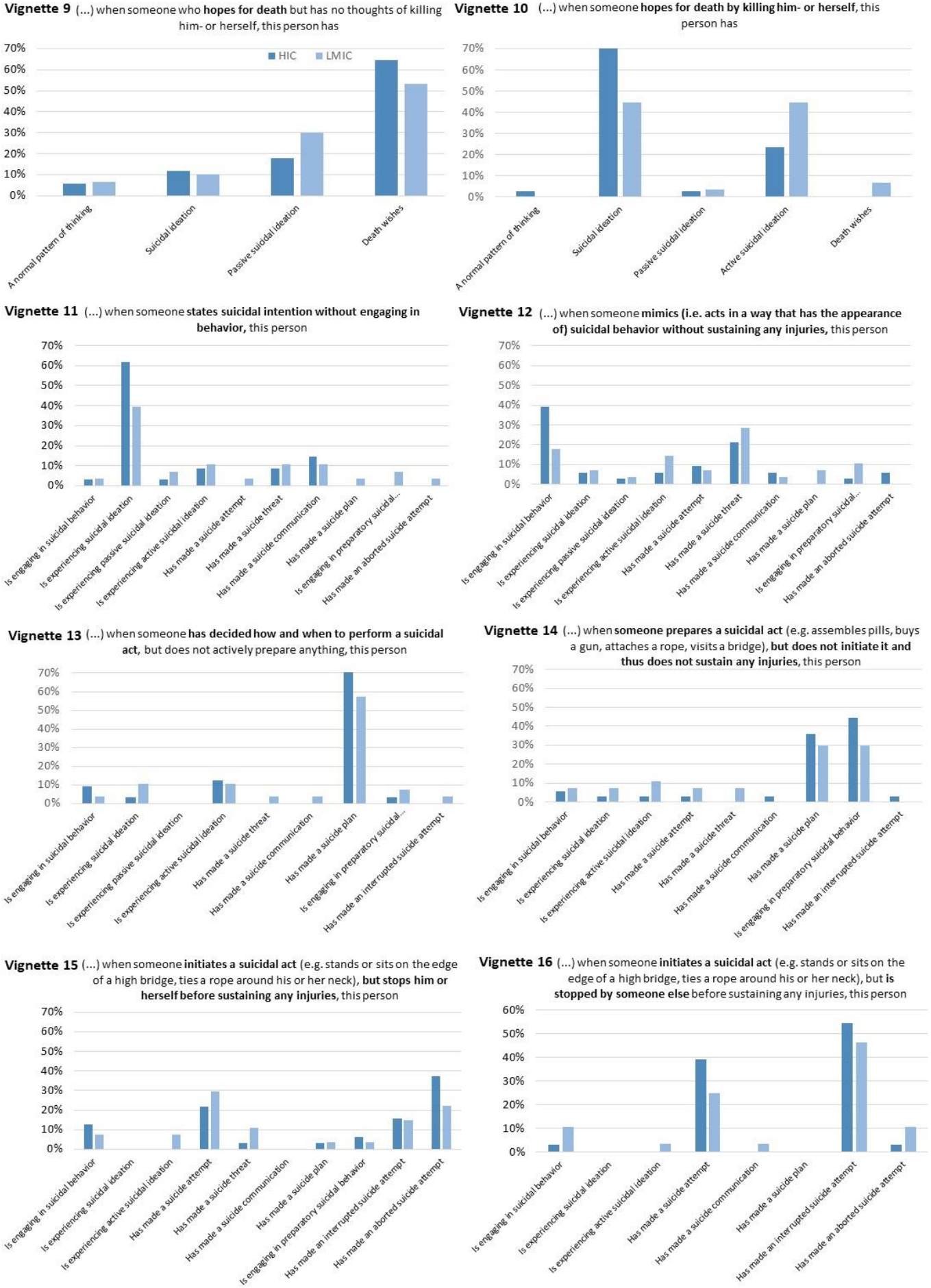
Supplementary Figure 2. Percentage of respondents who agreed with statements regarding the definition of suicide according to national income in the ISDELTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



Supplementary Figure 3. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 1-8) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



Supplementary Figure 4. Percentage of respondents agreeing to statements regarding the definition of suicidal behaviours (Vignettes 9-16) by national income in ISDTSB sample (HIC=High Income Country; LMIC=Low- and Middle-Income Country)



STROBE Statement

	Item No.	Recommendation	Page No.
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4
Objectives	3	State specific objectives, including any prespecified hypotheses	4
Method			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5-6
Participants	6	(*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up *Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls *Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants	5-6
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5-6
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	*5*
Bias	9	Describe any efforts to address potential sources of bias	5-6
Study size	10	Explain how the study size was arrived at	6
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	6
		(*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed *Case-control study*—If applicable, explain how matching of cases and controls was addressed *Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy	NA
		(*e*) Describe any sensitivity analyses	NA
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	5

		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	5-6
		(b) Indicate number of participants with missing data for each variable of interest	6-10
		© *Cohort study*—Summarise follow-up time (eg, average and total amount)	NA
Outcome data	15*	*Cohort study*—Report numbers of outcome events or summary measures over time	
		Case-control study—Report numbers in each exposure category, or summary measures of exposure	
		Cross-sectional study—Report numbers of outcome events or summary measures	6-10
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-10
		(*b*) Report category boundaries when continuous variables were categorized	6-10
		© If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	6-10
Key results	18	Summarise key results with reference to study objectives	10-12
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	14-15
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	16
Generalisability	21	Discuss the generalisability (external validity) of the study results	15-16
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	18

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.