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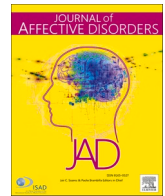
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Research paper

The importance of clinicians' and parents' awareness of suicidal behaviour in adolescents reaching the upper age limit of their mental health services in Europe

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ABSTRACT

Background: To study clinicians' and parents' awareness of suicidal behaviour in adolescents reaching the upper age limit of their Child and Adolescent Mental Health Service (CAMHS) and its association with mental health indicators, transition recommendations and mental health service (MHS) use.

Methods: 763 CAMHS users from eight European countries were assessed using multi-informant and standardised assessment tools at baseline and nine months follow-up. Separate ANCOVA's and pairwise comparisons were conducted to assess whether clinicians' and parents' awareness of young people's suicidal behaviour were associated with mental health indicators, clinician's recommendations to continue treatment and MHS use at nine months follow-up.

Results: 53.5 % of clinicians and 56.9 % of parents were unaware of young people's self-reported suicidal behaviour at baseline. Compared to those whose clinicians/parents were aware, unawareness was associated with a 72–80 % lower proportion of being recommended to continue treatment. Self-reported mental health problems at baseline were comparable for young people whose clinicians and parents were aware and unaware of suicidal behaviour. Clinicians' and parents' unawareness were not associated with MHS use at follow-up.

Limitations: Aspects of suicidal behaviour, such as suicide ideation, -plans and -attempts, could not be distinguished. Few young people transitioned to Adult Mental Health Services (AMHS), therefore power to study factors associated with AMHS use was limited.

Conclusion: Clinicians and parents are often unaware of suicidal behaviour, which decreases the likelihood of a recommendation to continue treatment, but does not seem to affect young people's MHS use or their mental health problems.

1. Introduction

Suicidal behaviour - as broadly defined by suicidal ideation, suicidal plans, and suicide attempts (Nock et al., 2009) - is a significant public health concern with death by suicide being globally the fourth leading cause of death among young people aged 15–19 years (World Health Organization, 2016). Suicidal behaviour is likely to develop along a continuum from less severe forms, such as death- and suicide ideation (i. e. wishing to be death or wishing to commit suicide), to acting on ideas or plans by serious suicide attempts, resulting in death (Stanley et al., 1992; Svetcic and De Leo, 2012). The prevalence of suicidal behaviour is exceptionally high among adolescents, with a 12-month prevalence of 14.2 % for suicidal ideation, 7.5 % for suicide plans and 4.5 % for suicide attempts (Lim et al., 2019). Given the significant impact of suicidal behaviour on young people's lives and mental health, efforts should focus on preventing this tragic outcome among young people. Timely recognition and appropriate treatment for underlying mental disorders can successfully reduce the risk for suicidal behaviour and death by suicide (Wasserman et al., 2012).

The divide between Child and Adolescent Mental Healthcare Services (CAMHS) and Adult Mental Healthcare Services (AMHS) can pose a barrier to the continuity of appropriate treatment for young people with and without suicidal behaviour. When young people reach the upper age limit of their CAMHS, it is up to their CAMHS clinician to decide whether the young person needs continued treatment and should be referred to AMHS. In a previous study investigating the clinician's recommendation, we found that self-reported suicidal behaviour was not associated with the clinician's recommendation to continue treatment (Gerritsen et al., 2022). This lack of an association was unexpected, but may be explained by clinicians' unawareness of their patients' suicidal behaviour. It is important to investigate the relationship between (awareness of) suicidal behaviour and the clinician's recommendation, as this recommendation may determine whether CAMHS users continue to receive care at mental health services (MHS) after reaching the CAMHS upper age limit and could thereby impact the long-term mental health outcomes of these young people.

Previous studies have showed that clinicians and parents are unaware of suicidal behaviour in about 50–75 % of young people with self-reported suicidal behaviour (Breton et al., 2002; Gao et al., 2015; Jones et al., 2019; Klaus et al., 2009; Yigletu et al., 2004). This unawareness may be due to the difficulties young people experience in communicating suicidal thoughts and feelings, their tendencies to minimise face-to-face disclosure of suicidal behaviour to clinicians (Gao et al., 2015;

Horesh et al., 2004; Kaplan et al., 1994), or clinicians not always actively asking about suicidal behaviour (Hom et al., 2017). As the risk of death by suicide is increased up to three months after discharge from a psychiatric ward (Wasserman et al., 2012), clinicians' and parents' unawareness of suicidal behaviour of a young person may severely affect the young person's mental health outcomes. To our knowledge, no study has yet investigated the extent and effect of clinicians' and parents' awareness of suicidality in young people at the upper age limit of their CAMHS with regard to clinicians' recommendations to continue treatment and subsequent MHS use. We investigate it based on data from the MILESTONE cohort study, the first European study investigating the longitudinal outcomes in a cohort of young people who reach the upper age boundary of their CAMHS (Singh et al., 2017).

1.1. Aims of the study

We aim to examine 1) the extent to which clinicians and parents are aware/unaware of the existence of suicidal behaviour in adolescents reaching the upper age limit of their CAMHS, 2) whether clinicians' recommendations about the future need of treatment are associated with unawareness of suicidal behaviour, 3) whether subsequent MHS use is associated with unawareness and 4) whether unawareness influences young people's mental health problems and suicidal behaviour.

2. Method

2.1. Study design and participants

The current study is part of the MILESTONE cohort study, a prospective cohort study investigating longitudinal outcomes in a cohort of CAMHS users from 39 CAMHS in Europe (Belgium, Croatia, France, Germany, Ireland, Italy, the Netherlands and the United Kingdom) (Singh et al., 2017). Supplementary Fig. S1 describes the flow of participants in the process of assessing eligibility, recruitment and follow-up. The study design, the recruitment process, and sample of the MILESTONE study have been previously described in detail (Gerritsen et al., 2021; Singh et al., 2017). The UK National Research Ethics Service Committee West Midlands – South Birmingham (15/WM/0052) and ethics boards in participating countries approved the study protocol (ISRCTN83240263; NCT03013595).

Participating young people received treatment for their mental health and approached the upper age limit of their CAMHS; they were within one year before or a maximum of three months after the upper

age limit. They had a minimum IQ of 70 or no indication of intellectual impairment and were (expected to be) able to complete questionnaires. A clinician (a mental health professional responsible for, or coordinating, the treatment for the young person) and a parent were also asked to participate in the study and could be included into the study at any time-point if they provided consent. Country-specific consent procedures were followed, according to national laws and medical ethical committee regulations. In total 763 young people between the ages of 15.2–19.6 years ($M_{\text{age}} = 17.5$, 60 % female) completed the baseline assessment. At nine months follow-up, 29 young people (3.8 %) had withdrawn from the study.

2.2. Procedure

After informed consent was obtained, young people and their parents were invited for a baseline assessment at their CAMHS, approximately six months before reaching the upper age limit. We conducted interviews to collect sociodemographic information and information on the need for care based on the Health of the Nation Outcome Scales for Children and Adolescents (HoNOSCA; Gowers et al., 1999). Online questionnaires were completed using HealthTracker™ at the clinic or at home if necessary. Clinical information on young people was provided by clinicians or by accessing medical files. At nine months follow-up, young people and their parents were invited for a similar second assessment. Based on young people's MHS use and their preferences, this assessment took place either at their original CAMHS, current MHS, home or phone. We used information from the first assessment following baseline, as our aim was to investigate how clinicians' and parents' awareness/unawareness of young people's suicidal behaviour at baseline was related to clinicians' recommendations and how this impacted subsequent MHS use and subsequent mental health problems.

2.3. Measures

Singh et al. (2017) provide a complete overview of all measures used in MILESTONE. We describe the measures for our main constructs (suicidality, transition recommendation and service use) in detail below and list predictors. For details on the predictors and their respective respondents see Table S1.

2.3.1. Suicidality

Self-reported history of suicide attempts (yes/no) was collected during an interview with young people both at baseline and nine months follow-up, with the following question(s): "Have you ever tried to kill yourself? Have you ever attempted suicide?"

Suicidal behaviour (self-, parent- and clinician-reported; broadly defined as suicidal ideation, plans and attempts) was collected with the Transition Readiness and Appropriate Measure (TRAM) at baseline and with the Transition Outcome Measure (TROM) at nine months follow-up (Santosh et al., 2020). The frequency of self-reported suicidal behaviour at baseline and at nine months follow-up was assessed with the item: "I have suicidal thoughts, wish I was dead, imagine how I would kill myself, and/or have attempted to end my own life", which young people rated on a scale from 0 to 5 in the past six months (where 0 = *not experienced*, 1 = *rarely*, 2 = *sometimes*, 3 = *often*, 4 = *most of the time*, 5 = *all of the time*). Clinicians and parents rated a similar item: "The young person has suicidal thoughts, wishes they were dead, imagines how they would kill themselves, and/or has attempted to end their own life", also on a scale from 0 to 5. Next, suicidal behaviour was dichotomised into 0 ('*not experienced*' or '*rarely*') and 1 ('*sometimes*'–'*all of the time*') (Vander Stoep et al., 2009). For validation purposes, correlations between self-reported suicidal behaviour on the TRAM and the suicidality items of the Youth Self Report (YSR; Achenbach and Rescorla, 2001) and the Adult Self Report (ASR; Achenbach and Rescorla, 2003) were calculated, which showed strong correlations ($r = 0.61$ – 0.79 ; Table S2).

2.3.2. Transition recommendations

At baseline, clinicians indicated what type of treatment they considered most appropriate for young people: 'be discharged (1)', 'treated by GP/family doctor (2)', 'treated by other mental health services (specify) (3)', 'remain with their current service (4)' or 'transition to AMHS (5)'. We created a dichotomous variable to distinguish between a recommendation for continuity of treatment within a mental healthcare setting (3, 4 or 5) and 'discontinuity' (1 or 2). A second dichotomous variable was created for those recommended to continue their treatment to distinguish between a 'CAMHS recommendation' and an 'AMHS recommendation'.

2.3.3. Mental health service use at nine months follow-up

As part of the interview at nine months follow-up, young people indicated their current service use: being in care at CAMHS, AMHS or not using MHS (including being in care in other sectors, not MHS). We created a dichotomous variable to distinguish between 'MHS use' and 'No MHS use'. A second dichotomous variable was created for those who reported MHS use to distinguish between 'CAMHS use' and 'AMHS use'.

Socio-demographic characteristics at baseline included gender, the highest level of parental education, country, living situation and education/employment.

Mental health indicators included clinical classifications as registered in medical files, a need for care score (HoNOSCA; based on interviews with young people, parents and clinicians), a clinician-rated severity of psychopathology score (Clinical Global Impression – Severity scale; CGI-S) (Guy, 1976), and self-reported internalising and externalising problems scores (YSR/ASR). Need for care, internalising and externalising problem scores were assessed both at baseline and at nine months follow-up. Clinical classifications and clinician-rated severity of psychopathology were not available at nine months follow-up for young people not receiving mental healthcare at that time-point.

Aspects of psychosocial functioning and experiences at baseline included psychological quality of life (World Health Organization Quality of Life Brief Inventory; WHOQOL-BREF) (Whoqol Group, 1998), everyday functional skills (Specific Levels of Functioning; SLOF) (Schneider and Struening, 1983), independent behaviour (Independent Behaviour During Consultations Scale; IBDCS) (van Staa and On Your Own Feet Research Group, 2011), bullying (Wolke and Sapouna, 2008; Zwierzyńska et al., 2013) and life-events.

2.4. Statistical analyses

2.4.1. Frequency of suicidal behaviour

First, frequencies of a history of suicide attempts at baseline were calculated. *t*-Tests and chi-square tests were used to compare the socio-demographic and clinical characteristics of young people with and without a history of suicide attempts at baseline.

Secondly, frequencies of self-, clinician- and parent-reported suicidal behaviour at baseline were described. We used an ANCOVA with Tukey's pairwise comparisons to assess whether young people, clinicians and parents differed in their reported suicidal behaviour. Furthermore, we dichotomised suicidal behaviour (yes/no) to calculate kappa coefficients for inter-rater agreement.

Lastly, ordinal mixed models were used to assess whether the frequency distribution of self-reported suicidal behaviour was associated with clinicians' awareness of young people's suicidal behaviour. To indicate clinicians' awareness of suicidal behaviour, a grouping variable was created based on discrepancies between self- and clinician-reported suicidal behaviour with labels 'self- and clinician-reported', 'clinician-reported', 'self-reported' and 'not reported'. A similar grouping variable was created for self- and parent-reported suicidal behaviour.

2.4.2. Associations with awareness of suicidal behaviour

First, separate ANCOVAs and Tukey's pairwise comparisons were conducted to investigate whether clinicians' awareness of young

people's suicidal behaviour was related to 1) mental health and psychosocial functioning at baseline; 2) clinicians' recommendation to continue treatment at baseline and 3) actual MHS use at nine months follow-up. For each separate ANCOVA, clinicians' awareness of suicidal behaviour was entered as a grouping variable and mental health indicators at baseline, aspects of psychosocial functioning at baseline, transition recommendations at baseline and MHS use at nine months follow-up were entered as dependent variables.

Secondly, additional ANCOVAs and Tukey's pairwise comparisons were conducted to investigate whether clinicians' awareness of suicidal behaviour was related to change in mental health indicators. Change in mental health indicators between baseline and nine months follow-up was calculated by subtracting the value at baseline from the value at follow-up. For each ANCOVA, clinicians' awareness of suicidal behaviour was entered as a grouping variable and change in mental health indicators as dependent variables. We hypothesised that for young people whose clinician was unaware of suicidal behaviour and did not receive treatment within mental healthcare at follow-up, mental health indicators would change differently when compared with those for young people who did receive treatment within mental healthcare at follow-up. We therefore tested whether adding the interaction between clinicians' awareness of suicidal behaviour and MHS use improved the model fit.

Finally, to assess relationships with parents' awareness of young people's suicidal behaviour, the analyses described above were repeated with parents' awareness of suicidal behaviour entered as a grouping variable.

ANCOVAs investigating change in mental health were adjusted for gender, country, parental education level, baseline mental health and MHS use at nine months follow-up to account for potential confounding. All other ANCOVAs and the ordinal mixed models were adjusted for gender, country and parental education level. As the data were clustered, the site was added as a random effect for each ANCOVA and ordinal mixed model. Analyses were performed using R Statistics for Windows (R Core Team, 2020), with a significance level of $\alpha = 0.05$.

2.4.3. Missing data and multiple imputations

Young people with missing data on clinician-reported suicidal behaviour ($n = 123$) were compared to young people for whom these data were available ($n = 640$). Data were more frequently missing in young people with self-reported suicidal behaviour ($p = .015$), self-reported internalising problems in the borderline/clinical range ($p = .041$), and if the information on self-reported suicidal behaviour were missing ($p < .001$) as well. These analyses were repeated for missing data on parent-reported suicidal behaviour ($n = 184$) compared to young people for whom these data were available ($n = 579$). Data were more frequently missing for females ($p = .037$), young people with self-reported suicidal behaviour ($p < .001$), self-reported internalising problems in the borderline/clinical range ($p = .005$), externalising problems in the borderline/clinical range ($p = .018$), more severe clinician-rated psychopathology ($p < .001$) and if information on self-reported suicidal behaviour ($p < .001$) and clinician-reported suicidal behaviour ($p < .001$) were missing as well.

Before ANCOVAs and Tukey's pairwise comparisons were performed, we applied multiple imputation on all variables included in the analyses to account for missing data using mice (van Buuren and Groothuis-Oudshoorn, 2011) and miceadds (Robitzsch and Grund, 2020). We used pooled estimates from 30 imputed datasets to calculate estimated marginal means (EMM) and proportions. To describe sample characteristics and frequencies, original non-imputed data were used.

3. Results

In total, 763 young people who approached the upper age limit of their CAMHS were included in the MILESTONE cohort and completed the baseline assessment. Sample characteristics are shown in Table S3.

3.1. Suicidal behaviour at baseline

A quarter of young people ($n = 196$) reported a lifetime history of suicide attempts at baseline. A history of suicide attempts was more likely among young people with a female gender ($p < .001$), not following education ($p = .001$), with multiple clinical classifications ($p = .007$), with a classification of a severe mental disorder ($p < .001$), a classification of an emotional disorder ($p < .001$), and with more frequent self-reported suicidal behaviour at baseline ($p < .001$). A history of suicide attempts was less likely among young people with a classification of a behavioural/neurodevelopmental disorder ($p < .001$).

Table 1 presents frequencies of young people's suicidal behaviour (broadly defined as suicidal ideation, plans and attempts) reported by young people, clinicians, and parents collected at baseline.

Analyses on dichotomised suicidal behaviour as reported by the different informants showed that young people were more likely to report suicidal behaviour than their clinicians (OR 1.81, 95 % CI [1.32–2.48], $p < .001$) and parents (OR 2.01, 95 % CI [1.45–2.78], $p < .001$). Agreement on reported suicidal behaviour was moderate for both young people and clinicians (81.9 %, kappa = 0.45, $p < .001$) and for young people and parents (83.6 %, kappa = 0.46, $p < .001$). This moderate agreement is mainly explained by a majority agreeing on the absence of suicidal behaviour, as in more than half of young people with self-reported suicidal behaviour, suicidal behaviour was not reported by clinicians (53.5 %) or parents (56.9 %) (Table 2). The agreement on suicidal behaviour between clinicians and parents was moderate as well (89.3 %, kappa = 0.53, $p < .001$), but 44.4 % of clinicians reported suicidal behaviour while parents did not and 36.5 % of parents reported suicidal behaviour while clinicians did not.

Ordinal mixed models showed that when clinicians were unaware of suicidal behaviour, self-reported suicidal behaviour (ranging from 'sometimes' to 'all of the time') was reported less often compared to when clinicians were aware of the suicidal behaviour (OR = 0.59, 95 % CI [0.40–0.87], $p = .008$). Similar results were found for parental awareness of self-reported suicidal behaviour (OR = 0.55, 95 % CI [0.36–0.85], $p = .007$).

3.2. Clinicians' and parents' awareness of suicidal behaviour in relation to mental health indicators and aspects of psychosocial functioning at baseline

Table 3 and Fig. 1 present how mental health and psychosocial functioning at baseline are related to clinicians' awareness of suicidal behaviour. Sample characteristics per group are shown in Table S4.

We focused specifically on comparing young people for whom the clinician was aware of suicidal behaviour ('self- and clinician-reported') with young people for whom the clinician was unaware of suicidal behaviour ('self-reported'). Clinicians' unawareness of suicidal behaviour was associated with a lower need for care score ($t(746) = -0.32$, $p < .001$), less severe clinician-rated psychopathology ($t(749) = -0.85$, $p < .001$), a lower likelihood of self-reported history of suicide attempts

Table 1
Frequency of young people's suicidal behaviour (n (%)).

	Self-reported ($N = 763$)	Clinician-reported ($N = 763$)	Parent-reported ($N = 763$)
Suicidal behaviour	192 (25.2)	105 (13.8)	77 (10.1)
Sometimes	93 (12.2)	67 (8.8)	47 (6.2)
Often	55 (7.2)	32 (4.2)	24 (3.2)
Most of the time	29 (3.8)	6 (0.8)	4 (0.5)
All of the time	15 (2.0)	–	2 (0.0)
No suicidal behaviour	524 (68.7)	535 (70.1)	502 (65.8)
No	424 (55.6)	446 (58.5)	460 (60.3)
Rarely	100 (13.1)	89 (11.7)	42 (5.5)
Missing	47 (6.2)	123 (16.1)	184 (24.1)

Note. Original, non-imputed data.

Table 2Informant discrepancies between self- and clinician-reported suicidal behaviour ($n = 617$) and self- and parent-reported suicidal behaviour ($n = 568$).

		Clinician-reported				Parent-reported			
		Suicidal behaviour		No suicidal behaviour		Suicidal behaviour		No suicidal behaviour	
		<i>N</i>	<i>CP</i>	<i>N</i>	<i>CP</i>	<i>N</i>	<i>CP</i>	<i>N</i>	<i>CP</i>
Self-reported	Suicidal behaviour	72	(71.3)	83	(16.1)	56	(74.7)	74	(15.0)
	RP	(46.4)		(53.5)		(43.1)		(56.9)	
	No suicidal behaviour	29	(28.7)	433	(83.9)	19	(25.3)	419	(85.0)
	RP	(6.3)		(93.7)		(4.3)		(95.7)	

Note. RP = row percentage, CP = column percentage.

Table 3

Self- and clinician-reported suicidal behaviour in relation to mental health indicators, aspects of psychosocial functioning and experiences at baseline.

	Suicidal behaviour at baseline			
	Self- and clinician-reported (a)	Clinician-reported (b)	Self-reported (c)	None-reported
Mental health indicators				
Emotional disorder ^d	0.69 [0.56–0.79]	0.84 [0.65–0.93]	0.69 [0.57–0.79]	0.52 ^{a,b,c} [0.45–0.59]
Behavioural/neurodevelopmental disorder ^e	0.23 [0.13–0.37]	0.16 [0.07–0.34]	0.23 [0.14–0.35]	0.43 ^{a,b,c} [0.34–0.54]
Severe mental disorder ^f	0.23 [0.14–0.35]	0.13 [0.05–0.28]	0.13 [0.07–0.23]	0.09 ^a [0.06–0.14]
Need for care (HoNOSCA)	1.4 [1.3–1.5]	1.2 [1.0–1.3]	1.0 ^a [0.9–1.1]	0.8 ^{a,b,c} [0.7–0.9]
Severity of psychopathology (CGI-S)	4.6 [4.3–4.8]	4.1 [3.7–4.6]	3.7 ^a [3.4–4.0]	3.3 ^{a,b,c} [3.1–3.4]
Internalising problems (YSR/ASR)	72.5 [70.1–74.8]	65.7 ^a [62.2–69.2]	69.2 [66.9–71.5]	58.0 ^{a,b,c} [56.5–59.5]
Externalising problems (YSR/ASR)	60.0 [57.7–62.3]	54.8 ^a [51.4–58.2]	57.6 [55.3–59.8]	51.6 ^{a,c} [50.1–53.1]
History of suicide attempts	0.57 [0.44–0.68]	0.50 [0.32–0.68]	0.33 ^a [0.23–0.44]	0.12 ^{a,b,c} [0.08–0.16]
Aspects of psychosocial functioning				
Psychological quality of life (WHOQOL-BREF)	8.4 [7.8–9.1]	10.9 ^a [10.0–11.8]	9.9 ^a [9.2–10.5]	13.5 ^{a,b,c} [13.0–13.9]
Everyday functional skills (SLOF)	4.2 [4.1–4.3]	4.3 [4.1–4.5]	4.3 [4.2–4.5]	4.4 [4.3–4.4]
Independent behaviour (IBDCS)	1.8 [1.6–2.0]	2.0 [1.7–2.3]	2.0 [1.8–2.2]	1.7 [1.6–1.9]
Experiences				
Victim of bullying	0.76 [0.66–0.84]	0.71 [0.54–0.83]	0.74 [0.64–0.82]	0.60 ^{a,c} [0.54–0.67]
Number of life events	2.7 [2.3–3.1]	2.1 [1.5–2.7]	2.3 [1.9–2.7]	1.6 ^{a,c} [1.4–1.8]

Note. ANCOVAs and Tukey's pairwise comparisons were performed to assess group differences, taking into account clustering of the data and corrected for gender, parental education level and country. Proportions [95 % CI] are presented for binary outcomes (History of Suicide Attempts, Victim of Bullying and clinical classifications) and estimated marginal means [95 % CI] for other outcomes. Ranges are: HoNOSCA [0–4], CGI-S [1–7], WHOQOL-BREF [4–20], IBDCS [0–4] and SLOF [1–5]. YSR/ASR are presented as *t*-scores with a *t*-score <60 as cut-off for the normal and >63 as cut-off for the clinical range.

^a Differs from 'self- and clinician-reported' with $p < .05$.

^b Differs from 'clinician-reported' with $p < .05$.

^c Differs from 'self-reported' with $p < .05$.

^d Combination of depressive, anxiety, eating, trauma, obsessive-compulsive and somatic disorders.

^e Combination of ADHD, ASD and CD.

^f Combination of bipolar, personality and schizophrenia spectrum disorders.

(OR = 0.37, 95 % CI [0.17–0.83], $p = .008$) and a higher self-reported psychological quality of life score ($t(748) = 3.64$, $p = .002$). In addition, both groups differed significantly on almost all domains from the young people without suicidal behaviour ('none reported' group).

Similar results were found for young people for whom the parent was aware vs. unaware of suicidal behaviour. However, parental unawareness of suicidal behaviour was also associated with a lower internalising problems score ($t(748) = -4.19$, $p = .022$) and a higher everyday functional skills score ($t(746) = 3.28$, $p = .006$) (Table S5, Fig. S2).

3.3. Clinicians' and parents' awareness of suicidal behaviour in relation to clinicians' recommendations to continue treatment and subsequent mental health service use

Fig. 2 shows the proportion of young people who received a recommendation to continue treatment and the proportion of young people who continued to use mental health services (MHS) at nine months follow-up depending on the presence of self-reported suicidal behaviour and clinicians' awareness of this behaviour. Almost all young people for whom the clinician was aware of self-reported suicidal behaviour received a continuity-of-care recommendation (96 %), while

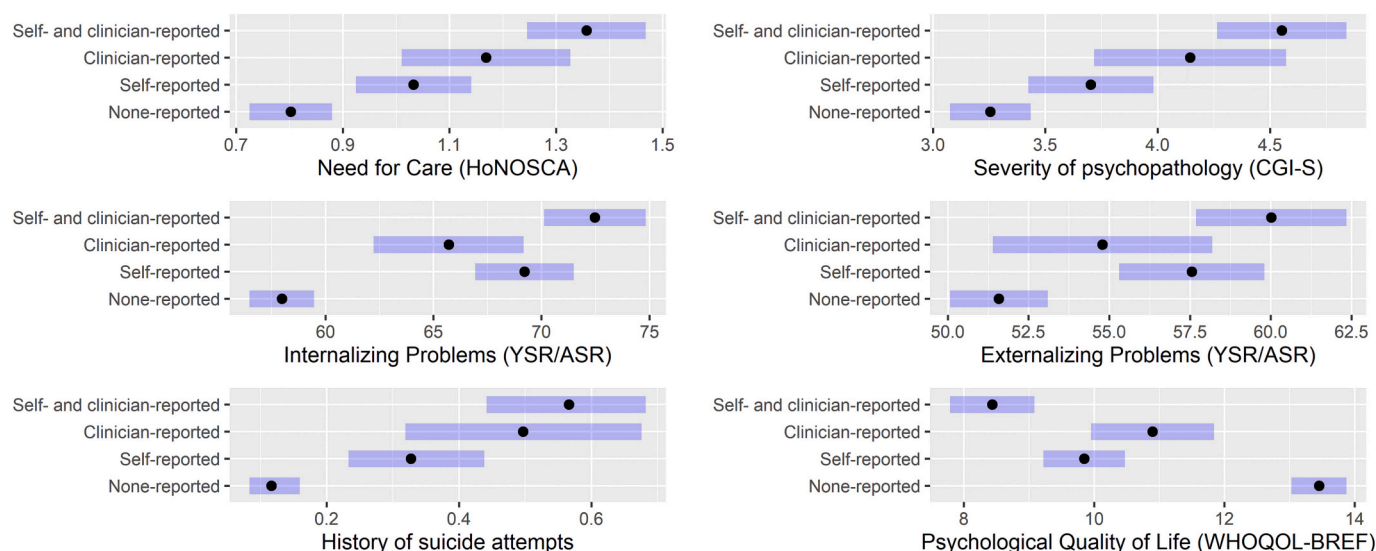


Fig. 1. Self- and clinician-reported suicidal behaviour in relation to mental health indicators and aspects of psychosocial functioning at baseline.

Note. ANCOVAs and Tukey's pairwise comparisons were performed to assess informant discrepancy group differences, taking into account clustering of the data and corrected for gender, parental education level and country. 95 % confidence intervals are presented for proportions of a history of suicide attempts and estimated marginal means of other outcomes. Ranges are: HoNOSCA [0–4], CGI-S [1–7] (mean item scores) and WHOQOL-BREF [4–20] (mean domain score). YSR/ASR are presented as *t*-scores with a *t*-score < 60 as cut-off for the normal and >63 as cut-off for the clinical range.

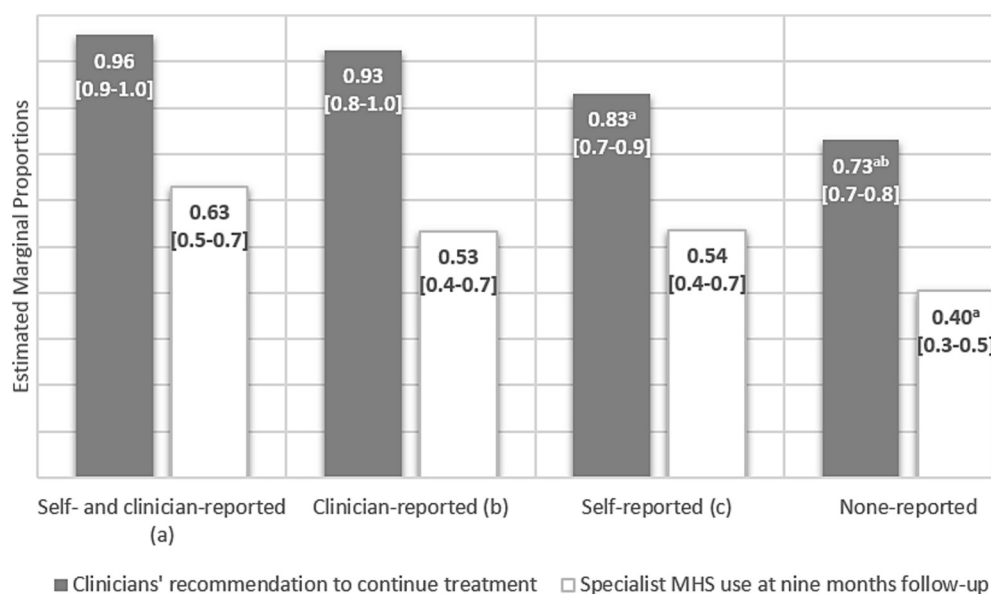


Fig. 2. Self- and clinician-reported suicidal behaviour in relation to clinicians' recommendations to continue treatment at baseline and MHS use at nine months follow-up.

Note. ANCOVAs and Tukey's pairwise comparisons were performed to assess informant discrepancy group differences, taking into account clustering of the data and corrected for gender, parental education level and country. Estimated Marginal Proportions [95 % CI] are presented for young people who received a recommendation to continue treatment and for young people who reported MHS use at follow-up. ^aThe proportion differs from 'Self- and clinician-reported' with $p < .05$, ^b the proportion differs from 'clinician-reported' with $p < .05$.

young people for whom the clinician was not aware of self-reported suicidal behaviour were less likely to receive a recommendation for continuity of care (83 %; OR = 0.20, 95 % CI [0.07–0.60], $p = .001$). At nine months follow-up, MHS use of young people for whom the clinician was not aware of suicidal behaviour (54 %) did not differ from MHS use of young people for whom the clinician was aware of suicidal behaviour (63 %; OR = 1.47, 95 % CI [0.67–3.23], $p = .590$), or from MHS use of young people who did not report suicidal behaviour (40 %; OR = 1.71, 95 % CI [0.91–3.20], $p = .123$) (Fig. 2). Similar patterns were found for self- and parent-reported suicidal behaviour (Fig. S3).

Clinicians' and parents' awareness of young people's suicidal behaviour was not related to the recommendation to continue treatment in either CAMHS or AMHS (Table S6A and B). Due to the small proportion of young people in care at AMHS at nine months follow-up ($n = 70$), group differences on actual AMHS use could not be interpreted.

3.4. Suicide attempts during follow-up and clinicians' and parents' awareness of suicidal behaviour in relation to change in mental health indicators between baseline and nine months follow-up

A total of 27 young people (3.5 %) reported a history of suicide attempts at nine months follow-up, but not at baseline. As other suicidal behaviours often precede suicide attempts, we assessed the proportion of these 27 young people who reported suicidal behaviour at baseline. Original, non-imputed baseline characteristics are presented in Table S3. Most of them ($n = 18$, 66.7 %) did not report suicidal behaviour. For those who did report suicidal behaviour ($n = 8$, 29.6 %) most clinicians ($n = 5$, 62.5 %) and some parents ($n = 3$, 37.5 %) were unaware of this self-reported suicidal behaviour.

Between baseline and nine months follow-up, self-reported internalising problems and self-reported suicidal behaviour scores changed

differently between the ‘awareness’-groups. For young people with no self-reported suicidal behaviour at baseline the self-reported internalising problems score showed a decrease, which differed from the internalising problems score for young people with self-reported suicidal behaviour at baseline which remained stable (irrespective of whether clinicians were aware ($t(747) = 2.89, p = .021$) or unaware of suicidal behaviour ($t(743) = 2.79, p = .028$)). For young people for whom the clinician was aware of self-reported suicidal behaviour at baseline, the self-reported suicidal behaviour score showed an increase, which differed from the decreased self-reported suicidal behaviour score for young people with no self-reported suicidal behaviour at baseline ($t(746) = 2.96, p = .017$). The self-reported internalising problems and self-reported suicidal behaviour scores did not change differently for young people for whom the clinician was aware versus unaware of suicidal behaviour (Table 4). Adding an interaction term between clinicians’ awareness of young people’s suicidal behaviour and MHS use at nine months follow-up did not improve the fit of the different models. This suggests that mental health indicator scores did not improve less, or worsen more, for young people whose clinicians were unaware of suicidal behaviour at baseline and who did not receive treatment at follow-up compared to those who did receive treatment at follow-up.

Groups based on self- and parent-reported suicidal behaviour showed the following differences in change scores: the internalising problems score of young people with no self-reported suicidal behaviour at baseline decreased. At the same time, the internalising problems score remained stable for young people with self- and parent-reported suicidal behaviour at baseline ($t(745) = 3.26, p = .006$). Furthermore, for young people with self- and parent-reported suicidal behaviour at baseline, the suicidal behaviour score increased, while it remained stable for those whose parent was unaware of suicidal behaviour ($t(746) = 3.80, p = .001$) and decreased for those with no self-reported suicidal behaviour ($t(746) = 3.66, p = .002$) (Table S7).

4. Discussion

We describe clinicians’ and parents’ awareness of suicidal behaviour of young people reaching the upper age limit of their CAMHS and its association with mental health indicators, psychosocial functioning, the clinicians’ recommendation to continue treatment and subsequent MHS use. We found that just over half of clinicians and parents were unaware of young people’s self-reported suicidal behaviour. This unawareness was associated with a smaller chance of receiving a clinicians’ recommendation to continue treatment. Self-reported mental health and psychosocial functioning were similarly affected compared to young people whose clinicians and parents were aware of suicidal behaviour. However, despite a lower likelihood to be recommended to continue treatment, we did not find differences in MHS use at nine months follow-up.

Table 4

Self- and clinician-reported suicidal behaviour in relation to change in mental health between baseline and 9-month follow-up.

	Suicidal behaviour at baseline			
	Self- and clinician-reported (a)	Clinician-reported (b)	Self-reported (c)	None-reported
Need for care (HoNOSCA)	−0.06 [−0.16–0.04]	−0.09 [−0.23–0.05]	−0.11 [−0.20 to −0.02]	−0.17 [−0.23 to −0.10]
Internalising problems (YSR/ASR)	1.20 [−1.06–3.47]	0.93 [−2.29–4.16]	0.88 [−1.24–3.00]	−2.26 ^{a,c} [−3.59 to −0.93]
Externalising problems (YSR/ASR)	0.82 [−0.90–2.53]	−0.07 [−2.62–2.48]	1.02 [−0.61–2.64]	−0.87 [−1.84–0.10]
Self-reported suicidal behaviour (TRAM/TROM)	0.36 [0.00–0.71]	0.24 [−0.11–0.59]	0.08 [−0.23–0.38]	−0.29 ^{a,b} [−0.46 to −0.12]

Note. ANCOVAs and Tukey’s pairwise comparisons were performed to assess informant discrepancy group differences, taking into account clustering of the data and corrected for gender, parental education level and country. Estimated marginal means [95 % CI] for the change between baseline and nine months follow-up are presented. A positive value indicates an increase in problems between baseline and follow-up, while a negative value indicates a decrease.

^a Differs from ‘self- and clinician-reported’ with $p < .05$.

^b Differs from ‘clinician-reported’ with $p < .05$.

^c Differs from ‘self-reported’ with $p < .05$.

4.1. Clinicians and parents’ awareness of suicidal behaviour

As expected, and in line with previous studies (Gao et al., 2015; Yigleu et al., 2004), we found higher rates of self-reported suicidal behaviour than clinician- and parent-reported suicidal behaviour. This suggests that clinicians and parents are often unaware of suicidal behaviour which the young person is willing to self-report in a study (Gao et al., 2015; Horesh et al., 2004; Kaplan et al., 1994). In addition, we found that clinicians reported suicidal behaviour more often when young people had reported having ever attempted suicide. This might suggest that clinicians are less hesitant to ask about current suicidal behaviour or that young people are more likely to disclose current suicidal behaviour when there is a known history of suicide attempts. However, our study also indicated that when clinicians and parents were unaware of suicidal behaviour, young people reported suicidal behaviour at a lower frequency than when clinicians and parents were aware of the suicidal behaviour. Therefore, an alternative explanation for these discrepancies might be that clinicians and parents interpret the burden of suicidal behaviour differently than young people and are thus less likely to rate suicidal behaviour as being present.

It is important to add that, even though previous studies (Gao et al., 2015; Horesh et al., 2004; Kaplan et al., 1994) show that young people are more likely to report suicidal behaviour in questionnaires than in face-to-face contact with clinicians, the proportion of self-reported suicidal behaviour in this study may still be an underestimation of the true prevalence, as 6.3 % of clinicians and 4.3 % of parents reports suicidal behaviour for young people who did not report this behaviour. It is difficult to say how a potential underestimation affected our findings.

4.2. Awareness of suicidal behaviour and implications for care

Clinicians’ and parents’ unawareness of self-reported suicidal behaviour was associated with lower baseline clinician-rated severity of psychopathology and baseline need for care scores, as well as a lower likelihood of a clinician’s recommendation to continue treatment. In contrast, self-reported mental health scores and psychosocial functioning scores at baseline were similar regardless of clinicians’ and parents’ awareness. In other words: the clinician’s and parent’s perspectives on severity of psychopathology seem to be the determining factor in the clinician’s consideration and recommendation to continue treatment. The self-reported suicidal behaviour might be considered as a burden of disease representation and the young person’s perspective is important to be integrated in clinician’s recommendation to continue treatment. This seems in line with our previous study showing that the clinician’s perspective on psychopathology is most strongly related to clinicians’ transition recommendations, while self-reported mental health problems seem not to be related (Gerritsen et al., 2022). Part of

the association between the clinicians' perspective on severity and the recommendation to continue treatment may be due to shared method variance. Alternatively, clinicians and parents may underestimate or be unaware how seriously affected young people with suicidal behaviour are. A third explanation is that young people with suicidal behaviour may over-report their own mental health problems. Anyhow, it is crucial to be aware of discrepancies in perspectives and to discuss suicidal behaviour, the burden experienced and the severity of mental health problems in general during transition planning. The perspectives of young people and parents are of importance in the transition decision process (Wilson et al., 2015). Although clinicians and parents may be afraid to trigger young people by asking explicit questions about suicidal behaviour, previous studies showed that this does not result in harmful outcomes (Polihronis et al., 2020). As self-reports of suicidal behaviour show inconsistencies across different assessment methods (Deming et al., 2021), multi-informant standardised assessment of suicidal behaviour, associated mental health problems, and risk factors may offer valuable additional information to clinicians involved in making the transition decisions.

It is particularly important to consider continued treatment for young people who report suicidal behaviour, as appropriate treatment may prevent suicidal behaviour progressing from ideation to serious suicide attempts (Stanley et al., 1992; Sveticic and De Leo, 2012). As young people were less likely to be recommended to continue treatment when clinicians were unaware of their suicidal behaviour, we expected these young people to be less likely to use MHS at nine months follow-up. This was not the case. Almost half of those with self-reported suicidal behaviour at baseline did not receive treatment in mental healthcare services at follow-up. This could indicate that many young people do not continue receiving the treatment they need after leaving CAMHS, as already suggested by other research (Appleton et al., 2019; Gerritsen et al., 2021). However, there were no indications that the mental health of young people whose clinician was unaware of suicidal behaviour and who did not continue to receive mental healthcare during follow-up was negatively affected, compared to young people who did receive continued treatment during follow-up. This may suggest that some young people who reported suicidal behaviour no longer needed continued treatment at MHS. This may be due to fluctuations in suicidal behaviour over time (De Leo et al., 2005), or alternatively, that some young people do not need, want or could access suitable continued treatment.

4.3. Strengths and limitations

The current study was based on a large European clinical cohort of CAMHS users reaching the upper age limit of their CAMHS (Singh et al., 2017). Assessments were extensive and used to collect information on constructs associated with young people's mental health and mental healthcare from multiple informants. All informants reported on the presence of young people's suicidal behaviour on equivalent questions. Despite these strengths, there are several limitations to the findings reported in this study. First, we were unable to clearly distinguish between suicidal ideation, suicide plans and attempts as suicidal behaviour was based on a single item per informant assessing the entire continuum of suicidal behaviour from suicidal ideation to attempts. Also the item used to measure suicidal behaviour did not include deliberate self-harm. However, the self-reported suicidal behaviour item correlated highly with the well-validated self-reported YSR/ASR items on suicidality, two items that are suitable for fast and easy assessment of suicidal risk (Van Meter et al., 2018). Since there is no equivalent clinician version available for the YSR/ASR items, we used the equivalent TRAM items for self-, clinician- and parent-reported suicidal behaviour. Secondly, only a relatively small number of young people had transitioned to AMHS at nine months follow-up, which limits the power to assess the relation between clinicians' and parents' unawareness of suicidal behaviour at baseline and AMHS use at nine months follow-up. Thirdly, one could

argue the lacking effect on mental health outcomes at nine months may be due to long-term mental health effects not becoming apparent within this short follow-up period. However, a longer follow-up period (i.e. two years) may be too long to assess the effects of awareness of suicidal behaviour and transition recommendations at the upper age limit of CAMHS, especially considering the potential influence of other factors, such as the episodic nature of depressive symptoms, life events and changing circumstances. Lastly, CAMHS participating in MILESTONE were not selected randomly, but were affiliated with the MILESTONE consortium and their network of mental health organisations. In addition, selection bias may also have been introduced by a response rate of 45.1 %. However, it is less likely that the generalizability is affected by a potential selection bias, as variables on which a selection could have taken place were included in the analyses (Nohr and Liew, 2018).

4.4. Concluding remark

This study shows that clinicians and parents are often unaware of the self-reported suicidal behaviour of young people reaching the upper age limit of their CAMHS, which can affect the clinician's recommendation for further treatment, but does not necessarily lead to decreased MHS use. Using self- and parent-reports to routinely assess for suicidal behaviour can increase awareness and thereby reduce the impact of suicidal behaviour.

CRedit authorship contribution statement

SEG and LSB verified underlying data, prepared the first draft and subsequent versions of this manuscript, under supervision of MMO, GCD, AM and MHJH and in collaboration with DW, PS and GDG. DR provided statistical consultation with regard to the conceptualization of the data-analysis plan, execution of the analyses and write-up. SPS, AM, GDG, PJS, JM, FM, DP-O, ST, UMES, TF, CS, MP, DW and GCD conceived the original study design, obtained funding and/or acted as principal investigators. HT was the study coordinator. SEG, LSB, RA, GS and PT were research assistants who helped set up the study in their countries, gain local ethical approvals and collected data. PC, FM, RN, AP, MCS, AS and ET also contributed to local sites set-up and data-collection. All authors critically reviewed the protocol and the manuscript and gave approval for the publication.

Conflict of interest

SPS is part-funded by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care West Midlands (NIHR CLAHRC WM), now recommissioned as NIHR Applied Research Collaboration West Midlands. The views expressed in this publication are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care. PS is the co-inventor of the HealthTrackerTM and is the Chief Executive Officer and shareholder in HealthTracker Ltd. AM was a speaker and advisor for Neurim, Shire, Infectopharm and Lilly (all not related to transition research).

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jad.2022.12.164>.

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