The University of Manchester

Healthcare Quality Improvement Partnership

Suicide by middle-aged men

National Confidential Inquiry
into Suicide and Safety in Mental Health

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The interpretation and conclusions contained in this report are those of the authors alone.

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Summary

Why did we carry out the study?

Since 2013, men aged 40-54 have had the highest suicide rate in the UK; accounting for a quarter of all suicide deaths in 2019. The suicide rate in middle-aged men in the UK is 3 times higher than women of the same age and 1.5 times greater than men in other age groups. This is of concern because middle-aged men are often thought not to be in contact with health or other support services, and are more likely to be affected by economic adversity. At times they report a reluctance to talk about or report mental health problems, and may perceive more challenges and barriers to accessing services than women.

This study was selected by the Independent Advisory Group on behalf of the funders. We used data from official investigations, mainly coroner inquests (or police death reports in Scotland), to examine factors associated with suicide in middle-aged men. More specifically, we aimed to:

(1) Examine the characteristics of middle-aged men who died by suicide;
(2) Determine how frequently suicide was preceded by specific events and clinical factors;
(3) Examine the role of support services;
(4) Make recommendations to strengthen suicide prevention for middle-aged men.

What did we do?

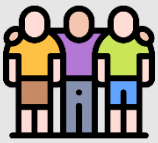
We used national mortality data from the Office of National Statistics and National Records of Scotland to identify men aged 40-54 who had died by suicide between 1 January 2017 and 31 December 2017 (the most recent year for which data were available at the time of data collection, in part because of the time associated with legal processes). We then selected a stratified random sample of 20% of these deaths for further investigation. We extracted information on the antecedents of suicide from official investigations into these deaths, primarily coroner inquests.

What were the main findings?

- We identified 1,516 men aged 40-54 who died by suicide in the 12 month study period; of these, we selected a random sample of approximately 20% (n=288) for whom further information on the factors relating to suicide was sought – these men are the main focus of the study;
- The most common method of suicide was hanging/strangulation (61%);
- Almost a third (30%) were unemployed at the time of death; of these, almost half had been unemployed for over 12 months (47%);

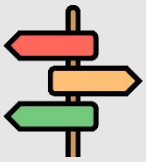
- Over a quarter (27%) lived in the most deprived areas in England – twice the proportion of those living in the least deprived areas (14%); in Scotland and Wales, the difference between those living in the most vs the least deprived areas was greater (34% v. 8% and 27% v. 9%, respectively);
- 45% were reported as living alone; 11% had reported recent social isolation;
- We found that bereavement was reported in 34% of deaths. For most of the men who were bereaved, this followed the death of a parent (80%). Suicide bereavement was reported in 6%;
- 15% were reported to have used the internet in ways that were suicide-related. This was most often searching for information about suicide methods;
- Physical health conditions were common (52%) and often chronic (33%); the most common conditions were circulatory system diseases (e.g. hypertension, 13%);
- Overall, 36% reported a problem with alcohol misuse and 31% reported illicit drug use, 49% had either alcohol or drug misuse or both; this was particularly common for men who were unemployed, bereaved, and had a history of violence or self-harm;
- Over half (53%) of middle-aged men had expressed suicidal ideation or intent at some time; a fifth (20%) in the week prior to death. 44% had a known history of self-harm; 7% in the week prior to death;
- Many (66%) had a mental health diagnosis, mainly affective disorders (30%); over half of men with a mental health diagnosis also had a physical condition (56%). We also found a group of men (14%) where mental health issues were undiagnosed but suspected by their family members and/or partner;
- Many had experienced adverse life events within 3 months of death, including problems with family relationships (36%), finance (30%), housing (28%), or the workplace (24%). Overall, 57% were experiencing economic problems - unemployment, finance or accommodation - at the time of death;
- Most (91%) middle-aged men had been in contact with at least one front-line service or agency, ranging from within 1 week of death (38%) to more than 3 months prior to death (49%), most often primary care services (82%); half (50%) had been in contact with mental health services, 30% with the justice system (i.e. police, probation or prison services). 2% were in contact with employment services, despite the high rates of unemployment found; overall 67% had been in recent contact with services (i.e. within 3 months of death), mainly primary care (43%).

Key messages



1. Middle-aged men are the group at highest risk of dying by suicide; the reasons for this are complex, and include a combination of longstanding and recent risks. We should avoid attributing these suicide deaths to single causes, as this will make prevention less effective;

2. Rates of contact with services among middle-aged men were higher than expected; almost all had been in contact with a front-line service or agency at some time. It is therefore too simplistic to say that men do not seek help;



3. There is a vital role in prevention particularly for primary care, A&E, the justice system, and mental health services. We should focus on how these services can improve the recognition of risk and respond to men's needs, and how services might work better together;

4. We have confirmed that economic adversity, alcohol and drug misuse, and relationship stresses are common antecedents of suicide in men in mid-life. Prevention requires a range of public health, clinical and socio-economic interventions;

5. More than half of the middle-aged men who died had a physical health condition; over a third of those who were prescribed medication for their physical health were prescribed opiates. Physical ill-health is an important factor in suicide risk and help-seeking for physical health problems may be an opportunity for prevention. Opiate analgesics appear to add to risk, particularly in individuals with physical ill-health, and safe prescribing is vital and in accordance with national guidelines on the management of chronic pain;

6. Middle-aged men who seek help for their mental health sometimes remain untreated. In particular, psychological therapies suited to their needs should be offered;

7. Around half of the men who died were known to have self-harmed. Recognition of risk by services after self-harm is vital, as further self-harm may involve a method of greater lethality such as hanging;

Key messages (continued)

8. Many of the men in our study appear to have been affected by bereavement. There is a need to ensure bereavement support is available in a way that addresses the needs of men;

9. We found information on suicide methods was often obtained via the internet: online safety should be part of any prevention plan for men at risk of suicide. The current online harms initiative by the Law Commission is an opportunity to consider this aspect of suicide risk;

10. There is also a small group of suicidal men who appear to be out of contact with any supports. There are several examples of local and national third sector initiatives aiming to reach this group and these should be supported and adopted more widely.

Background

Men aged 40-54 have the highest suicide rate in the UK,[1] and account for a quarter of all suicide deaths. In 2019, there were almost 5,700 deaths by suicide registered in England and Wales – 76% by men, 24% by men aged 40-54.[2] Equivalent data from Scotland records 833 probable suicides registered in 2019 – 74% by men, 31% by men aged 40-54.[3] Since 2001, the most common method of suicide in men (hanging, strangulation and suffocation) has risen from accounting for 41% to 62% of all male suicide deaths in England and Wales.[2]

Following the 2008 economic recession, there was an upward trend in suicide rates in men with those in mid-life (45-54) at particular risk.[4] More recently, the suicide rate among middle-aged men in England and Wales has increased since 2017.[2] This rise could be partly explained by the lowering in 2018 of the "standard of proof" required for a suicide conclusion at coroner inquest.[5] It is likely that there will be an increase in the number of deaths recorded as suicide as a result of this change;[2] however, to fully understand what factors could have contributed to the increase, further investigation is needed.

What we do know is that men can be reluctant to talk about and seek help and support for their problems, and are less well-informed about mental health, with more negative attitudes about mental ill-health than women.[6-9] Multiple, complex factors may be associated with suicide in this group, including economic pressures, social isolation and a lack of social supports, alcohol and drug misuse, and physical illness.[10-15] Future economic downturn following the coronavirus (COVID-19) pandemic is also likely to particularly affect men, although it is too soon to examine the long-term impact of pandemic-related economic adversity on suicide rates.[16]

Reducing the risk of suicide in middle-aged men is one of the main priority areas identified in the National Suicide Prevention Strategy;[17] an ambition supported by a NHS commitment to provide every area in England with funding for suicide prevention and bereavement services, as laid out in the NHS Long Term Plan.[18]

A national study to investigate suicide by middle-aged men

We have established a national study combining multiple sources of information that provide a detailed account from families, friends and professionals on the stresses men in their mid-life face before they take their lives.

The study provides rich data on the adversities middle-aged men were facing prior to their death, that we hope will help inform policy, public health strategies, and safer practice in all front-line agencies, including the identification of barriers to accessing services, and ultimately reduce suicide rates.

The findings described in this study do not cover deaths that occurred during the COVID-19 pandemic.

Aims of the study

- To examine the characteristics of middle-aged men who died by suicide;
- To determine how frequently suicide was preceded by specific events and clinical factors (e.g. socio-economic position, reluctance to seek help for both mental and physical health);
- To examine the role of support services;
- To make recommendations to strengthen suicide prevention for middle-aged men.

How we carried out the study

Report coverage

This report describes findings from a study combining multiple sources of information to examine the factors relating to suicide by middle-aged men. We collected data from a range of investigations into the deaths of men aged 40-54 by suicide (including probable suicide) in England, Scotland and Wales by official bodies, primarily coroner inquests (police death reports in Scotland). We did not conduct new investigations.

This report is based on deaths that occurred in a 12 month period between 1 January 2017 and 31 December 2017. It describes the antecedents of suicide, barriers to accessing services, and includes recommendations for suicide prevention for men in mid-life.

Definitions

As is conventional in UK national statistics and suicide research,[19] we defined suicides as deaths that received a conclusion of intentional self-harm or undetermined intent at coroner inquest (England and Wales), or by a Procurator Fiscal (Scotland).

Deaths coded with the following International Classification of Diseases, Tenth Revision (ICD-10)[20] codes were included in the study: X60-X84; Y10-Y34 (excluding Y33.9); Y87. Deaths receiving a narrative conclusion at coroner inquest were included in the study if Office for National Statistics (ONS) procedures for identifying suicide deaths applied one of these ICD-10 codes (this does not apply to deaths in Scotland). These deaths are collectively referred to as suicides.

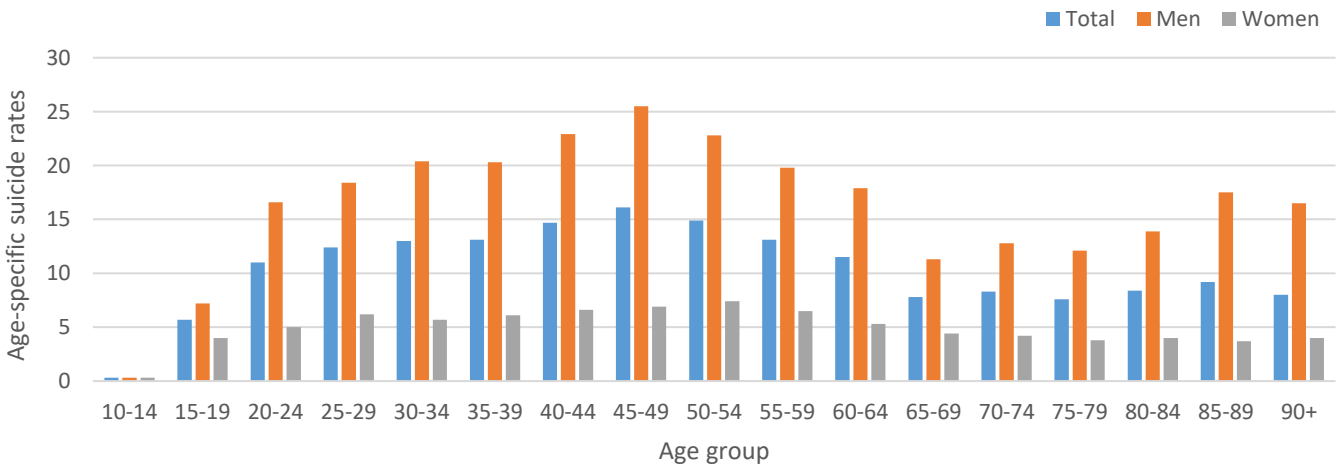


Figure 1a: **Age-specific suicide rates by sex and five-year age groups, England and Wales, registered in 2019** (Source: Office for National Statistics)

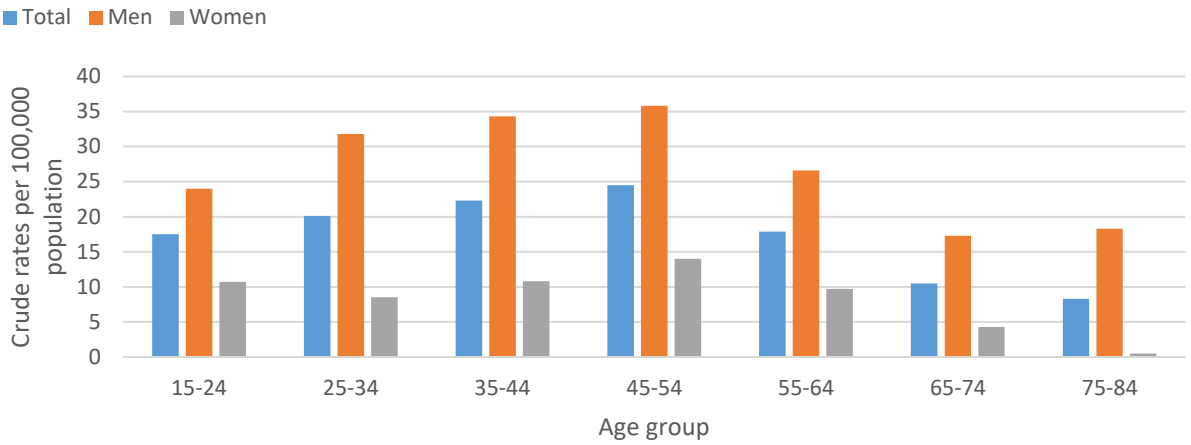


Figure 1b: Crude suicide rates per 100,000 population by sex and 10-year age groups, Scotland, registered in 2019 (Source: National Records of Scotland)

Middle-aged men are defined in this report as men aged 40-54. Men in this age group have the highest suicide rate in the UK (Figures 1a and 1b).[2,3]

Notification of deaths by suicide

National mortality data on middle-aged men who died by suicide in 2017 were obtained from ONS (for deaths registered in England and Wales) and National Records of Scotland (NRS; for deaths registered in Scotland). Data from Northern Ireland were not obtained due to restrictions in the sharing of person identifiable data. Findings in this report are presented for England, Wales and Scotland combined, with the exception of deprivation figures which are presented by nation (general population deaths) or England only (sampled deaths); different indices of multiple deprivation make a single combined analysis difficult.[21] In total, we were notified of 1,516 deaths by suicide (Table 1).

Table 1: Available data sources

	Number (%)
Suicide deaths by middle-aged men (notified by ONS, NRS)	1,516*
Number of deaths sampled	288 (19%)
Deaths on which at least 1 report has been obtained	242 (84%)
Coroner inquest hearings/files or police death reports	228 (79%)
NHS serious incident report	68 (24%)
NCISH data	69 (24%)
Single source of data obtained	186 (65%)

* Note: Based on a 20% sample of the total number of deaths notified at the time of sampling (n=1,486).

Data sources

There were 1,516 deaths by suicide by men aged 40-54 in England, Scotland and Wales in 2017. Of these, we selected 288 (19%; Table 1). We aimed to collect data on 20% of suicide deaths by middle-aged men. A 20% sample was chosen to reach a sufficient sample size, whilst ensuring there was research capacity to extract and analyse the information. These 288 men were the people on whom we sought further information on the factors related to suicide. Information was received from one or more of the following data sources for 242 men (84%).

Coroner inquest hearings/files or police death reports (228 deaths)

Audio-recordings of inquest proceedings (or where unavailable, statements or depositions submitted as evidence during the inquest) were requested for all sampled suicide deaths from the senior coroner of the jurisdiction where the death occurred. Redacted police death reports were requested from the Crown Office and Procurator Fiscal Service (COPFS) for deaths in Scotland. For 12 deaths, the coroner (or equivalent) did not wish to or was unable to provide data, and for 34 deaths, data was not returned.

NCISH data (69 deaths)

NCISH collects data on a UK-wide consecutive case series of people who die by suicide while under the recent care of mental health services. A full description of NCISH data collection methods is available on our website and in previous national reports.[10] Briefly:

- Mental health providers identify from national data which people had contact with mental health services in the 12 months before death;
- Clinical information is collected for these patients via a questionnaire completed by the senior clinician responsible for the patient's care.

NHS serious incident reports (68 deaths)

If a suicide by a patient was identified from NCISH data (see 'NCISH data' box), the medical director of the treating NHS Trust or Health Board was asked to provide a copy of the serious incident report (or critical incident review, significant adverse incident report, or clinical review report, referred to as serious incident reports hereon). These reports describe the internal investigation of the patient's death, including the contributory factors leading to death, and make recommendations for future prevention.

Justice system reports (3 deaths)

In England and Wales, the Prisons and Probation Ombudsman (PPO) publish independent, fatal investigation reports of deaths by apparent suicide in custody on their website. Reports are searchable by location, gender, age, establishment and cause of death. We searched the PPO website for fatal investigation reports meeting the study criteria (i.e. sampled middle-aged man who died by suicide in custody).

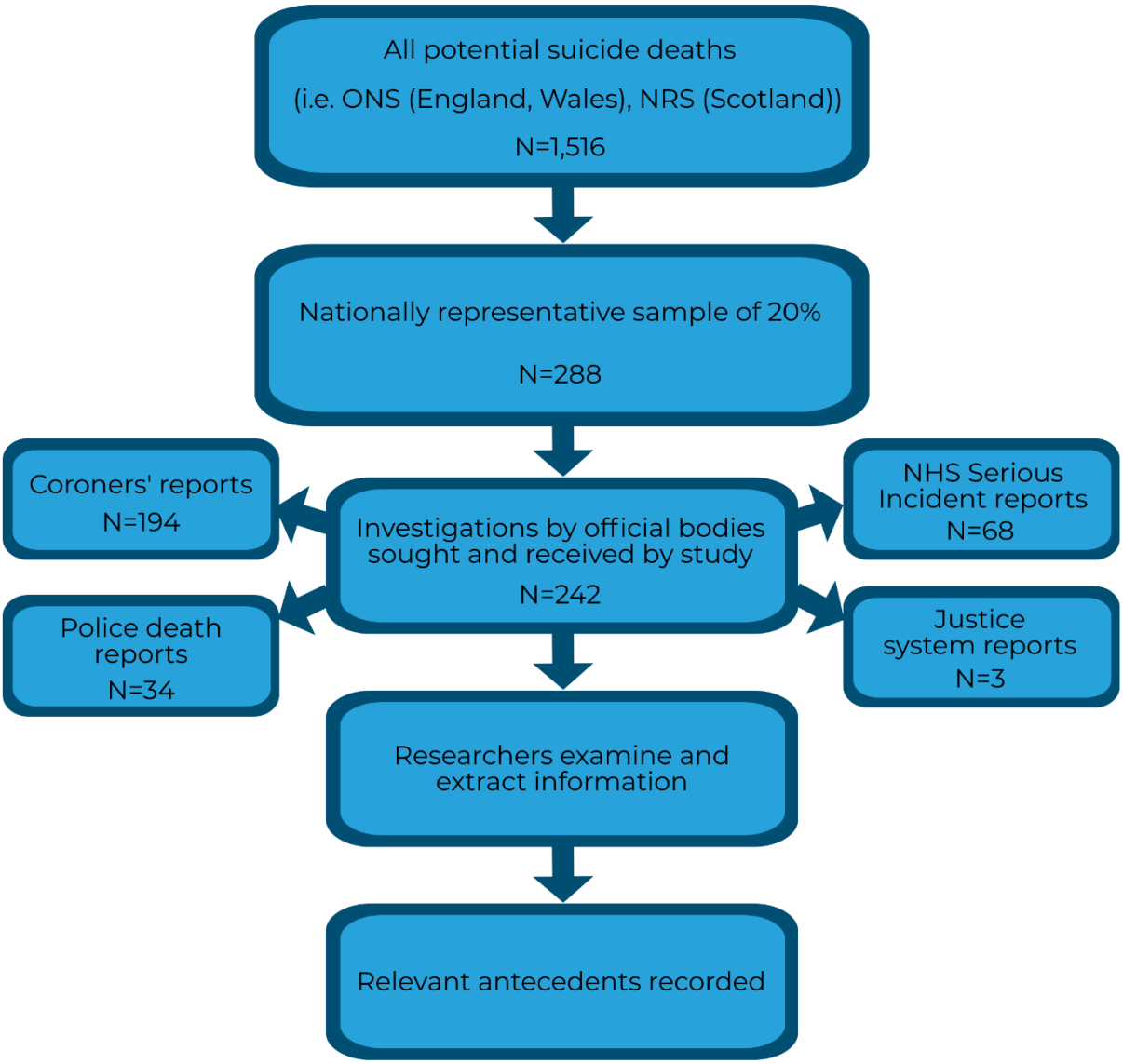
In Scotland, deaths of a person detained by the police or in prison are investigated at Fatal Accident Inquiries (FAI). We searched the Scottish Courts and Tribunals website where the judgements of FAIs are published for any FAIs meeting the study criteria.

Analysis

Information was taken from the sources listed above via a data extraction pro forma on to a standardised database for aggregate analysis (Figure 2).

Data are presented as numbers and percentages. The denominator in all estimates was the total number of men on which at least one data source was obtained (n=242), unless otherwise specified. If an item was not recorded in any data source, it was assumed to be absent or not relevant to the person's death. Statistically significant differences ($p < .05$) are highlighted in the figures. Further details on data analysis are described in appendix 2 (pages 40-41).

Figure 2: Data flow

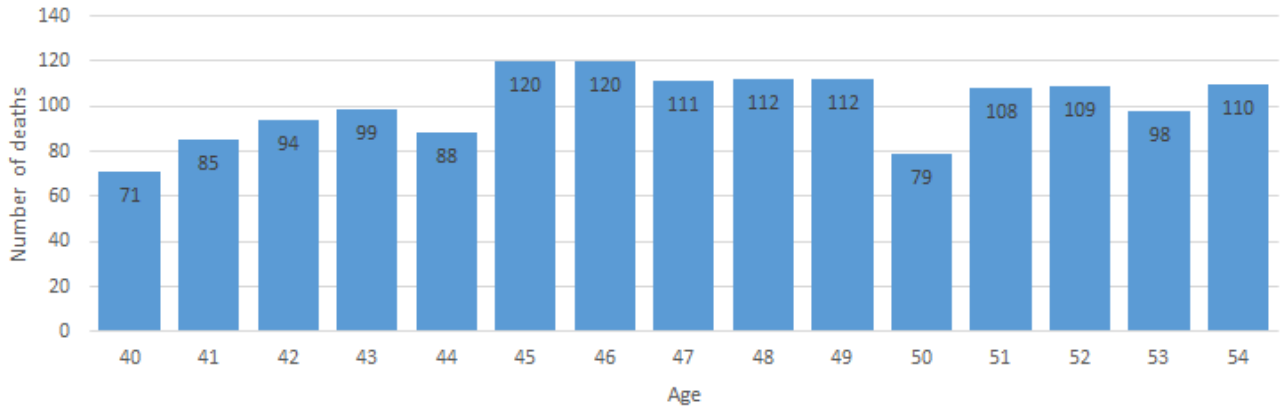


What we found

Deaths notified

We were notified of 5,889 deaths by suicide in England, Wales and Scotland in the 12 month study period. 76% (n=4,458) of these deaths were by men; 26% (n=1,516) by men aged 40-54. As shown in Figure 3 the number of suicides was similar for men aged 40-44 (437, 29%), 45-49 (575, 38%) and 50-54 (504, 33%). Of the 1,516 deaths, 1,265 (83%) were assigned a suicide conclusion, and 251 (17%) an undetermined (open) conclusion.

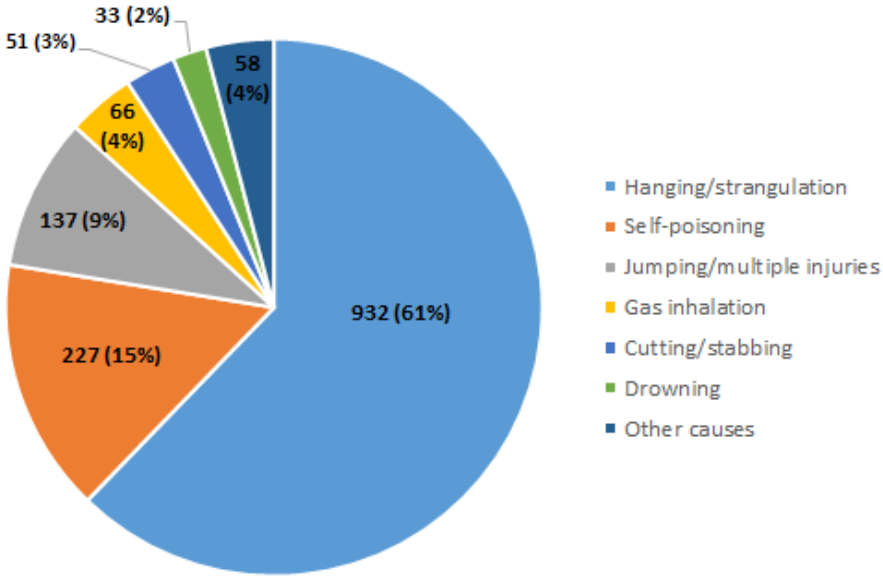
Figure 3: Number of suicides by middle-aged men, by single age (2017)



Method of suicide

The most common method of suicide was hanging/ strangulation, accounting for 61% of all suicides by middle-aged men (Figure 4). The second most common method was self-poisoning, followed by jumping/multiple injuries, i.e. jumping or lying in front of a train or other vehicle (54, 4%), jumping from a height (58, 4%) or other multiple injuries (25,

Figure 4: Method of suicide by men aged 40-54



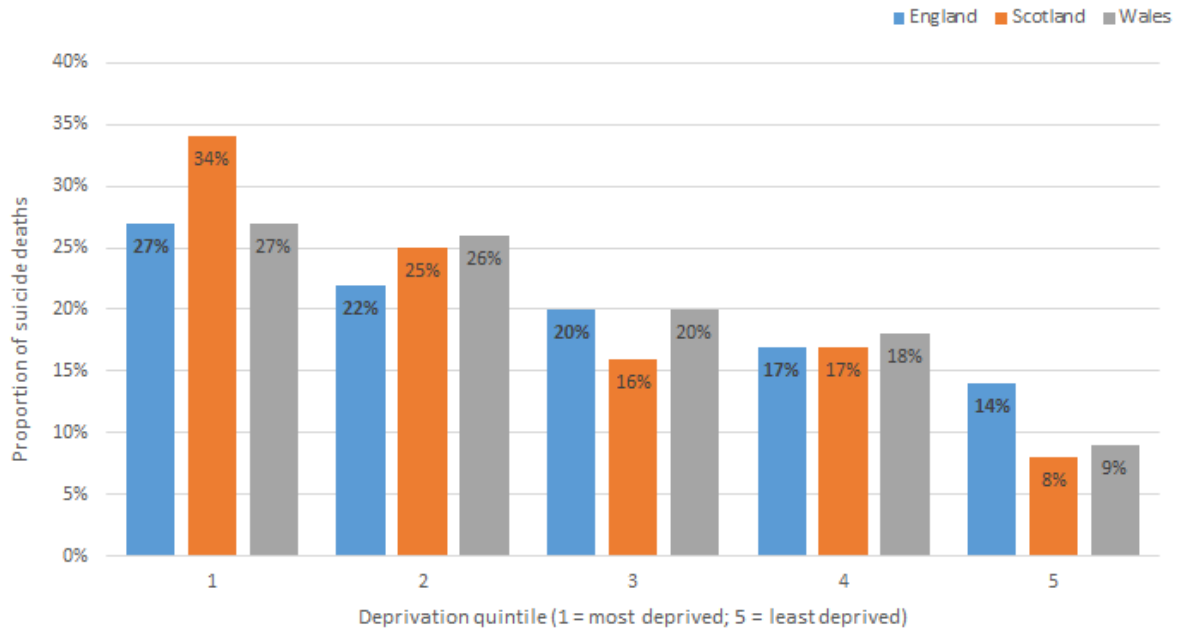
2%). Less common methods included gas inhalation (66, 4%), cutting/stabbing (51, 3%), and drowning (33, 2%). Of the 227 deaths by self-poisoning, the main substances taken (where known) were opiates/opioids (45, 20%).

Deprivation

Figure 5 shows the proportion of suicide deaths by men aged 40-54 by deprivation quintile and country. In each UK nation the proportion of suicide deaths increased from the least to the most deprived areas. 34% (n=64) of men in Scotland lived in the most deprived quintile of Lower Layer Super Output Areas (LSOA) prior to their death. 8% (n=16) in the least deprived. In England and Wales, 27% (n=319 England; n=25 Wales) lived in the most deprived LSOAs, compared to 14% (n=166) and 9% (n=8), respectively, in the least deprived.

LSOAs are a geographic hierarchy designed to report small area statistics and are based on areas with approximately the same population size. Each UK country measures deprivation differently, with LSOAs in Scotland comprising a smaller average population per area (~769) than in England (~1,500) or Wales (~1,600). Men that lived in the 20% most deprived areas in Scotland may therefore not have been subject to the same level of deprivation as those who lived in the 20% most deprived areas in England or Wales. However, if there was no effect of deprivation the proportion of suicide deaths in each UK nation would be the same across quintiles.

Figure 5: Proportion of suicide deaths by men aged 40-54, by deprivation quintile and country (2017)



Factors related to suicide

We sought to record information on the adversities faced by a 20% sample of middle-aged men (aged 40-59) who died by suicide in 2017 (n=288). In total, we recorded information on 242 (84%), mainly from coroner inquest hearings or police death reports (228, 94%). 68 (28%) were aged 40-44, 95 (39%) were aged 45-49, and 79 (33%) were aged 50-54. The remainder of the findings are based on these 242 men.

Economic factors

Employment

Seventy-two (30%) men were unemployed at the time of death, for 34 (14%) this had been for over 12 months. This is higher than the 4.5% of unemployed economically active men in the general population (Table 2).[22] Seven were on long-term sick leave. Unemployed men were more likely than other men to be living alone (63% v. 38%), have reported recent financial problems (42% v. 25%), and to have previously self-harmed (57% v. 38%) or expressed suicidal ideation or intent (68% v. 46%). There were also higher rates of alcohol (49% v. 31%) and illicit drug misuse (49% v. 24%). Recent relationship problems were less likely (17% v. 38%).

Table 2: Comparison of key risk factors from study sample, by available general population figures.

Variable	Sampled middle-aged men (%)	General population figure (%)
Unemployment	30%	4.5%
Deprivation	25%	20%
Divorced/separated	21%	5%
Alcohol misuse	36%	20%
Drug misuse	31%	7%
Physical health condition	52%	34%
Mental health diagnosis	66%	15%

Current or former members of the Armed Forces

Nine (4%) men were current or former members of the Armed Forces. Five of those who had formerly been in the Armed Forces were unemployed at the time of death. Current or former members of the Armed Forces were more likely to have a physical health condition (89% v. 50%), mainly chronic pain or impaired mobility (n=5), compared to other men. Six (67%) had a mental health diagnosis.

Deprivation

In England, 49 of 193 men (25%) lived in the most deprived LSOAs – higher than the 20% that would be expected if suicide deaths were equally distributed by deprivation quintile (Table 2), 24 (12%) in the least deprived LSOAs. Men living in the most deprived areas in England were more likely to be unmarried (76% v. 50%) and to have a history of alcohol misuse (39% v. 8%) compared to men living in the least deprived areas of England. Deprivation relates only to the area in which these men lived (where there may also be fewer resources and opportunities) and has to be considered alongside other sociodemographic and economic factors (i.e. income).

Social and demographic characteristics

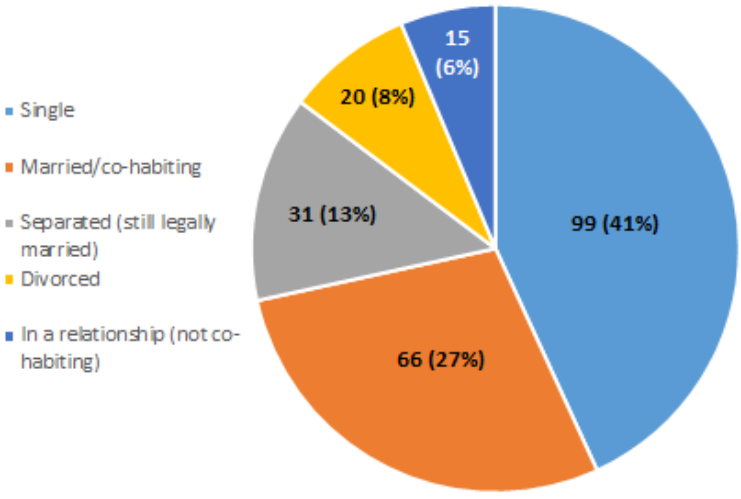
Nine (4%) middle-aged men were from an ethnic minority group, including 3 from an Asian or Asian British group, 3 from a Black, African, Caribbean or Mixed ethnic group, and 3 from an Other ethnic group. This is likely to be an underestimate as information on ethnicity is not routinely recorded at coroner inquest.[23]

Six (2%) men were gay or bisexual, of whom 5 (83%) were recorded as experiencing conflict with their family and/or internal turmoil regarding their sexuality. All 6 had previously expressed suicidal ideation or intent and had a mental health diagnosis, mainly affective disorders.

Family environment and relationships

One hundred and nine (45%) middle-aged men lived alone, 62 (26%) with their spouse or partner. Twenty-two (9%) lived with their parent(s) or in another shared arrangement, e.g. with friends, other relatives or as a lodger (20, 8%). Living in a hotel was noted for 3 (1%). Four (2%) were reported as being homeless at the time of death.

Figure 6: Relationship status in men aged 40-54



Sixty-six (27%) middle-aged men were married or co-habiting, 15 (6%) were in a relationship (but not cohabiting; Figure 6). Thirty-one (13%) were separated yet still legally married, and 20 (8%) were divorced – marginally higher than the proportion of divorced men of the same age in the general population (5%, Table 2).[24]

Seven (3%) men were reported as having a child or children under the age of 5. A further 85 (35%) were fathers to children aged over five, including adult children.

Family history and abuse

A family history of physical illness (in a parent, family member or sibling) was reported in 23 (10%) men, mental illness in 21 (9%), suicide in 9 (4%), and self-harm in 4 (2%).

Ten (4%) of the men in our sample reported a history of abuse, most commonly sexual abuse (6, 2%). A further 8 (3%) reported a history of negative childhood experiences (i.e. child neglect, emotional deprivation, being a victim of bullying). Three (1%) men had previously been looked after children.

History of violence

Forty-nine (20%) men had a history of violence. Thirty-two (13%) men had a recent history of violence (i.e. in the 3 months prior to death). Twenty-four (10%) were offenders of domestic/intimate partner violence. These 49 men had significantly higher rates of alcohol misuse (27, 55%) and previous self-harm (31, 63%). Seventeen (7%) reported being a victim of domestic/intimate partner violence - for 12 (5%) this had been recent victimisation.

Experience of bereavement

Eighty-two (34%) men were reported to have been bereaved by the death of a parent (66, 27%), family member or partner (24, 10%), including their child (7, 3%), or a friend or acquaintance (6, 2%). Nineteen (8%) had experienced multiple bereavements. Fourteen (6%) had been bereaved by suicide. For most (67, 82%), the bereavement occurred more than 3 months earlier. In 12 (5%) the bereavement had occurred in the 3 months prior to death. The death of a parent was more likely to have occurred more than 3 months earlier (84% v. 6%). Table 3 shows the antecedents of suicide in bereaved men. A family history of mental or physical illness, alcohol misuse and a diagnosis of mental illness were often reported in bereaved men.

Suicide-related internet use

Thirty-six (15%) men had used the internet in ways that were suicide-related. This was most often searching for information on suicide method (24, 10%). Of these 24, 8 (33%) died by the method they were known to have had searched on – most often hanging/strangulation (n=4). Ten (4%) had communicated suicidal ideas or intent online, or visited websites which may have encouraged suicide. Table 4 shows the characteristics of men with suicide-related internet use. They were more likely than

other men to have previously self-harmed or expressed suicidal ideas. Recent financial problems were reported in 12 (33%) and relationship break-up in 10 (28%).

Table 3: Antecedents of suicide in bereaved middle-aged men

	N	%
Family history of mental illness	14	17 ▲
Family history of physical illness	19	23 ▲
Abuse	5	6
Suicide-related internet use	15	18
Physical health condition	47	57
Alcohol misuse	40	49 ▲
Illicit drug use	29	35
Previous self-harm	41	50
Suicidal ideas or intent	46	56
Any diagnosis of mental illness	63	77 ▲
Service contact (at any time)	77	94

▲▼= significantly ($p<0.05$) higher or lower than men who were not bereaved.

Table 4: Antecedents of suicide in men with suicide-related internet use

	N	%
Not married	22	61
Living alone	16	44
Unemployed	11	31
Physical health condition	24	67
Alcohol misuse	13	36
Illicit drug use	11	31
Previous self-harm	24	67 ▲
Suicidal ideas or intent	27	75 ▲
Any diagnosis of mental illness	27	75
Service contact (at any time)	34	94

▲▼= significantly ($p<0.05$) higher or lower than men who did not use the internet in ways that were suicide-related.

Medical history

Physical health conditions

A physical health condition was recorded in 125 (52%) men (higher than the 34% of both sexes with a long-lasting health condition in the general population,[25] Table 2), most often circulatory system disease (e.g. hypertension, 32, 13%), respiratory disease (e.g. asthma and chronic obstructive pulmonary disease (COPD), 27, 11%), digestive system disease (e.g. alcoholic cirrhosis of liver, 26, 11%), and chronic pain (22, 9%). For 79 (33%) middle-aged men the condition lasted for more than 12 months. Sixty-eight (28%) were prescribed medication for physical health; 23 (10%) were prescribed opiates for pain relief, including for short-term pain management.

Thirty-three (14%) had reported declining physical health and for 24 (10%) the condition was felt to have had a significant impact on their daily lives, including their ability to work (15, 6%), reduced physical activity (e.g. participation in sport; 8, 3%), and lessening of social contact (4, 2%).

Fourteen (6%) were reported as being reluctant to seek help for their physical health, this was mainly by missing medical appointments (9, 4%).

Alcohol and drugs

Alcohol misuse was reported in 88 (36%); illicit drug use in 75 (31%), compared to an estimated 20% and 7% of men, respectively, from surveys of the general population (Table 2).[25,26] Forty-four (18%) had a history of alcohol misuse *and* illicit drug use, and 119 (49%) a history of either alcohol *or* drug misuse *or* both. The most commonly used illicit drugs were stimulants (e.g. amphetamines, LSD, cocaine, ecstasy, 42, 17%), cannabis (40, 17%) and heroin or other opiates (32, 13%). Sixty-seven (28%) had misused alcohol recently and recent illicit drug use was reported in 51 (21%) (mainly stimulants (25 10%), heroin or other opiates (21, 9%), and cannabis (19, 8%)).

Evidence from toxicological analysis indicated 70 (29%) middle-aged men had consumed alcohol at the time of death. This information was unavailable for Scotland (34 men). Thirty-four (16%) had an alcohol level above the drink driving limit in England and Wales (80 mg/100mls). Eighteen (9%) had an alcohol level above 150mg/100mls.

Illicit drugs were detected in 30 (12%) men at the time of death, mainly stimulants (20, 8%), cannabis (13, 5%) and heroin or other opiates (10, 4%). Prescribed and over the counter drugs were detected outside their therapeutic range in 30 (12%), mainly opiates/opioids (8, 3%).

Self-harm and suicidal ideas

One hundred and six (44%) men had a history of self-harm. Self-poisoning (by overdose; 41, 17%), cutting (19, 8%) and the use of a ligature (18, 7%) were the most common methods. Recent serious self-harm requiring medical intervention in hospital was required in 39 (16%) and by a GP in 7 (3%).

Men who self-harmed had significantly higher rates of unemployment (39% v. 23%), alcohol misuse (50% v. 25%), suicidal ideas (76% v. 35%), mental (75% v. 49%) and physical health (59% v. 46%) diagnoses, and service contact (98% v. 85%) than men with no history of self-harm.

One hundred and twenty-eight (53%) had expressed suicidal ideation or intent. These thoughts were most often expressed to a health professional (86, 36%), family member (44, 18%), or partner (42, 17%). Seven (3%) had communicated suicidal thoughts online.

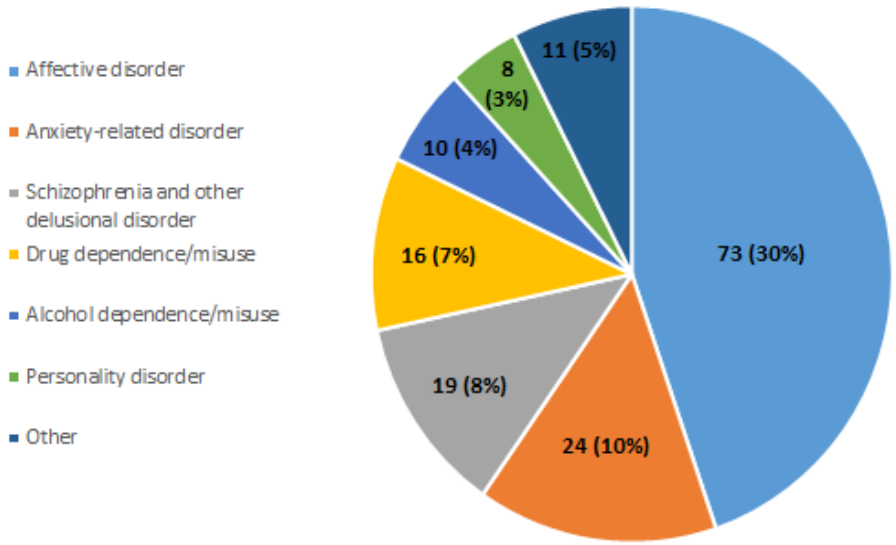
Seventeen (7%) had an episode of self-harm in the week prior to death. Expressions of suicidal ideation or intent were reported for 48 (20%) in the week prior to death - 19 (8%) on the day of death.

Ninety-eight (41%) middle-aged men left a suicide note.

Psychiatric diagnoses

A diagnosis of mental illness was reported in 160 (66%) men, compared to approximately 15% of men aged 35-54 in the general population who meet the criteria for a common mental disorder (i.e. anxiety or depression, Table 2).[27] The most common diagnosis was affective disorders (bipolar or depression), followed by anxiety-related disorders (including obsessive-compulsive and post-traumatic stress disorder; Figure 7). Eight-three (34%) had a secondary diagnosis. For 35 (14%) men, their family members and/or partner suspected they had undiagnosed mental health issues.

Figure 7: Psychiatric diagnosis in men aged 40-54



Physical comorbidity was common. Of the 160 men with a psychiatric diagnosis, 89 (56%) were also reported to have a physical health condition.

One hundred and six (44%) were prescribed antidepressants (typically SSRI/SNRIs (82, 34%), other

antidepressants (28, 12%) and tricyclic antidepressants (12, 5%)). Antipsychotic drugs were prescribed for 38 (16%), benzodiazepines for 23 (10%) and lithium or mood stabilisers for 9 (4%). Twelve (5%) were receiving psychological therapy - of these, 9 were also prescribed antidepressants. Overall, 128 (80%) of the 160 with a diagnosis of mental illness were receiving treatment in the form of medication and/or psychological therapy.

Recent life events

Relationship problems

Seventy-six (31%) men reported recent relationship problems with their current or former partner; 48 (20%) had recently separated from their partner and 12 (5%) were going through the divorce process at the time of death. 50% (n=24) of the middle-aged men who had recently separated from their partner were living alone at the time of death. Those reporting recent relationship problems were more likely to also have recent financial problems, a history of alcohol misuse, expressed suicidal ideation or intent, and had service contact than other men. They were less likely to be unemployed (Table 5).

Relationship problems with children were also reported (13, 5%). Eleven (5%) reported problems accessing their children. Twenty-six (11%) were socially isolated.

Table 5: Antecedents of suicide in middle-aged men with recent relationship problems

	N	%
Living alone	32	42
Recent social isolation	6	8
Unemployment	12	16 ▼
Recent financial problems	31	41 ▲
Alcohol misuse	35	46 ▲
Illicit drug use	24	32
Previous self-harm	40	53
Suicidal ideas or intent	51	67 ▲
Any diagnosis of mental illness	45	59
Service contact (at any time)	74	97 ▲

▲▼= significantly ($p<0.05$) higher or lower than men who did not report recent relationship problems.

Housing instability

Twenty-one (9%) men reported accommodation problems (i.e. being asked or threatened with having to leave their home), and 17 (7%) had recently moved house. Forty-nine (20%) reported problems with their accommodation which were making living conditions difficult and uncomfortable e.g. untidy property, lack of property maintenance.

Workplace problems

Fifty-eight (24%) middle-aged men reported recent workplace problems, including: concerns about losing job (14, 6%), job loss (12, 5%), job insecurity (6, 2%), a change of job (5, 2%), and other workplace-related problems (45, 19%; e.g. being on sick leave).

Financial problems

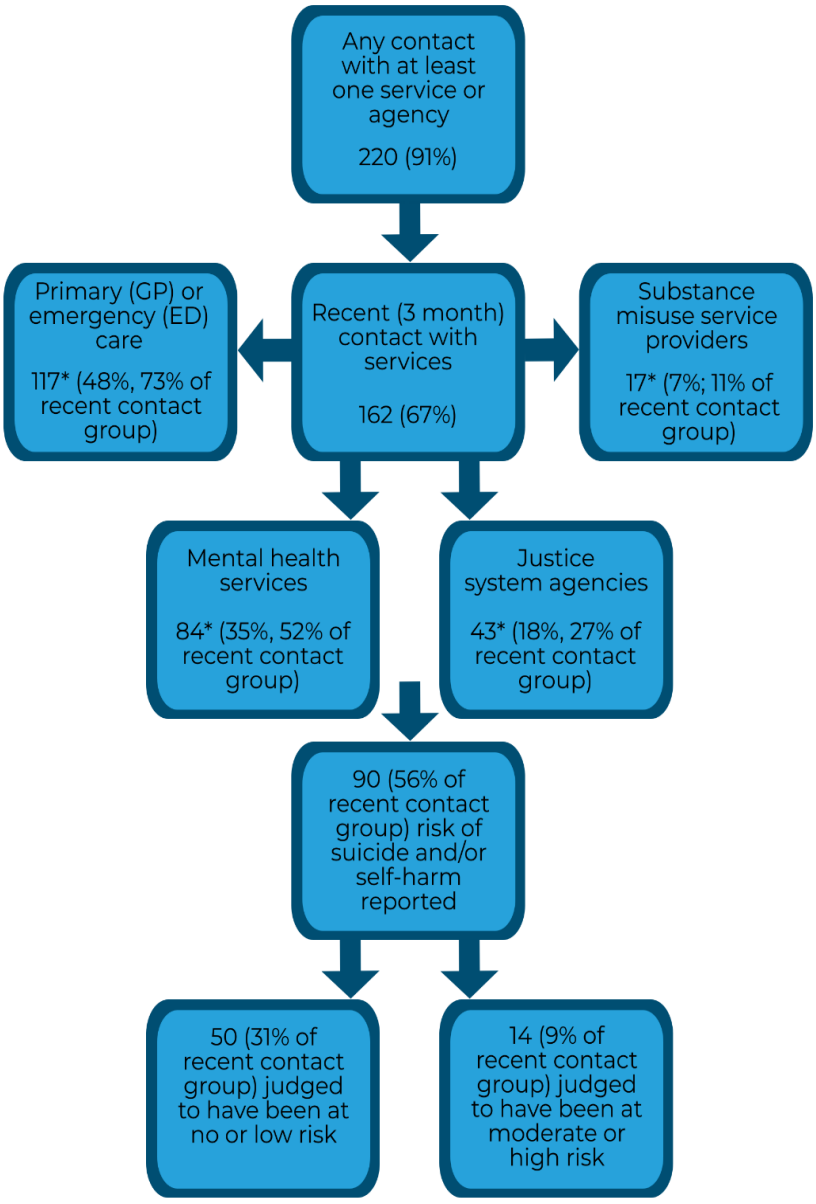
Seventy-two (30%) men had experienced recent financial problems. These comprised debt, including from gambling problems (35, 14%), concerns about money owed (e.g. credit card, loan, or mortgage repayments; 22, 9%), concerns that benefit payments would be reduced or stopped (10, 4%), and threats of court proceedings or bailiff notices (8, 3%). Overall, 6 (2%) men reported gambling problems with or without associated financial problems.

Contact with services

Figure 8 shows the pattern of lifetime and recent contact with front-line services and their recognition of risk. 91% middle-aged men had been in contact with at least one service or agency at some time. This was most often with primary care (i.e. GP; 199, 82%), followed by mental health services (120, 50%), the emergency department (80, 33%) and justice system agencies (73, 30%)[†]. 67% had been in recent contact with services, mainly primary care (105, 43%), and in 9% of these, risk was viewed as moderate or high – in the others there was either no evidence of suicide risk assessment (44%), the categorisation of risk was unrecorded (16%) or seen as low (31%).

Recent contact with services was recorded for 76% (117/153) of men who had explicitly indicated their risk through self-harm or the expression of suicidal intent.

Figure 8: Contact with services by men aged 40-54



*Note: figures do not tally with the total recent contact group (i.e. 161) as some middle-aged men will have recently been seen by more than one service.

Ninety-one (38%) men had sought help in the week prior to death, mainly with mental health services (46, 19%), followed by justice system agencies (29, 12%) and primary care (29, 12%). Twenty-six (11%) men had been in contact with third sector or voluntary agencies (including alcohol/drug service providers) at any time; 6 (2%) with employment services.

[†] Figures are not mutually exclusive and include men who had been in contact with more than one service.

27% (n=32) of middle-aged men who reported a history of alcohol or drug misuse (n=119) had been in contact with NHS-based, third sector or voluntary alcohol and drug services. 6% of unemployed men were known to employment services.

No service contact

Twenty-two (9%) men had no known contact with any agencies or services. Men in this 'no contact' group had significantly lower rates of physical and mental illness, self-harm and suicidal ideas, and alcohol misuse. Seventy-four (31%) had no contact with any services, with the exception of primary or emergency department care.

Contact with multiple agencies

Forty-one (17%) middle-aged men had contact with multiple agencies (i.e. primary care, mental health services and justice system agencies). This "multiple contact" group were more likely to be unemployed, have a physical health condition, a history of substance misuse, self-harm and suicidal ideas, and a diagnosis of mental illness.

Primary care contact

One hundred and five (43%) men had recently seen their GP, including 29 (12%) in the week before death. At their last GP contact, 75 (31%) had consulted regarding mental health, 65 (27%) for physical illness and 16 (7%) for self-harm or suicidal ideas. Following GP consultation, 32 (13%) were referred for further follow-up – 20 for mental ill-health, 13 for physical health, and 9 for self-harm.

Emergency Department (A&E) contact

Eighty (33%) men had attended an Emergency Department at some time, including 35 (14%) in the 3 months prior to death and 11 (5%) in the week before death. 26 (74%) of the men who recently attended A&E were seen for their mental health, self-harm or suicidal ideas. Of these, 7 were referred for further follow-up and four were admitted to a psychiatric in-patient ward.

Estimations of risk

For 97 (40%) middle-aged men, the treating clinician's estimation of suicide risk at final service contact was recorded, and in 14% (n=14) of these, risk was viewed as moderate or high; in 56% (n=54) as low or not present (Table 6). In the remaining 30% (n=29), there was evidence risk had been assessed but not categorised. Previous self-harm and suicidal ideas or intent were the main difference between those men assessed to be at high compared to low risk. Although indications of risk were present for some who were judged to be at low risk, including a history of substance misuse, previous self-harm and suicidal ideas

and/or intent. Based on our evidence from a previous study,[28] we recommend risk assessment tools should not be seen as a way of predicting future suicidal behaviour.

Table 6: Antecedents of suicide by estimation of risk

	Low/none N=54 (%)	Medium/high N=14 (%)
Not married	40 (74%)	9 (64%)
Living alone	29 (54%)	6 (43%)
Unemployed	22 (41%)	4 (29%)
Bereaved	18 (33%)	7 (50%)
Suicide-related internet use	10 (19%)	5 (36%)
Physical health condition	28 (52%)	10 (71%)
Alcohol misuse	28 (52%)	7 (50%)
Illicit drug use	23 (43%)	5 (36%)
Previous self-harm	37 (69%)	14 (100%) ▲
Suicidal ideas or intent	38 (70%)	14 (100%) ▲

▲▼= significantly ($p<0.05$) higher or lower than men judged to be at low or no risk of suicide.

Cumulative adversity

94% (n=227) of middle-aged men reported exposure to at least one of four key indicators of suicide risk in men:

(i) Unemployment;

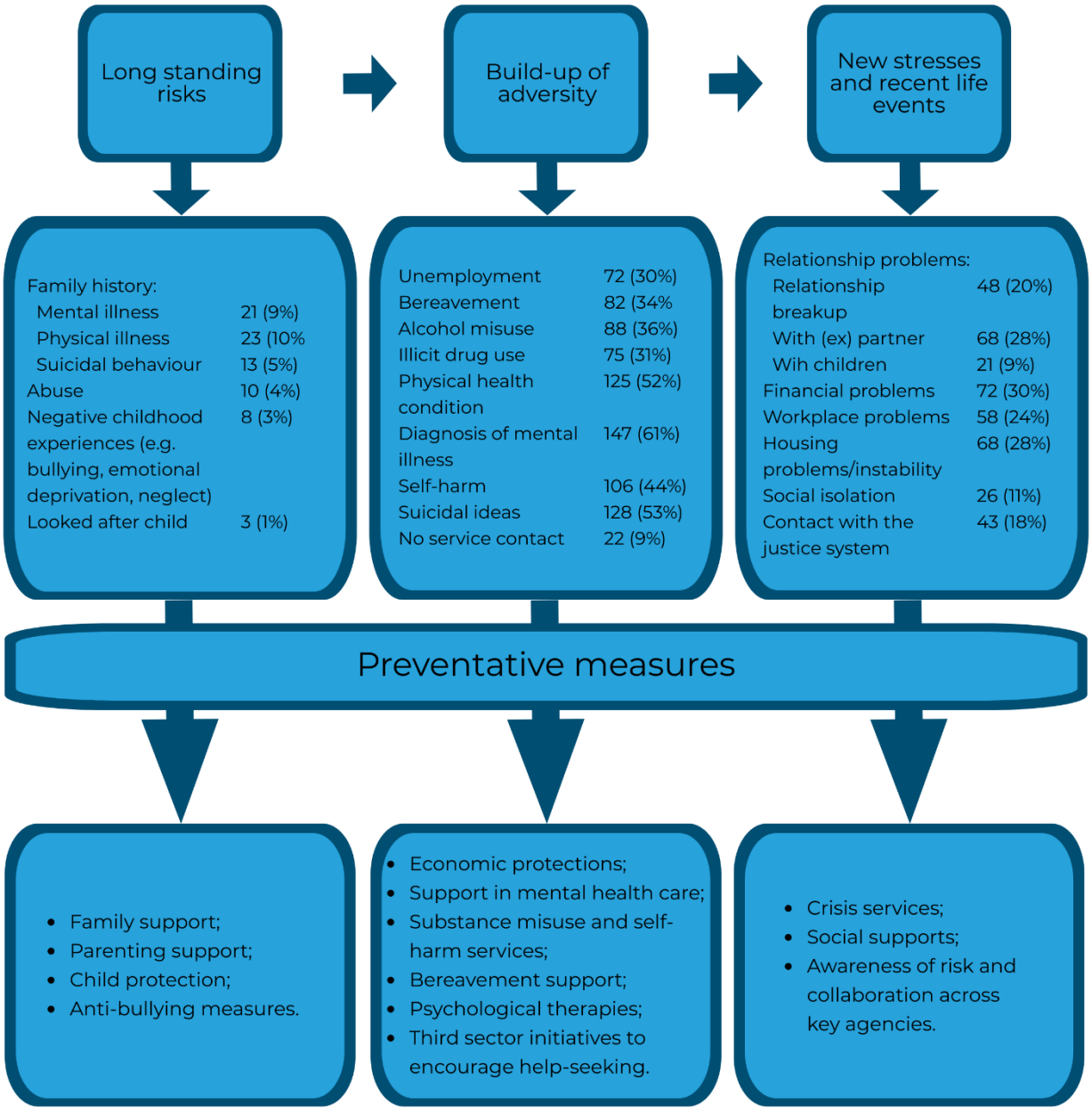
(ii) Alcohol and/or drug misuse;

(iii) No contact with services (excluding with a GP or at A&E);

(iv) Non-economic recent life events (relationship and workplace problems).

The most prevalent indicators recorded were alcohol and/or drug misuse (49%) and recent non-economic life events (48%); 6% (n=15) reported no experience of any of these indicators. There was evidence of a cumulative build-up of adversity, with many men experiencing a combination of risks, both long standing (i.e. alcohol and drug misuse) and recent (Figure 9); 45% (n=109) reported an accumulation of two adversities, 7% (n=18) reported three, and 1% (n=3) reported experiencing all four.

Figure 9: A model of cumulative risk



Age groups compared

Table 7 (see appendix 1) shows the antecedents of suicide by the three age groups comprising middle-age in this study (i.e. 40-44, 45-49 and 50-54 years). Men aged 40-44 were more likely to be from an ethnic minority group whilst being bereaved was less common compared to older age groups. Men aged 45-49 were more likely to be unemployed compared to their younger counterparts. The eldest group (i.e. 50-54 year olds) more often lived alone, had been bereaved and reported a physical health problem, while illicit drug use was less likely.

Summary of findings

Factors related to suicide by middle-aged men aged 40-54

This study examined a one-year national sample of middle-aged men who died by suicide; the findings describe the adversities middle-aged men were facing prior to their death – taken from personal narratives, which were discussed at inquest for the reason that the informant or coroner felt they were relevant to the person's death. We extracted information on the antecedents of suicide from official investigations, mainly inquests, for a sample of 20% of men who died by suicide between 1 January 2017 and 31 December 2017 (n=242).

We found high rates of key risk factors compared to their incidence in the general population (see Table 2): 30% of men were unemployed; a quarter (25%) lived in the most deprived areas of England, 12% in the least deprived areas; a fifth (21%) were divorced or separated – few compared to married or cohabiting men in conflict with their partners (39%). Over a third (36%) of men who died by suicide in our study had a history of alcohol misuse, 31% of drug misuse. Over half of the men who died had a physical health condition (52%), mainly circulatory (e.g. hypertension, 13%) or respiratory (e.g. asthma, 11%), and often long-term (33%), and co-morbid with a mental health diagnosis (37%). Many (66%) had a mental health diagnosis, mainly affective disorders (30%). There was also a small group of men (14%) with suspected, but undiagnosed, mental health needs. Few were socially isolated (11%).

Hanging, the most common method of suicide among men, accounted for around two-thirds of the deaths by middle-aged men (61%). Self-poisoning accounted for less than a fifth of deaths (15%). However, the main drugs used, opiates/opioids (20%), carry a high likelihood of fatality. Our findings add to the evidence that men use more dangerous suicide methods than women.[2]

Recent adversity was evident for many, often against a background of deprivation. Problems with housing or housing stability (28%), financial problems, including debt (30%), and workplace problems (24%) were often reported. A fifth had recently experienced a relationship break up (20%) and conflict with a partner or ex-partner was evident in over a quarter of men (28%). Overall, 57% were experiencing unemployment, financial or accommodation problems at the time of death. Most men will have the resilience to overcome such events, but for some they represent a trigger event, where suicidal behaviour is an impulsive reaction to a crisis, after an accumulation of lifetime and other adversities (see Figure 9).

A reluctance to seek help for mental and physical health is often associated with suicide by middle-aged men.[6,27] However, contrary to what we expected, we found only a minority (9%) of men who

died were not in contact with any front-line services or agencies. Of those who had been in contact with services, for only 2% was this with employment services, despite the high rate of unemployment found, or with voluntary or third sector services (11%). Around a third (30%) of men had been in contact with the justice system at some point prior to death. Despite the complexity of antecedents found, support was often narrowly framed with 17% of men in contact with multiple services.

A comparatively low rate (5%) of engagement with talking therapies was also evident among the men in our sample. This is consistent with data showing women are twice as likely as men to finish a course of Improving Access to Psychological Therapies (IAPT),[29] despite evidence that the efficacy of IAPT is similar for both women and men,[29] and are more likely than men to seek help through psychological therapy.[30] Improving access to psychological therapy is cited by clinicians' as a factor that may have made suicide less likely in the patients they treated.[10]

The wide-range of antecedents that we have found appear to occur in the context of vulnerabilities (e.g. long-term unemployment, poor physical health, alcohol misuse), or a lack of protective factors (e.g. social support, maintaining positive relationships), supporting (i) a model of cumulative risk, where there is the opportunity for prevention and intervention throughout different components of the model (Figure 9), and (ii) the "cohort effect" hypothesis, which contends that accumulated life experiences associated with being born in a certain cohort shape men across their lifespan. Twenty years ago, the highest suicide rates were in men aged 20-34. These men have carried their suicide risk with them and now rates are highest in men aged 40-54 years.[2]

What the study can't tell us

- The study is not a risk factor study. The design does not allow us to compare middle-aged men who died with those who did not die (i.e. controls), as there is no easy source of data on equivalent controls. We therefore cannot establish cause and effect, and cannot be certain of risk factors;
- These findings are aggregated for England, Scotland and Wales. There are no country-specific figures (with the exception of deprivation), and findings may be driven by the larger number of deaths in England. Findings may not apply to Northern Ireland;
- The study may have under-estimated the true figure of antecedents, especially in sensitive areas, such as gambling or sexuality;
- Other figures may be over-estimates, as families and others "search for meaning" following the death and highlight the factors they see as most relevant;

- Some information may be subject to recall bias and variations in completeness or content detail. We also acknowledge the wide range of antecedents we identified may not be comprehensive;
- The study examined deaths that occurred prior to the coronavirus (COVID-19) pandemic, and the findings do not tell us about suicide during or after the first lockdown in March 2020. However, men in mid-life are likely to remain a group at high risk of suicide and many of these antecedents will continue to be targets for prevention. In particular, economic and societal pressures, which are known to affect men to a greater extent, are likely to become more important in coming months and perhaps years.

Key messages

1. Middle-aged men are the group at highest risk of dying by suicide; the reasons for this are complex, and include a combination of longstanding and recent risks. We should avoid attributing these suicide deaths to single causes, as this will make prevention less effective;

2. Rates of contact with services among middle-aged men were higher than expected; almost all had been in contact with a front-line service or agency at some time. It is therefore too simplistic to say that men do not seek help;

3. There is a vital role in prevention particularly for primary care, A&E, the justice system, and mental health services. We should focus on how these services can improve the recognition of risk and respond to men's needs, and how services might work better together;

4. We have confirmed that economic adversity, alcohol and drug misuse, and relationship stresses are common antecedents of suicide in men in mid-life. Prevention requires a range of public health, clinical and socio-economic interventions;

5. More than half of the middle-aged men who died had a physical health condition; over a third of those who were prescribed medication for their physical health were prescribed opiates. Physical ill-health is an important factor in suicide risk and help-seeking for physical health problems may be an opportunity for prevention. Opiate analgesics appear to add to risk, particularly in individuals with physical ill-health,[31] and safe prescribing is vital and in accordance with national guidelines on the management of chronic pain[32];

6. Middle-aged men who seek help for their mental health sometimes remain untreated. In particular, psychological therapies suited to their needs should be offered;

7. Around half of the men who died were known to have self-harmed. Recognition of risk by services after self-harm is vital, as further self-harm may involve a method of greater lethality such as hanging;

8. Many of the men in our study appear to have been affected by bereavement. There is a need to ensure bereavement support is available in a way that addresses the needs of meet men;

9. We found information on suicide methods was often obtained via the internet: online safety should be part of any prevention plan for men at risk of suicide. The current online harms initiative by the Law Commission[33] is an opportunity to consider this aspect of suicide risk;

10. There is also a small group of suicidal men who appear to be out of contact with any supports. There are several examples of local and national third sector initiatives aiming to reach this group[35-36] and these should be supported and adopted more widely.

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Ethical approval

Approvals were received from the University of Manchester Research Governance and Ethics; National Research Ethics Service (NRES) Committee North West (25/03/2019); Health Research Authority Confidential Advisory Group (HRA-CAG) (29/07/2019); Public Benefit and Privacy Panel for Health and Social Care (PBPP) (11/10/2019); and Research Management and Governance approvals from individual NHS Health Boards in Scotland. NHS Trusts and Health Boards in England and Wales were not required to formally confirm capacity and capability.

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Definitions

Accommodation problems	Accommodation problems were recorded if they had occurred in the 3 months prior to death and included: • Moving house; • Eviction or threat of eviction; • Being asked to leave the family home; • Other accommodation problems i.e. untidy property, lack of property maintenance.
Alcohol misuse	Recorded from medical evidence (i.e. from a GP) and family testimony heard during the coroner's inquest, or from other sources of data (e.g. NHS serious incident report) and included any evidence to suggest: • The individual was drinking alcohol in a way that was harmful; • Alcohol consumption was having a negative impact on social and physical health; • Dependence on alcohol.
Contact with the justice system	Contact with the prison (or youth offender institution) service, with the police either as an offender or a victim of crime (not including for suicidal behaviour), or with the probation service.
Contact with mental health services	Contact with adult mental health services, including crisis resolution home treatment (CRHT) services, IAPT, assertive outreach services, and NHS-based drug and/or alcohol services.
Estimation of suicide risk	Recorded from medical evidence heard during the coroner's inquest, or from other sources of data, on the last estimation of suicide risk by a GP or mental health professional within an Emergency Department or secondary mental health service.
Ethnic minority	"Ethnic minorities" is used to refer to all ethnic groups except the White British group, in line with ONS guidance.
Financial problems	Financial problems were recorded if they had occurred in the 3 months prior to death and included: • Debt; • Receiving bailiff notices or threats of court proceedings; • Concerns about money owed (e.g. credit cards, short-term loans, mortgage repayments); • Reduction in, delay or [threat of] loss of benefit payments; • Gambling problems (with debt); • Making rash financial decisions.
History of abuse	Physical, sexual, and/or emotional abuse.
History of violence	Serious threat or assault causing significant physical harm, including sexual assault and domestic/intimate partner violence, as an offender.
Multiple contact with services	Contact with each of the following services: primary care, mental health services, and the justice system.

Physical health condition	Recorded from medical evidence heard during the coroner's inquest (i.e. from a GP), or from other sources of data.
Problems accessing children	Problems accessing children were recorded if they had occurred in the 3 months prior to death and included: • Living separately from children; • Loss of or restricted custody; • Children taken into care.
Psychiatric diagnosis and medication	Recorded from medical evidence heard during the coroner's inquest (i.e. from a GP), or from other sources of data.
Recent contact with services	Contact with any service or agency in the 3 months prior to death.
Relationship problems with children	Relationship problems with children were recorded if they had occurred in the 3 months prior to death and included: • Recent arguments with children, including children they did not live with; • Problems with accessing children.
Relationship problems with current or former partner	Relationship problems with partner were recorded if they had occurred in the 3 months prior to death and included: • Recent arguments with a current or former partner; • Reported difficulties within the relationship; • Ex-partner beginning a new relationship. Separation from partner was recorded as a separate antecedent.
Serious recent episode of self-harm	A serious recent episode of self-harm was recorded if the individual's last episode of self-harm prior to death required medical intervention/treatment by either a GP or in an Emergency Department (A&E). Recorded from medical evidence heard during the coroner's inquest, or from other sources of data.
Social isolation	No or very few friends. Recorded if had occurred in the 3 months prior to death.
Suicide-related internet use	Using the internet in ways that were suicide-related was recorded if at least one of the following was reported: • Obtaining information (e.g. method details) on how to die by suicide online; • Visiting websites that may have encouraged suicide (including chat rooms); • Communicating suicidal ideation/intent online.
Workplace problems	Workplace problems were recorded if they had occurred in the 3 months prior to death and included: • Being on sick leave; • Loss of job, concerns about losing job or job insecurity; • Change of job; • Being a victim of bullying/intimidation in the workplace.

Appendices

Appendix 1

Table 7: Antecedents of suicide in 40-44, 45-49 and 50-54 year old men

	Total (n=242)	40-44 (n=68)	45-49 (n=95)	50-54 (n=79)
Sociodemographic				
Ethnic minority group	9 (4%)	6 (9%) ▲	<3	<3
Gay or bisexual	6 (2%)	<3	<3	<3
Unmarried	161 (67%)	44 (65%)	66 (69%)	51 (65%)
Unemployed	72 (30%)	14 (21%)	34 (36%) ▲	24 (30%)
Living alone	109 (45%)	24 (35%)	42 (44%)	43 (54%) ▲
Socially isolated	26 (11%)	8 (12%)	8 (8%)	10 (13%)
Family history				
Mental illness	21 (9%)	3 (4%)	11 (12%)	7 (9%)
Physical illness	23 (10%)	5 (7%)	10 (11%)	8 (10%)
Experience of bereavement				
Bereaved	82 (34%)	16 (24%) ▼	32 (34%)	34 (43%) ▲
Bereaved by suicide	14 (6%)	4 (6%)	5 (5%)	5 (6%)
Medical history				
Physical health condition	125 (52%)	30 (44%)	47 (49%)	48 (61%) ▲
Alcohol misuse	88 (36%)	22 (32%)	40 (42%)	26 (33%)
Illicit drug use	75 (31%)	25 (37%)	36 (38%)	14 (18%) ▼
Internet use				
Suicide-related internet use (any)	36 (15%)	13 (19%)	9 (9%)	14 (18%)
Searching for information on suicide method	24 (10%)	9 (13%)	7 (7%)	8 (10%)
Self-harm and suicidal ideas				
Previous self-harm	106 (44%)	32 (47%)	41 (43%)	33 (42%)
Serious recent episode of self-harm (requiring medical treatment)	46 (19%)	11 (16%)	19 (20%)	16 (20%)

▲▼= significantly ($p<0.05$) higher or lower than men in other age-groups.

Table 7 (continued): Antecedents of suicide in 40-44, 45-49 and 50-54 year old men

	Total (n=242)	40-44 (n=68)	45-49 (n=95)	50-54 (n=79)
Self-harm and suicidal ideas (continued)				
Suicidal ideas and/or intent	128 (53%)	37 (54%)	49 (52%)	42 (53%)
Psychiatric diagnosis				
Any diagnosis of mental illness	160 (66%)	44 (65%)	65 (68%)	51 (65%)
Affective disorders (bipolar disorder and depression)	73 (30%)	17 (25%)	26 (27%)	30 (38%)
Anxiety disorders (including PTSD, OCD)	24 (10%)	10 (15%)	10 (11%)	4 (5%)
Schizophrenia and delusional disorders	19 (8%)	5 (7%)	8 (8%)	6 (8%)
Recent events				
Relationship breakup	48 (20%)	14 (21%)	22 (23%)	12 (15%)
Relationship problems	76 (31%)	24 (35%)	28 (29%)	24 (30%)
Accommodation problems	68 (28%)	23 (34%)	27 (28%)	18 (23%)
Work-related problems	58 (24%)	16 (24%)	22 (23%)	20 (25%)
Financial problems	72 (30%)	20 (29%)	32 (34%)	20 (25%)
Service contact				
Any service contact	220 (91%)	60 (88%)	87 (92%)	73 (92%)
Any service contact (excluding GP or ED)	168 (69%)	45 (66%)	65 (68%)	58 (73%)
Primary care	199 (82%)	54 (79%)	80 (84%)	65 (82%)
Emergency Department	80 (33%)	27 (40%)	28 (29%)	25 (32%)
Mental health services	120 (50%)	33 (49%)	45 (47%)	42 (53%)
Justice system / police	73 (30%)	21 (31%)	31 (33%)	21 (27%)

▲▼= significantly ($p<0.05$) higher or lower than men in other age-groups.

Appendix 2

Analysis

As shown in Figure 2, information was taken from the data sources (see pages 11-12) via a data extraction pro forma onto a standardised database for aggregate analysis. Information was collected about demographic factors (relationship status, sexual orientation, employment status, living circumstances), medical history (physical health conditions, alcohol misuse, illicit drug use), psychiatric history (psychiatric disorders, medication), disclosure of suicidal ideas and/or intent, history of self-harm, service contact (with GP, A&E department, mental health services, substance misuse services, social care or local authority services, the justice system), bullying and abuse, bereavement, suicide-related internet use, and recent family, workplace, financial, or accommodation problems. Definitions are shown on pages 36-37. Findings from England, Wales and Scotland are presented as aggregate figures.

Antecedents were recorded if they were referred to in any of the data sources as having been present in the man's life at any time and in the 3 months prior to their death (referred to as 'recent'). Reference to a specific antecedent in an official investigation suggests that it was relevant to the death but not causal.

A random sample of 20% of deaths of men aged 40-54 was selected from all men who died by suicide in this age-group between 1 January and 31 December 2017 – a total of 1,516 deaths. A 20% sample was chosen to allow a sufficient number of men to be examined, whilst ensuring there was research capacity to extract and analyse the information. Sampling was based on the proportion of individual deaths from (i) each age group (in order to ensure individual deaths were included from each age (40-54)) and (ii) each UK country included in the study. For the 12 month study period overall data completeness was 84%, i.e. information was received from one or more data sources for 242 of the 288 middle-aged men in our sample.

Deprivation scores were derived by linking the last known postcode of residence of the men in our study sample to the 2019 Index of Multiple Deprivation (IMD) for England, the 2019 Welsh Index of Multiple Deprivation (WIMD) and the 2020 Scottish Index of Multiple Deprivation (SIMD). The IMD for each country used was the closest available to the study period. Each postcode was linked to a deprivation score via Lower Super Output Areas (LSOAs) using online geography matching tools.[37-39] Postcode data were available, and a deprivation score derived, for 98% (n=1,481) of all suicide deaths in middle-aged men in 2017. For the men in our sample, deprivation scores were derived for England only and were available for 192 of the 193 (99%) men who resided or died by suicide in England.

Deprivation scores were categorised into five equal groups (quintiles) ranging from the most deprived 20% of LSOAs to the 20% least deprived.

Unless otherwise specified, the denominator in all estimates was the total number of men on which at least one report was obtained (i.e. 242). If an item (i.e. bereavement) was not mentioned in any data source it was assumed to be absent or not relevant to the man's death. Pearson's chi square tests or Fisher's exact test were used to examine associations between subgroups. A two-sided p value of 0.05 was considered statistically significant. We applied ONS guidance on disclosure control to protect confidentiality, and supressed cell counts under three, including zero.