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Implementation of community screening strategies for depression.

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Community screening for depression could be used for monitoring, early detection, prevention and maximize the impact of the policies to reduce its burden.

1 Depression is highly prevalent mental health disorder, affecting approximately 4 to 10%
2 of people depending on the specific population and context,¹⁻³ and a major public health
3 problem and cause of disability and loss of quality of life worldwide. Effective primary
4 prevention strategies to reduce its prevalence and impact are needed, and the
5 implementation of screening strategies for depression at the community level could be a
6 key instrument to inform these strategies.

7 Screening programmes are preventive resources that aim to identify individuals and
8 population groups with high vulnerability to different health problems among apparently
9 healthy people, in order to prevent the onset, development, burden and/or impact of those
10 health problems.⁴ In the case of depression, due to the self-reported nature of symptoms
11 and the use of self-reported measures, the implementation of screening strategies have
12 drawn increasing interest worldwide.⁵ However, before implementation of screening
13 strategies the recommendations of the UK National Screening Committee,⁶ and the US
14 preventive services task force should be followed,⁷ including a consideration of the aims,
15 feasibility and effectiveness, and availability and suitability of screening measures for the
16 detection of relevant cases, as well as the availability of treatments.

17 **Clinical screening**

18 In clinical settings one of the main objectives of screening strategies is the detection of
19 clinically relevant cases who could benefit from treatment. By contrast, at the community
20 or population level, screening strategies for depression focus on the identification of the

21 characteristics of those with depression, as well as groups with a higher vulnerability of
22 developing it, who might benefit from primary prevention measures.

23 Depression screening has been mainly proposed and implemented in primary care.⁸
24 Primary care is typically the entry to the healthcare system for patients with depression
25 and, in many countries, diagnosis and management is carried out at this level. However,
26 evidence about the effectiveness and efficiency of screening for depression at primary
27 care is limited, and screening is only recommended in situations in which it is possible to
28 guarantee the patient's continued care, which may convey financial costs.^{9,10} Screening
29 in clinical settings only covers health service users and so some high-risk population
30 groups, such as homeless people, might not be included. Data from clinical screening
31 strategies might therefore not be applicable to the whole population.

32 **Community screening**

33 Community screening strategies for depression have been proposed,¹¹ as these could
34 determine the prevalence of possible depression and depressive symptoms within
35 populations and be used to identify vulnerable groups. Community screening strategies
36 could identify probable cases of depression among people belonging to population groups
37 with reduced (or without) access to health services, such as homeless people.¹²

38 Community screening strategies will not be feasible in all contexts, as they require a high
39 availability of economic and human resources, such as staff recruitment, training, and
40 administration of the screening measures. As with primary care contexts, a clinical
41 consultation should be recommended or, at least, suggested for the probable cases
42 identified, which limits the feasibility of community screening to contexts in which this
43 is possible, mainly countries with universal healthcare coverage.^{8,10}

44 **Imperfect screening questionnaires**

45 The measures most frequently used worldwide for the screening of depression are: the 2-
46 8- and 9-item versions of the Patient Health Questionnaire (PHQ-2, PHQ-8 and PHQ-9
47 respectively used in the UK Biobank and the European Health Interview Survey); the
48 Centre for Epidemiological Studies-Depression Scale (CES-D), used in the European
49 Social Survey; and the first and second versions of the Beck Depression Inventory (BDI
50 and BDI-II), used in several primary care settings in the USA. Despite their extended use,
51 the use of these self-reported instruments can result in a high proportion of individual
52 false positive cases, and to an overestimation of the prevalence of specific depressive
53 disorders in the population.¹³ The excessive identification of cases of depression could
54 potentially harm patient's health and place an additional burden on already strained health
55 resources due to consumption of medication or unnecessary consultations.

56 Community screening aims to detect early depressive symptoms, before people develop
57 full-blown depression, for targeted primary preventative strategies. Prevalence estimates
58 obtained from community screening could be considered a relevant and suitable resource
59 for such detection, if the data used to obtain them are population-based or representative
60 of the population.¹⁴ Estimates of depression prevalence derived from community
61 screening should consider positives in the screening as possible cases, not people with
62 depression.

63 Strategies have been proposed to improve the accuracy of the estimates derived from the
64 use of screening questionnaires.^{13,15} These strategies include: the adaptation (usually
65 increasing) of the cut-off values to detect possible cases using self-reported
66 questionnaires (such as a cut-off score of 12 or higher instead the value of 10 for the PHQ-
67 9); the use of two-step approaches, such as using a self-reported questionnaire as a first
68 step to estimate the prevalence and a clinical interview in a randomly selected subsample
69 as a second step to double check the potential deviations of the estimations; and the use

70 of a Bayesian approach based on assumptions derived from data from previous research
71 to account for the imperfect diagnostic accuracy of screening tools.

72 **Improving systematic screening.**

73 While systematic screening for depression in clinical settings is not recommended,
74 screening tools might be useful for assessing symptoms severity and the outcomes of
75 treatments in patients with depressive disorders in primary care.¹⁰ Combining the data
76 from clinical and community screening opens a window of opportunity to capture
77 different relevant information for the monitoring of depression. Data can be collected
78 about specific treatments and vulnerable groups, and the quality of the data from other
79 monitoring sources (such as data from population health surveys) can be enhanced.

80 Previous trials,^{16,17} indicate that web-based patient portals to screen for depression as part
81 of population health programmes can improve participation rates in screening
82 programmes, and better identify cases, compared to screening in clinical appointments.
83 Systematic community screening using both electronic based and face-to face strategies
84 could enhance case detection and reach population groups that usually have high
85 depression rates but are difficult to reach, such as homeless people.¹²

86 Linkage between data collected in clinical and community settings should takes
87 advantage of new technologies and data collection systems, such as mobile technologies
88 and social media, and use shared identification codes to guarantee anonymisation or
89 pseudo- anonymisation; this could constitute a key step forward to synergistically
90 improve clinical and community screening.¹⁸ Previous research¹⁴ has shown that the
91 linkage of secondary data from different sources within health information systems (such
92 as linkage of data from clinical records and population health surveys), could improve

93 their reliability, validity, and accuracy for the detection and monitoring of people with
 94 probable depressive disorders at both the clinical and population levels.

	Goal	Strengths	Weaknesses
Clinical screening	Detection of possible cases who could benefit from treatment	Population is already screened within the healthcare system.	Only covers health service users; some high-risk population groups might not be included.
Community screening	Detection of early depressive symptoms for targeted preventative strategies	Representativeness of the results and identification of vulnerable population groups.	Requires a high availability of economic and human resources.

95

96 **Limits with comparability**

97 The wide availability of valid and reliable questionnaires for the assessment of probable
 98 depression and depressive symptoms could seem to be an advantage, but in reality, it
 99 limits the comparability of outcomes from screening programs. To enhance
 100 comparability, a core set of equivalent tools could be used for the assessment of
 101 depression or, ideally, the same questionnaire could be used across different contexts,
 102 such as the use of the PHQ-9 proposed by the joint initiative by funders and journals.¹⁹

103 There are also differences in the scoring of the same (or equivalent) screening tools, and
104 in how their results are interpreted.^{10,20}

105 These differences could have serious implications at both the individual level and at
106 population levels. At the individual level the use of inadequate cut-off scores could lead
107 to false positives and, conversely, false negatives, leading to unnecessary treatments and
108 opportunities of treatment respectively. At the group level, misinterpreting the results of
109 screening tools could lead to inadequate public health decision making, which could
110 preclude the optimal allocation of primary preventive resources. Specific guidelines are
111 needed for community screening of depression, including evidence-based
112 recommendations about what specific tools should be used, their possible equivalence,
113 how to use them, and about the interpretation of their results. This should improve the
114 effectiveness and comparability of screening strategies.

115 Despite the challenges for their implementation and use, data from community screening
116 strategies (ideally linked to data from clinically screening, other clinical data, and data
117 from other sources) could be a relevant and suitable resource to enhance the detection of
118 individual, group and environmental characteristics associated with probable depressive
119 disorders including in vulnerable population groups, to inform the development of
120 preventive measures and, ultimately, to reduce the burden and impact of depression at all
121 levels.

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131 **Competing interests**

132 All authors declare that they have no conflict of interests.

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