



Evidence Summary for Policy

The role of arts in improving health & wellbeing

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Executive summary

Background

This evidence summary has been commissioned by DCMS in response to the World Health Organisation report published in November 2019 entitled “What is the evidence on the role of the arts in improving health and wellbeing?” (1). This report synthesised the findings from over 3,500 studies on the role of the arts in the prevention of ill health, promotion of health, and management and treatment of illness across the lifespan. The reviewed evidence included study designs such as randomized controlled studies, nationally-representative longitudinal cohort studies, community-wide ethnographies, cross-sectional surveys, laboratory experiments, and case studies. The WHO report also made a series of policy suggestions to countries globally. However, the WHO report is a high-level evidence synthesis, so the details of studies included and assessments of the quality of the evidence base included is currently unclear.

Aims

Therefore, building on the findings from the WHO report, this review had three aims:

1. To review the evidence on how arts engagement can impact on the following three DCMS policy-relevant outcomes: (i) social outcomes, (ii) youth development, and (iii) the prevention of mental and physical illness.
2. To review the evidence on how social prescribing programmes that have used arts interventions can impact on the three outcomes above, again reviewing the types of studies and quality of the evidence base.
3. To provide a series of recommendations for how DCMS might invest in future research or academic collaboration to build the evidence base on interventions impacting on these three outcomes.

We drew on studies included in the WHO report and conducted further literature searches (see methods in Appendix 1). Our results present the findings by study type and discuss the quality of the evidence base for each specific outcome.

Summary of findings

Using the FORM Body of Evidence Matrix, which considers the quality, consistency, generalizability and potential impact of the evidence base for each particular outcome (see Appendix 2), our findings show strong ‘grade A’ evidence for the following outcomes, suggesting that this evidence can be trusted to guide policy:

- The use of music to support infant social development
- The use of book reading to support child social development
- The use of music or reading for speech and language development amongst infants and children
- The use of the arts to support aspects of social cohesion
- The use of the arts to improve wellbeing (i.e. positive psychological factors) in adults
- The use of the arts to reduce physical decline in older age

Our findings show promising ‘grade B’ evidence for the following outcomes, suggesting that this evidence can be trusted to guide policy in most situations:

- The use of the arts (other than reading) to support child social development
- The use of the arts to support wellbeing in children and young people
- The use of the arts to support cognition in older age

Our findings show weaker ‘grade C and D’ evidence for the following outcomes. This is largely due to insufficient research to date but suggests that caution should be taken if developing policy in these areas and more work is needed:

- The use of the arts to reduce social inequalities
- The use of the arts to improve educational attainment
- The use of the arts to manage or treat mental illness (e.g. depression and anxiety) in children and young people
- The use of the arts to prevent mental illness (e.g. depression and anxiety) in adults
- The use of the arts to prevent further cognitive decline in adults with cognitive impairments
- The use of the arts to reduce non-communicable disease incidence

In relation to the use of social prescribing (SP), we focused specifically on SP that involves arts activities to explore whether arts-based SP is an effective mechanism for connecting individuals to arts activities. The evidence is promising for wellbeing and social cohesion (‘grade B’) but weak for physical health and social inequalities, and non-existent for social development, the prevention of mental illness, and cognition. Nevertheless, economic evaluations suggest there may be benefits including returns on investment and social returns on investment from implementing arts-based SP.

Methods

Searches

The initial source for this report was the World Health Organisation report on arts and health published in November 2019, which includes the findings from over 3,500 studies (1). Data were drawn from the WHO report in relation to each of the topics selected for inclusion in this report. As the WHO report was not intended to be exhaustive, further searches were also undertaken for this report using keyword searches of databases including Google Scholar, PubMed, ScienceDirect, Cochrane Library and Web of Science. We focused on studies published in the English language (but with no geographical limitations) since 2000. We only include studies that involved humans and used any arts activities as the intervention of focus. Studies were excluded if they were animal studies, they focused exclusively on architecture or design, or they involved broader activities outside the scope of our definition of arts, such as gardening, engagement with the natural environment, cookery, sports or religion. We placed no geographical limitation on the studies included, but the vast majority were from OECD countries. Where possible, we present the findings from meta-analyses and systematic reviews. However, additionally, we discuss the findings from individual studies not included within any of these reviews. Of note, this report was undertaken very rapidly to meet a policy need, so it is not a systematic review nor rapid evidence assessment. Nevertheless, it gives an indication of the scope and quality of the available evidence.

For the social prescribing evidence base specifically, we restricted our searches to studies that specifically mentioned the arts in relation to SP. Studies that just mentioned SP but that did not say whether any kind of arts activity was included within the offering for patients were excluded. We also focused exclusively on SP interventions that used a link worker model, whereby individuals were referred by a GP to a link worker, who then helped them identify a suitable activity. This is the model that is currently being rolled out by NHS England. Therefore, SP interventions that involved either direct referrals from GPs or individual self-referral were excluded.

Definitions

We focused on four types of **arts activities**: performing arts (e.g. making music, dancing, acting etc.); visual arts, design and crafts (e.g. drawing, clay modelling, photography, sewing etc.); literature (e.g. reading, creative writing, other literary activities etc.); and culture (e.g. going to museums, galleries, exhibitions, concerts, the theatre, community events, cultural festivals, and fairs). We focused on three types of outcomes. For **social outcomes**, we categorised the studies into social development in infants and children, social cohesion and social inequalities. For **youth development**, we categorised the studies into speech and language development, educational attainment, and mental health. Finally, for **prevention of mental and physical illness** in adulthood, we categorised the studies into prevention of mental illness, cognition in older age, and prevention of physical illness. In this report, mental health is used as an umbrella term to include prevention of mental illness (e.g. depression or anxiety) and promotion of wellbeing (positive factors such as flourishing and meaning in life).

Quality assessment

To assess the quality of the evidence base, we used the FORM Body of Evidence Matrix (2). FORM is a structured process for considering the whole body of evidence relevant to a particular question. As an approach, it recognises that ascribing a level of evidence to each study that reflects the risk of bias in its design is only one small part of assessing evidence for a guideline recommendation. Therefore, FORM provides a framework for assessing all of the studies relevant to a particular outcome against five criteria. To assess the **evidence base**, it looks at the quantity and quality of included studies. In particular, RCTs are considered as the gold-standard approach to make causal claims, while representative cohort studies provide data on generalisability of findings. Other quantitative and qualitative designs are considered to provide further detail but to be less suitable for attributing replicable impact to specific interventions. This quality assessment approach is similar to other methods such as the Maryland Scientific Methods Scale in looking at issues such as design and bias, but is a more rapid, less detailed assessment. FORM also looks at the **consistency** of findings between studies; the **potential impact** suggested by the evidence base; the **generalisability** of the results to the population for whom the guideline is intended; and the **applicability** of the results to their intended setting. Under FORM, these five key components are individually assessed for each question giving a picture of both the internal and external validity of the evidence base under consideration. FORM was originally developed as a tool for clinical practice guideline development, so this report uses a modified version of FORM for non-clinical policy guideline development, which involves minor changes to the evidence matrix, such as removing references to healthcare contexts, clarifying the assessment of the evidence base, and interpreting grades of recommendation in relation to development of policy.

Arts engagement and health outcomes

Social outcomes

A SUMMARY OF FINDINGS

There are multiple social outcomes for which the evidence suggests benefits from engagement with the arts. There is strong evidence that music can support social development in infants including enhancing infant attention, affect, and mother-infant bond. There is also promising evidence that other arts activities can support child social development, including improving prosocial skills, social competence and socio-emotional development. There is also strong evidence that arts engagement can enhance aspects of social cohesion, including reducing individual loneliness and isolation, increasing prosocial behaviours, reducing aggression and discrimination, and improving social consciousness. There is weaker evidence on the effects of the arts on social inequalities. A number of studies suggest economic benefits to communities and societies from engagement with the arts, but these have used observational methods, and it is unclear precisely whether individuals of higher or lower socio-economic status benefit most. Further, there are a small number of studies suggesting that the arts can particularly support individuals from lower socio-economic backgrounds, enhancing psychological, biological and social outcomes. Finally, there are some preliminary studies suggesting benefits to individuals and communities facing disadvantage, such as reducing discrimination and tensions, and supporting empowerment. But the evidence on the effects of the arts on social inequalities remains for future studies to explore further. More detail on the specific studies and an assessment of this evidence base is provided below.

QUANTITY AND QUALITY OF STUDIES

SOCIAL DEVELOPMENT IN INFANTS AND YOUNG CHILDREN

RCTs: Several studies have looked at arts and social development in *infants*. A systematic review including 5 RCTs and 139 other quantitative studies found that motherese (maternal musical vocal interaction with babies) promotes infants' affect and attention (3). This has been supported by the findings from individual RCTs outside of this review, such as those focusing on Family Nurture Interventions (FNI) that include vocal soothing as a form of co-regulation between mother and infant, which have shown improved caregiving behaviours for new mothers (n=115) (4), and enhanced social-relatedness (n=59) (5). An RCT including 31 preterm infants also found that live music, when compared to recorded or no music (n=31) had a positive effect on infants' behavioural state, and improved interactions between nurses and infants, but the sample size is small (6). However, these effects appear strongest in the post-partum period as an RCT exploring music listening during pregnancy (n=296) found no significant changes to maternal-foetal attachment after birth (7).

Amongst *young children*, a meta-analysis of 18 RCTs found that parent-child book reading is beneficial to child and parent psychosocial functioning in ages 0-6 years (8). Individual RCTs have also shown that large-scale community orchestral music programmes can improve self-control, reduce behavioural differences, and lower aggressive behaviour (n=2914) (9), and dance therapy for children with learning disabilities can improve interpersonal relationships (10).

Quantitative studies: The findings from RCTs have been supported by further findings from other quantitative studies. Amongst *infants*, quasi-experimental research has shown that singing to infants is associated with increases in maternal perceptions of emotional closeness (n=43) (11), modulation of infant arousal (n=34) (12), and can improve postnatal bonding (n=168) (13). Music therapy song-writing in the form of composing welcome songs for preterm babies has also been found to support parent-infant communication and bonding (n=15), although the sample size is small so caution is required in interpreting the findings (14). A cross-sectional survey of 391 new mothers has shown associations between singing to babies and mother-infant bond (15).

Amongst *children*, studies support and expand on findings from RCTs. Art therapy within parental training (n=87) can promote children's acceptance by peers and by their mother (16), and opera for children aged 9-10 (n=104) (17) and drama for school children (n=913) (18) have been associated with increased bullying awareness. Further, drumming has been associated with improved domains of socio-emotional behaviour amongst children aged 10-12 (n=101) (19), group music training for children with poor prosocial skills aged 8 (n=84) has been associated with increased sympathy and prosocial behaviour (20), and music for children aged 5-11 (n=20) has been associated with improved social competence (21). Social inclusion and related psychological factors such as self-concept have also been found to be higher amongst

children who sing together (n=6087) (22). Further, music is associated with reduced aggressive behaviour amongst teenagers with visual impairments (n=56) (23). Cross-sectional data from children aged 4-7 years (n=276) has also shown an association between group music lessons and social skills (24), while data from adolescents and young adults (n=760) has shown that family cohesion is higher in families who listen to music together (25). Longitudinal data have shown that shared musical activities at home amongst children aged 2-5 (n=3031) are associated with prosocial skills and attentional regulation (26).

Qualitative studies: The findings from qualitative studies further echo the findings from RCTs and quantitative studies, showing that music can support child development and quality of mother-infant interactions (27), singing can enhance mother-infant bond (28), and arts activities can support the development of prosocial behaviours (29). Further, qualitative studies have proposed that other related outcomes may be affected too, such as arts enabling child-directed experiences of freedom and belonging, thereby supporting development (30), and visual arts contributing to social, mental, and emotional child development (31).

Overall, the evidence base for studies on music and infant development is very strong (B), consistent (A), generalizable (A), applicable (A), and has the potential for meaningful impact (B). The evidence base on arts and the development of older children is very strong for studies on book reading (A) but smaller for other arts activities (B). However, these findings are consistent (A), relatively generalisable (B) and applicable (B), and there is potential for meaningful impact (B). This provides an overall grade of recommendation of A for the evidence on music and infants and B for the evidence on both arts and reading for children. The body of evidence on arts and social development can be trusted to guide policy development in general for infants, and in most situations for children.

SOCIAL COHESION

RCTs: Social cohesion refers to the willingness of people within society to cooperate with and support one another. It includes people's social interactions, behaviours and experiences. A meta-analysis of published and unpublished experimental data from 14 RCTs has shown that fiction reading improves cognitive processes involved in social interactions (32), while another review of 8 RCTs found that creative reading activities have a positive effect on child prosocial behaviour (33). A systematic review focused on interventions that could alleviate loneliness and social isolation for adults aged 55+ found 4 RCTs showing that community-engaged art programs for this age group reduce loneliness and social isolation (34). Further, in individual RCTs, music with pro-integration lyrics for university students (n=291) has been found to reduce prejudice, aggression and discrimination (35).

Quantitative studies: RCT findings are supported by quasi-experimental studies that have shown increases in social closeness and cohesion from singing for 70-90 minutes including amongst healthy adults (n=369) (36,37), and people affected by cancer (n=193) (38). This bonding effect appears to be faster than for other non-musical social activities (37). Relationships have been found to be stronger amongst police and the community as a result of theatre projects (n=10) (39), and amongst young people who engage in social circus programmes (n=93) (40). Further, prosocial behaviours such as volunteering and charitable giving have been shown to increase over a period of 2 years amongst adults who engage more in the arts (n=30,476) (41), and theatre has prompted individuals aged over 15 (n=44) to want to change the situation around domestic and family violence, thereby improving social consciousness (42).

Qualitative studies: Qualitative studies further support these findings, reporting improvements in social acceptance, connection and social inclusion amongst individuals affected by dementia engaging in dance (43), and improvements in relationships and social inclusion both amongst disadvantaged adults engaging in dance (44) and children with and without disabilities engaging in outdoor arts (45). Intergenerational community arts projects have been reported to support relationships, personal development, social inclusion, social networks, confidence, and self-esteem and develop a sense of social justice, empathy, and support for others amongst older adults aged 65-95 and volunteers aged 55-75 (46-48). Mixed arts activities have been shown to develop social engagement and practical skills that are useful in finding work amongst refugees and asylum seekers (49), as well as build resilience for indigenous youth communities (50). Finally, group storytelling has been reported as a catalyst for community regeneration (51), and social circus as a way to improve social acceptance and social identity for young people (40).

The evidence base on arts and aspects of social cohesion such as social interactions, behaviours and loneliness is strong (A), consistent (A), generalizable (A), applicable (A), and has a potentially large impact (A). This provides an overall grade

of recommendation of A, suggesting the evidence base on arts and social cohesion is strong and can be trusted to guide policy development.

SOCIAL INEQUALITIES

RCTs: There is some evidence to suggest that engagement in the arts can help to reduce inequalities in health outcomes for children experiencing adverse circumstances. For example, an RCT with children (n=26) found that community-based music therapy could reduce depression, anxiety, withdrawal and improve attention problems for those who had been exposed to maltreatment and poverty, although the sample size is small (52). Additionally, a cluster RCT including 235 school children with reading difficulties living in an impoverished area also found that music classes had an effect on reading ability (53).

Quantitative studies: Building on the findings of the RCTs with children, arts activities have been found to reduce stress hormone levels in children who are economically disadvantaged aged 3-5 (n=310) (54). Other quantitative studies have focused on other aspects of inequality. For example, economic studies have shown that cultural sites and the music industry provide job opportunities and support social mobility, employment and socioeconomic stability for both individuals and communities (55–60). For example, the music industry in Seattle creates 11,155 jobs (55), the impact of visitor spending from a Jazz festival in Italy is estimated to be around €1.4 million (56), and the impact of Edinburgh's 12 festivals has been measured at £280m in Edinburgh and £313m in Scotland, bringing in 5,660 new jobs in Edinburgh in 2015 (60). Questionnaire data from festival visitors (n=335) of a multicultural festival have also revealed that festival engagement resulted in cognitive, social and affective benefits, suggesting that multicultural festivals may contribute to social integration in countries experiencing significant shifts in ethnic composition (61).

Qualitative studies: Qualitative research has covered broader outcomes relating to inequalities that have not yet been tested in quantitative studies. For example, it has suggested that singing and dance can support disadvantaged adults through formation of a new group identity (62). Music-making is also reported to help engage marginalised youth in educational settings (63) and support empowerment in marginalised communities (64), and art-making has been reported to give a voice to marginalised communities (65). Further studies suggest the arts can support an understanding of cultural traditions, including preventing discriminatory attitudes and reducing harassment and ethnic tension amongst communities (66,67).

The evidence base on arts and social inequalities is currently relatively poor (D), with relatively good quality results from quantitative studies but weaker and smaller evidence from RCTs. Findings are currently inconsistent as the outcomes used have been heterogeneous (C), but epidemiology evidence suggests findings have good generalisability (B) and applicability (B) with potential minor impact (C). The overall grade of recommendation is C, suggesting the body of evidence on arts and social inequalities has some policy implications but caution should be taken in its application.

Youth development

A SUMMARY OF FINDINGS

There are multiple aspects of child development for which the evidence suggests benefits from engagement with the arts. There is very strong evidence that music can support speech and language in infants, while wider arts and reading can support the further development of language in children. Further, there is promising evidence that arts engagement can support wellbeing in young people. The evidence is more mixed for other outcomes. In relation to education attainment, although some RCTs of music interventions and a large number of quantitative and qualitative studies suggest benefits, other RCTs of music interventions provide conflicting evidence. For other art forms, the literature is weaker still. In relation to mental illness, there is currently little evidence that the arts can support in the management or treatment of specific conditions such as anxiety or depression for young people, but this appears to be driven by a lack of research rather than null findings.

QUANTITY AND QUALITY OF STUDIES

SPEECH AND LANGUAGE DEVELOPMENT

RCTs: Amongst *infants*, a systematic review including 5 RCTs and 139 other quantitative studies have found that motherese (maternal musical vocal interaction with babies) can promote infants' language learning (3). This has been supported by the findings from individual RCTs outside of this review on music exposure that have shown earlier and larger brain responses to musical tones amongst 6 month olds (68).

Amongst *children*, music has been found to improve sound processing and language development in 4-5 year olds (n=74) (69). Similarly, amongst children using cochlear implants, music training improves emotional speech prosody (n=18), but the sample size is small (70). Amongst children with dyslexia aged 8-11, music classes improve rhythmic abilities, phonological awareness and reading skills (n=26), but again the sample size is small (71). Amongst children with reading difficulties aged 8-10, music education improves phonological awareness (n=235) (53). In relation to other arts activities, a meta-analysis of 19 RCTs found that shared book reading in children aged 1-6 improves expressive language and receptive language (72).

Quantitative studies: The findings from RCTs are supported by further quantitative studies. Amongst infants, reading to babies aged 3-12 months has been found to improve language and social communication skills (n=32) (73). Amongst children, quasi-experimental studies have shown enhanced neuroplasticity, enhanced processing of aspects of speech, and improved linguistic abilities in musical compared to non-musical school children (n=24) (74), as well as speech improvement in 8-year old children as a result of musical training (n=32) (75). A study of 250 primary school students found that long-term musical training was associated with second language development (76), while a longitudinal study of children aged 5-6 (n=66) involved in community music classes found improvements in children's language processing, vocabulary skills, and linguistic skills (77). Studies of music training have found brain changes in children aged 6-7 (n=75) (78), and greater grey matter volumes in different brain areas in adult musicians aged 20-32 (n=44) who had been playing for up to 26 years (79). Neuroscientific evidence also supports this, with reviews of multiple quantitative studies showing that music can result in positive changes in brain structure and function, therefore helping cognitive processes in everyday life (80). Further, these results are not confined to neurotypical children. Amongst children with dyslexia (n=24), music training can lead to improvements in auditory attention and phonological awareness (81). Similarly, classroom music for children with autism and other developmental disabilities can improve verbal responsiveness (n=33) (82), while amongst children with Rett syndrome (n=23) music can improve communication skills (83), and amongst children who are deaf (n=28) music can improve auditory perceptual skills (84).

Qualitative studies: Qualitative research has further echoed these findings, reporting that music can support children's communication and expressive behaviours (85) and, similarly, can support communication development in children with (86) and without (87) disabilities.

The evidence on music and infant speech and language development is very strong (A), consistent (A), generalizable (A), applicable (A), and has a potentially large impact (A). The evidence on both reading and arts on child language development is similarly strong (A), consistent (A), generalizable (A), applicable (A), and has a potentially meaningful impact (B). This provides an overall grade recommendation of A for music in infants, and A for both music and reading in childhood, suggesting the body of evidence on music and reading for infants and children is strong and can be trusted to guide policy development.

EDUCATIONAL ATTAINMENT

RCTs: One meta-analysis including 6 RCTs found that music training may enhance literacy development as a result of changes in brain mechanisms that support music and language cognition (88). However, these results have been shown to be small to moderate in effect size and a recent review of 54 experimental studies (n=23 RCTs) found that statistically significant results were found only in studies using no randomisation (89). This is also supported in other individual RCTs, such as two RCTs including a total of 74 children aged four which found no consistent evidence for non-musical cognitive benefits from music classes (90). A systematic review including 12 studies (a mixture of RCTs and other quasi-experimental designs) exploring music education in children aged 4-12 to examine why results are inconclusive or contradictory found that unclear results could be explained by lack of uniform research methods across studies (91).

Quantitative studies: In relation to studies on music, non-randomised quasi-experimental studies not included in the reviews above have reported music training is associated with enhanced reading ability amongst university students (n=166) (93), and music psychotherapy is associated with increased concentration and improved school marks amongst students aged 12 suffering from school failure (n=21) (95). Cross-sectional data have shown that childhood instrument playing or singing are positively associated with educational achievements (n=608-3222) (98,99), while longitudinal data have shown that shared musical activities at home amongst children aged 2-5 (n=3031) are associated with better numeracy (26). Benefits have also been reported amongst children with dyslexia; a systematic review including 23 quantitative studies exploring music education and dyslexia found that music improved literacy skills (96); a finding supported by another study showing associations between music training and improvements in reading abilities for those with dyslexia (n=24) (79). Further, while the results on cognitive transfer effects are debated, a systematic review of two quasi-experimental and five mixed-methods studies has suggested that music programmes can reduce truancy and increase attendance in school (97).

In relation to other art forms, dance has been associated with higher levels of selective attention amongst school students in years 5 and 6 (n=192) (92) and increased mental age amongst reception class school children (n=53) (93), and is associated with higher academic performance in students aged 11 (n=714) (94). Museum engagement has been associated with improved spatial reasoning in children aged 4 (n=111) (95). Both dance and cultural engagement are associated with higher verbal IQ scores in those aged 7-12 (n=99) (96).

Qualitative studies: Findings from qualitative studies have suggested benefits from music: group singing in primary schools has been reported to enhance students' musical learning and teacher skills, as well as promote learning in other academic subjects (97). In under-achieving secondary schools, music has been reported to reengage disaffected youth, promote inclusiveness and meet individual student needs (98). Amongst other art forms, art-integrated approaches to education in primary schools have been reported to support student learning in meaningful ways and enable students to better express learning outcomes (99), visual arts in secondary school education have been reported to support students in developing critical perspectives (31), and school environments have been suggested as suitable environments for art therapy, increasing agency in school students (87).

The evidence base on music and educational attainment is very high quality (A), generalisable (A) and applicable (A), but it likely only has the potential for modest impact (C) and is of poor consistency (D). Although some RCTs and a large number of quantitative and qualitative studies suggest benefits, other RCTs provide conflicting evidence. As such, this provides an overall grade of C: care should be taken in using findings on music and education to guide policy development. For other art forms and educational attainment, the evidence base is currently weak as we lack RCTs (D), but the quantitative and qualitative data show relative consistency (B), generalisability (B) and applicability (B), with potential for modest impact (C). Nevertheless, as we lack RCTs the grade of recommendation is a D: evidence on other art forms and educational attainment is still weak and more research is required.

MENTAL HEALTH

RCTs: In relation to *wellbeing*, a meta-analysis of 11 RCTs of music therapy for children and adolescents with psychopathology has found improvements in self-confidence, self-esteem and self-concept (100), and a systematic review of 7 RCTs has found that dance can improve well-being in young people aged 15-24 (101). Amongst individual RCTs not included within these reviews, dance therapy for children with learning disabilities has been found to improve emotion recognition and self-esteem (10), music therapy for children and adolescents aged 8-16 with behavioural and emotional problems (n=251) has improved self-esteem (102), and digital music has supported young people aged 16 to 25 with mild levels of mental distress (n=169) to identify and manage their emotions (103).

However, in relation to arts and the incidence or management of mental illness, there have been very few studies. The study of music therapy for children with behavioural and emotional problems reported reduced depression scores (102), but more work is needed. Further, an RCT found that music therapy could reduce depression, anxiety, withdrawal and improve attention problems for children who had been exposed to maltreatment and poverty (n=26) (52).

Quantitative studies: Findings relating to *wellbeing* are supported by quasi-experimental studies. In a study of adolescents aged 13-14 (n=60) music has been found to improve emotional intelligence (104), while musical theatre engagement is related to socio-emotional functioning in children with intellectual disability or delay (n=47) (105) and

music with improved emotional regulation in ‘at risk’ adolescents aged 13-14 (n=257) (106). Moreover, a scoping review including 12 experimental studies has suggested that performance and visual arts programmes can support those with disabilities through positively impacting upon psychosocial wellbeing (107). A rapid review including 4 studies with a quantitative component also found that arts activities for children and young people can build resilience (108).

In relation to *mental illness*, there remain few studies, in particular little specifically on the incidence of conditions such as anxiety and depression. But in longitudinal data analyses, creative activities are associated with a lower relative risk of social and behavioural instability and maladjustment (which includes depression and hostility) amongst 7-11 year olds (n=7558) (109), and arts therapies have been found to improve emotional and behavioural difficulties for young people aged 10-16 (n=81) (110).

Qualitative studies: Qualitative studies provide further data on wellbeing. Drama has been reported to promote emotional awareness and empathy and improve well-being and communication (111), arts therapies for young people aged 10-16 have been reported to support emotional regulation (110), and visual arts have been reported to facilitate self-expression (31). Further qualitative studies have proposed that other related outcomes may be affected too, such as dance movement psychotherapy for young people aged 17 supporting improved perceptions of body image (112).

The evidence base on mixed arts and aspects of wellbeing in young people is excellent (A), consistent (A), and relatively generalisable (B). It is of satisfactory applicability as the contexts of intervention have varied so much (C). The potential for impact is substantial (B). This provides an overall grade of recommendation of B: the evidence on arts and wellbeing in young people is strong and can be trusted to guide policy development in most situations. The evidence based for mental illness is poor (D), and consistency, generalisability, applicability and impact cannot be assessed properly yet. This provides an overall grade of recommendation of D: the evidence on arts and mental illness in children and young people is weak and requires developing.

Prevention of mental and physical ill health

A SUMMARY OF FINDINGS

There are several aspects relating to the prevention of mental and physical illness where the evidence suggests benefits from engagement with the arts. There is strong evidence that arts can support wellbeing in adults. Results show benefits including enhancing aspects of pleasure (“hedonia”), flourishing (“eudemonia”), and quality of life. There is also strong evidence on the benefits of arts engagement for cognition in older age, including memory and executive function. Further, there is strong evidence that the arts can reduce physical decline in older adults, including improving gait, strength and balance. There are also some areas where the evidence base is weaker, but this appears to be driven by a lack of studies rather than null findings. For example, there is currently limited evidence that engagement with the arts can reduce the incidence of mental illness. There are promising data from epidemiology studies but this remains to be studied further in trials. Similarly, there is promising data on the effects of arts on cognitive decline in adults with cognitive impairments and dementias, but the evidence base is currently heterogeneous. There is also weak evidence at present that engagement with the arts can reduce the incidence of non-communicable diseases. Nevertheless, there are some early findings suggesting future potential in this area, in particular in relation to health-related behaviours and stress-related physiological changes that are relevant to various health conditions.

QUANTITY AND QUALITY OF STUDIES

PREVENTION OF MENTAL ILL HEALTH (IN ADULTS)

RCTs: In relation to *wellbeing*, a systematic review of 7 RCTs has found that dance can improve well-being in young adults aged 15-24 (101), while a systematic review including 22 RCTs has found reliable evidence that music and singing can improve wellbeing in adults (113). Systematic reviews have also shown that the arts can improve wellbeing for particular patient populations, such as a review including 6 RCTs showing that music may improve quality of life for cancer patients (114), and a review including 22 RCTs showing that music may improve emotional well-being and quality of life as well as reduce depression for those with dementia (115). However, a systematic review including 2 RCTs exploring the benefits of art therapy found no clear changes in relation to emotional wellbeing or quality of life when comparing art therapy to other activities for people with dementia (116). Individual RCTs have also found that

community singing increases quality of life for adults aged 60+ (n=258) (117), playing percussion instruments reduces stress and improves well-being for oncology staff (n=48) (118), and dance reduces stress and improves quality of life for adults suffering with stress (n=162) (119,120).

Although there is a large literature of RCTs on the *treatment or management* of mental illness through arts involvement (as reviewed in the WHO report (1)), there are, as yet, no RCTs that have shown that arts engagement can reduce the *incidence* of mental illness (such as depression or anxiety).

Quantitative studies: Supporting RCTs on wellbeing, quasi-experimental intervention studies have shown that *wellbeing* can be improved by arts activities (n=127-687) (121,122), and cultural engagement (n=100-115) (123) (124). Music making can also improve quality of life for individuals aged 50+ (n=398) (125), and circus-arts can improve self-perceptions of personal health (126). In cross-sectional studies, dance is associated with enhanced wellbeing in young women (n=201) (127), attendance at cultural events with enhanced occupational well-being in employees (128), crafts activities with enhanced wellbeing in adults (n= 37,000) (129), and music listening with improved wellbeing in young adults aged 17-25 (n=107) (130). A scoping review including 16 studies with a quantitative component also found that Men's Sheds (community spaces where men can connect and engage in activities including arts) can improve mental health and wellbeing (131). Analyses of longitudinal cohort data have shown that community arts or music classes are associated with enhanced wellbeing in adults aged 50+ (n=2548) (132) and life satisfaction in adults (133).

In relation to the incidence of mental illness, other quasi-experimental studies have suggested that singing can prevent increases in depression and decreases in wellbeing and self-esteem amongst individuals who have been bereaved (n=58) (134). Further, analyses of longitudinal cohort data have shown that cultural engagement is associated with a reduced risk of developing depression in adults aged 50+ (N= 2148) (135).

Qualitative studies: Qualitative studies echo these findings for wellbeing, such as reporting that music and circus-arts can support wellbeing (126,130,136), and arts engagement can provide a sense of purpose, empowerment and personal growth (121,137), as well as improving self-esteem and confidence (108,138). Further, qualitative studies have also proposed that community drumming can promote emotional, psychological and social dimensions of wellbeing for mental health service users and their carers (139) and community arts festivals can support self-efficacy and emotional response (140). There has been limited qualitative research on the incidence of mental illness, but it has been reported that music-making can protect against stress and depression (125).

The evidence base on mixed arts and aspects of wellbeing in adults is excellent (A), consistent for arts engagement (but less so for arts therapies) (A), and generalisable (A). It is of good applicability (B). The potential for impact is substantial (A). This provides an overall grade of recommendation of A: the evidence on mixed arts and wellbeing in adults is strong and can be trusted to guide policy development. The evidence based on the prevention of mental illness is of satisfactory quality (C), with no RCTs but good quality quantitative studies. These findings are so far consistent (A), and relatively generalizable and applicable due to the epidemiological approach (B), with potential for meaningful impact (B). But this remains to be explored further. This provides an overall grade of recommendation of C: the evidence shows some preliminary support for using the arts to prevent mental illness, but caution should be taken in its application.

COGNITION IN OLDER AGE

RCTs: In relation to the effect of arts on cognition in older age amongst individuals *not yet showing signs of cognitive decline*, a meta-analysis of 10 RCTs focused on musical instrument playing in adults aged 60+ has shown enhanced speed, memory, and executive function (141). Further, a systematic review of 8 RCTs has found that dance can trigger structural changes in the brain, including increased hippocampal volume and gray matter volume, as well as functional changes such as improved cognitive function (142). Multiple individual RCTs not included in these reviews have also shown that dance can have cognitive benefits: Latin dance programmes can improve episodic memory and overall cognition for adults aged 55+ (n=57) (143), and social dancing can improve cognitive domains such as spatial memory for adults (n=115) (144). Individual RCTs have further shown that music training can improve verbal memory and visual memory in older adults (average age 77 years; n=24), but the sample size is small (145). Also, theatre programmes can improve cognitive and affective measures amongst adults aged 68-93 (n=122) (146), and arts therapies can improve cognitive function amongst older people (average age 71 years; n=68) (147).

Fewer studies have been conducted on the cognitive effects of the arts for individuals *already experiencing cognitive decline*. But it has been shown that amongst individuals with mild cognitive impairment, creative activities can improve general cognitive functioning and memory (N=93) (148), ballroom dance can improve cognition for those with amnesic mild cognitive impairment (n=129) (149), and music can improve episodic memory and, to a lesser extent, attention, executive function and general cognition for those with mild to moderate dementia (n=80) (150). There is also a large literature on the benefits of the arts for emotional and social functioning in people with cognitive decline, but that is not included here and discussed further in the WHO report (1).

Quantitative studies: In addition to RCTs, quasi-experimental quantitative studies have shown that, for *cognitively unimpaired adults*, musical training is associated with improved visual spatial ability and executive functioning (n=58) (151), improved memory in later life (n=237) (152) and better executive control in later life (N=34) (153). Supporting this, a scoping review including 1 non-randomised intervention study and 9 descriptive studies found that music playing was correlated with positive outcomes on cognitive ability for adults aged 50+ (154). Similarly, visual arts engagement is associated with increases in brain activity in older adults (average age 68 years; n=60) (155), theatre is associated with improved cognition (n=124) (156), and dance may enhance cognitive resilience (n=87) (157). Further, analyses of longitudinal cohort data have shown that cultural engagement is associated with a lower incidence rate of dementia (N=3911 & 9550) (158,159), and a lesser decline in cognitive function (N= 3,445) (160), while playing a musical instrument is associated with a lower likelihood of developing dementia or cognitive impairment (N=314) (161).

Quasi-experimental studies have also explored the benefits of the arts for *those with dementia*: reading can impact positively on cognitive skills including enhanced memory, listening and attention (n=61) (162), storytelling can lead to moderate increases in communication of basic needs (n=56) (163), and live music can increase levels of engagement (n=24) (164). As well as this, singing can improve memory and social interaction (n=29) (165), and increase communication and participation (n=45) (166). Further, art-making can provide an opportunity for sustained attention (n=53) (167,168).

Qualitative studies: Qualitative studies echo these findings, reporting that music has perceived cognitive benefits for adults aged 50+, including improving memory and mental health (125), and arts engagement can improve episodic memory (169). For those with mild dementia; artistic activities are reported to support feelings of cognitive capacity (170) and comedy is reported to prompt perceived improvements to memory, learning and communication (171).

The evidence base on arts and cognition in healthy older adults is very strong (A) and consistent (A). It is relatively generalizable (B), although many studies have been laboratory studies so the applicability is only good (B). The findings have the potential for modest impact (C). This provides an overall grade of recommendation of B: the evidence on arts and cognition in healthy older adults is generally good and can be trusted to guide policy development in most situations. For studies on older adults experiencing cognitive decline, the evidence base is good (B), but heterogeneous in arts interventions and outcomes studied (consistency C), with currently adequate generalisability (C). The findings have the potential for modest impact (C), providing an overall grade of C: the evidence on the use of the arts for adults experiencing cognitive decline suggest promise but should be used with caution, especially in relation to the expected level of impact.

PREVENTION OF PHYSICAL ILLNESS IN HEALTHY ADULTS

RCTs: In relation to *physical function* in healthy older adults, a meta-analysis of 34 studies found that rhythmic auditory cueing improved gait for older adults (average age 68 years) and young adults (average age 27 years) (172). Further, a review of 7 RCTs found that dance can improve balance, gait and strength for adults aged 60+ (173), while a review of 10 RCTs found that dance can improve fear of falling (174). In terms of individual RCTs not included within the reviews mentioned above, dancing for women aged 60-80 years has been found to slow the decline of bone mineral density and improve balance ability (n=40) (175), and mobility (n=43) (176), although the sample size for both studies is small. There is a wider literature on the arts and physical decline in people with degenerative conditions such as Parkinson's, which is not covered here but can be read elsewhere (1).

There are, as yet, no RCTs that have shown that arts engagement can reduce the incidence of *physical illness* (in particular non-communicable diseases such as cardiovascular disease, cancer, respiratory disease or diabetes). However, a meta-analysis of 19 RCTs has found that music listening can decrease anxiety, cortisol levels and blood pressure (177), which are all associated with cardiovascular disease, and a systematic review of 37 studies (n=27 RCTs) found that

creative arts therapies can significantly reduce stress (178), amongst other reviews. Further, it has been found that the arts can decrease aortic stiffness and wave reflections which are predictors of cardiovascular risk (n=20) (179), and can also affect behavioural risk factors associated with non-communicable diseases. For example, dance-based exercise activities can improve sleep quality and reduce smoking and alcohol consumption for adults (n=40) (180), and recorded, relaxing music can support substance addicted individuals (n=21) to reduce cravings and compulsive behaviours (181).

Quantitative studies: In addition to RCTs, quasi-experimental studies of *physical function* have shown how dance can improve performance in motor and visual tasks (N=39) (182), balance and stability (N=13-253) (183–185), postural control and lower body strength (N=13-41) (186–188), bone health and muscle mass (n=28-42) (189,190), and risk of falling (n=253) (185), as well as increase moderate and vigorous physical activity (n=60) (191). Musical training has been shown to slow the rate of age-related hearing loss (n=175) (192), while participatory arts programmes have been found to improve ratings of physical health in adults over the age of 64, reduce instances of falls, and increase levels of physical activity (193). Further, analyses of longitudinal cohort data have shown that cultural engagement is associated with a reduced risk of becoming frail and a slower progression of frailty over time (N=4,575) (194), and viewed as protective against the development of chronic pain (N=2,631) (195). Further, music listening has been associated with a decreased risk of falls in older hospital patients (average age 86 years; N=152) (196). Cultural engagement has also been associated with longevity, independent of demographic and socio-economic confounders, including amongst 10,609 adults aged 25-74 (197), 12,982 individuals aged 16-74 (198), 463 adults aged over 77 (199), 7,922 industrial employees (200), 7,217 adults aged over 30 (201), 5,087 adults aged 30-59 (202), and 6,710 adults aged 50 or over (203).

In relation to *physical illness*, analyses of longitudinal cohort data have shown that those with low social and cultural participation have an increased risk of coronary heart disease (N=6,900) (204), and dance engagement is associated with a reduced risk of cardiovascular disease mortality (N= 48,390) (205), and among adolescent twin boys, playing an instrument is associated with reduced the risk of becoming overweight later in life (N=5184 twins) (206). Reading is also associated with healthy lifestyle behaviours, including lower odds of trying a cigarette and alcohol, and increased fruit consumption (N=11,180) (207).

Qualitative studies: Qualitative studies echo these studies, including reporting that arts are a means to keep physically active (191), and to improve perceived physical health (131). Further, qualitative studies have proposed that other related outcomes may be affected too, such as dance improving movement memory and functional skill, as well as promoting positive attitudes towards exercise (208).

The evidence base on arts and physical decline is strong (A) and consistent (A), with good generalisability (A) and applicability (A) and potential for meaningful impact (B). This provides an overall grade of recommendation of A: the evidence on the use of the arts to reduce physical decline in older age is strong and can be trusted to guide policy development. However, for non-communicable diseases, the evidence base is poor (D), reliant on circumstantial data, with not enough data to assess consistency, generalisability, applicability, or impact, providing an overall recommendation grade of D: the body of evidence on the use of the arts to help prevent non-communicable disease incidence is currently weak.

Arts in social prescribing and health outcomes

In light of the findings presented above, it is relevant to consider schemes that help to connect individuals to arts activities for their health and wellbeing. Social prescribing (SP) is one such scheme being used to engage individuals with a range of activities and groups including functional support (e.g. job centres or benefits advice), training (e.g. skills or education to support employment), or community activities (e.g. gardening, exercise, arts & crafts groups, peer support, and shared reading). The typical model involves a GP referring a patient who could potentially benefit to a 'link worker' (sometimes referred to as a 'community navigator'). The link worker works with the patient to co-produce a personalised, community-based support plan based on 'what matters' to the patient, and then supports the patient to engage with the community group, service, or activity. As part of the Long Term Plan, NHS England has committed to hiring 1,000 Link Workers across 2019-20; one for each Primary Care Network (209). Although social prescribing can also take alternative forms, such as involving referrals direct from a GP and involving self-referrals without a GP being involved, in this report, we focus just on studies that have involved a GP in some capacity. Further, although there are relatively few studies that have focused on social prescribing that involved exclusively arts activities, there are a number

of studies where arts activities have been part of the social prescription. So we focus on those studies here in order to examine whether SP is an effective mechanism to engage individuals with arts activities and whether the same types of benefits reported in Section 1 can be replicated if patients are referred to the arts via SP. We exclude any studies where arts were not available to patients as part of the offering, or where it remains unknown whether arts was one of the options that patients received. Therefore, we refer to SP below as 'arts-based SP'.

Arts-based social prescribing and social outcomes

A SUMMARY OF FINDINGS

There is emerging evidence on the effectiveness of SP as a way of connecting individuals to arts-based activities for social outcomes. There is moderate evidence that arts-based SP can improve aspects of social cohesion such as loneliness, social isolation and social connectedness. However, there is only weak evidence that arts-based SP can have an effect on social inequalities: preliminary studies suggest benefits for the management of finances, debt reduction and activation in individuals who are unemployed, but more research is needed. There is no evidence on whether arts-based SP can affect social development.

QUANTITY AND QUALITY OF STUDIES

RCTs: In relation to *social development*, no RCTs of arts-based SP have been identified. In relation to *social cohesion*, an RCT of a 12-week arts on prescription scheme involving 66 adults with moderate anxiety or depression, demonstrated decreased social isolation (along with anxiety and depression) (210). Similarly, a cluster-RCT of a community engagement project involving 3986 adults from 20 matched pairs of neighbourhoods in deprived areas found a significant increase in social cohesion and neighbourhoods 'pulling together' (211). In relation to *social inequalities*, no RCTs of arts-based SP have been identified.

Quantitative studies: In relation to *social development*, no quantitative studies of arts-based SP have been identified. In relation to *social cohesion*, a study of adults aged 50+ found improvements in social support following arts-based SP (n=51) (212), while reductions in social isolation have been reported in multiple quantitative social prescribing studies (213–218). These findings have been echoed in studies specifically involving adults with mental illness: a study of adults with mild to severe anxiety or depression (n=342) found improvements in the size of patients' social networks as a result of engaging in arts-based SP (213), while a study of individuals with mixed mental health needs involved in arts-based SP showed improvements in ease of social interactions (n=53) (219), another study involving adults with mixed mental health problems found improvements in social inclusion and empowerment (n=62) (216), and a study of individuals with mental health problems and social isolation (n=399) found improvements in social connectedness, self-care and community trust (220). These findings have also been echoed in studies involving adults with physical illness. For example, a study of chronically ill patients experiencing loneliness (n=630) found that arts-based SP reduced loneliness and increased social connectedness including a sense of community belonging (218). Increased engagement with community activities has specifically been reported amongst individuals who have received arts-based SP, with studies showing increases in awareness of services and groups available in the community (n=292) (221), and increased engagement in these groups (n=280-630) (218,222).

In relation to *social inequalities*, a study of 182 individuals, half of whom were unemployed at baseline, found improvements in debt reduction, access to debt advice, and ability to manage finances (223), and another (n=46) found increases in perceived economic well-being over a 3-month follow-up in adults with depression (214). A study involving older adults (average age 60; n=280) found improved improvements in work and finances (218), and a study of adults with long-term mental and physical health conditions found improvements in financial management (n=292) (221). A prospective cohort study of patients (n=48) of whom 65% were not in paid employment found improvements in patient activation (224). Further, an evaluation of adults with psychosocial issues (n=16) demonstrated improved well-being outcomes through tackling the social determinants of health such as financial difficulties, unemployment and education (225).

Qualitative studies: There have also been a number of qualitative studies on social outcomes from arts-based SP that corroborate findings from RCTs and other quantitative studies. Little has been undertaken on *social development* and

SP. In relation to *social cohesion*, studies have reported increased social connectedness (213,218), sociability (226,227), community integration, social skills and social relationships (228). In addition, other studies have reported reductions in social isolation both for adults who are unemployed and for patients with complex needs (229–231). There have also been reports of improved self-care and health-related behaviours in adults with one or more long-term condition (229) and in socially-isolated adults aged 50+ (212). Further, it has been reported that patients accessing a arts-based SP service can become less socially isolated, more independent (222). In relation to *social inequalities*, reports of improvements in economic wellbeing have been found amongst adults with depression (n=34) (214), and it has been reported that adults are more able to access the welfare benefits they are entitled to (222).

Overall, the evidence for arts-based SP as a mechanism of connecting individuals to arts activities is non-existent in relation to social development, and relatively weak in relation to social inequalities (evidence base C, consistency C, generalisability C, potential impact C: overall grade C). However, the evidence for arts-based SP as a mechanism of connecting individuals to arts activities is strong in relation to outcomes relating to aspects of social cohesion (evidence base B, consistency A, generalisability B, applicability B, potential impact A: overall grade B).

Social prescribing and youth development

A SUMMARY OF FINDINGS

Under the definition of SP we have set out (i.e. focusing on SP programmes that involved the arts), no published studies were found that involved SP for young people below the age of 18, so the effects of the scheme on youth development are currently unknown. However, children are eligible for SP under the national roll-out so studies may emerge shortly.

Social prescribing and prevention of mental and physical ill health

A SUMMARY OF FINDINGS

There is emerging evidence on the effectiveness of SP as a way of connecting individuals to arts-based activities for the prevention of illness. There is moderate evidence that arts-based SP can improve aspects of wellbeing, although there remains no evidence on the prevention of mental ill health. There is very weak evidence that arts-based SP can have an effect on physical ill health: preliminary studies suggest tentative benefits for health-related behaviours and self-reported health outcomes, but more research is needed. There is no evidence on whether arts-based SP can affect cognition.

QUANTITY AND QUALITY OF STUDIES

RCTs: An RCT of SP involving adult patients with psychosocial issues (n=161) found improvements in patients' anxiety, quality of life, feelings about general health, and ability to carry out general activities (232). An RCT involving adults with moderate anxiety or depression (n=42) found positive outcomes in 78% of the intervention group, with decreases in anxiety and depression scores (210). However, no RCTs have been found on *cognition* or prevention of *physical illness*.

Quantitative studies: Regarding *mental health*, quasi-experimental studies support the findings from RCTs, showing improvements in well-being, anxiety, and depression scores, and psychological empowerment, including in studies involving adults with mental health problems (n= 12-3,686) (210,212,213,215–217,219,220,233–239). No quantitative studies have been found on *cognition*. In relation to *physical health*, improvements in physical exercise and activity, self-care and health-related behaviours have also been found (N=30-128) (215,229), and patients with long-term mental or physical health conditions have reported better symptom management (n=147) (238), and greater perceived support to manage their health more effectively (n=292) (221). Further, frequent attenders have been found to have improved health outcomes and to become less reliant on health-care resources (N=21) (240).

Qualitative studies: Supporting the quantitative findings, a number of qualitative studies have reported benefits to patients' general *mental* health including well-being and mood (216,217,222,234,241–245). More specifically, arts-based SP schemes have been reported to improve aspects of flourishing, including self-esteem, control and sense of purpose (228,246). Further, arts-based SP schemes have been reported to affect wider aspects of patients' lives, including their self-care, health-related behaviours such as increased physical activity and improved diet (229). This

appears to be due, at least in part, to arts-based SP schemes helping patients to set goals and plan for 'normality' (227). Little qualitative research has been conducted on *cognition* or prevention of *physical illness*.

Overall, the evidence for arts-based SP as a mechanism of connecting individuals to arts activities is relatively good in relation to wellbeing (evidence base B, consistency A, generalisability B, applicability B, potential impact A: overall grade B). However, there is no evidence on arts-based SP and cognition, and weak evidence on prevention of physical illness (evidence base D and insufficient evidence to assess the other domains, providing an overall grade of D).

Economic evaluations

A number of economic evaluations of arts-based SP have been carried out. Of those that have specifically involved arts activities, the majority conducted have suggested returns on investment as a result of changes in health service utilisation, as well as social returns on investment as a result of the wider societal effects of SP. Please note, we have not been able to make an assessment of the quality of these studies and have not assessed if they comply with HM Treasury Green Book guidance.

RETURNS ON INVESTMENT

A cost benefit analysis of the Rotherham social prescribing project involving 280 mostly older people (87% > 60, 75% > 60, 46% > 80) found in-patient admissions reduced by 21%, A&E by 20% and outpatients by 20%, estimating a Return On Investment (ROI) of 50p for every £1 spent (222). The 5-year cost reduction was projected to increase to £3.38 for every £1 if the benefits identified were maintained, or there was a lower proposed figure of £1.41 per £1 if a 33% drop-off was assumed. Other evaluations have produced similar results. For example, an evaluation of a social prescribing scheme in Brighton & Hove (n=100) involving people mainly suffering with social isolation or psychosocial issues found a 12.7% increase in primary care capacity compared to matched controls because of reductions in GP appointments. This translated to £1,365 net cost saving per person (247). Similarly, a study of 21 patients found a direct cost saving of between £77.72 and £8,109 per "frequent attender" patient over 5 months based on reductions in healthcare usage before, during, and after the intervention (240). It has also been found that arts-based SP can lead to reductions in use of psychotropic medication, although the economic or social impact of this has not been calculated (245). However, some smaller studies have failed to find significant changes, potentially due to a lack of statistical power. For example, an observational study assessing the financial and environmental impacts associated with healthcare usage (GP appointments, psychotropic medications and secondary-care referrals) following SP involving adults with common mental health problems showed a trend towards reduced healthcare usage compared to controls, but this was not significant (248). Further, in the only RCT performed on link worker social prescribing, the intervention group was found to have improvements in anxiety and depression but alongside increased costs associated with primary care contact in the cost benefit analysis (232). However, this study only looked at costs after 4-months, with no analysis of longer-term savings beyond a year, so it is possible that this actually represented an increase in patient activation that may have still had economic benefits through supporting individuals in taking control of their own health longer term and in enabling the identification of health problems earlier along with a lowered usage of secondary care services. As such, it is recommended that measures of economic impact should take account of health care costs over follow-up periods of at least a year and consider not just primary care but also secondary care such as hospital admissions.

SOCIAL RETURNS ON INVESTMENT

Several of these studies have also performed Social Return On Investment (SROI) analysis. The Rotherham study previously mentioned estimated between patient well-being benefits valued at £810,000-£920,000 and an estimated annual value of volunteering within the pilot of £81,000-£148,000 (an additional 16-26p for each £1 invested) (222). A study of 128 patients found a SROI of £2.90 for every £1 spent, with 60% of patients showing a reduction in GP attendance rates over 12 months (215). The social impacts included harnessing volunteers, patients returning to paid employment, enhanced community capacity, and reduced suicide attempts. Another study involving 40 participants also demonstrated an ROI of 43p per £1 spend, and a £1.26 SROI, providing a total return of £1.69 per person (237). The ROI was calculated from emergency admissions, GP appointments, home visits and telephone call data 6-months before and after the SP intervention. The SROI also included attempted suicides prevented, improved well-being in

patients, value of volunteering, and return to employment. Finally, in a study of 48 patients in Waltham, there was a reported SROI of £1.09 to £1.92 for every £1 invested in the service after 4 months compared to the baseline (224).

These analyses echo similar findings from studies that have focused on the net benefits of participation in community assets (236). A study of 3,686 adults estimated the combined societal value of the effects of health-related quality of life and healthcare costs from one year of participation in community assets to be £763-£1142 per patient per year (236). Other research has suggested engagement with community assets delivers net economic benefits over the short and longer term, due to reductions in public sector service use such as social care (249).

Research Recommendations

In light of the evidence presented above, there are a number of areas where more research is encouraged. In relation to those topics that were graded C and D, it is recommended that work is initially done using an epidemiological approach to assess potential findings prior to investment in specific trials. Areas that are particularly promising include:

1. Research on arts and social inequalities, including whether (i) individual arts engagement is associated with social mobility across the life-course, (ii) population-level arts engagement is associated with levels of inequality, (iii) individual-level arts engagement is associated with better health or social outcomes that are normally adversely affected by inequalities, and (iv) individuals of lower social status benefit especially from arts engagement.
2. Research on arts and the prevention of mental illness in children and adults, including whether arts engagement at different stages of the lifespan is associated with lower risk of incidence of depression, anxiety or other mental illnesses.
3. Research on arts and the prevention of non-communicable diseases (NCDs), including whether arts engagement is associated with (i) lower engagement with unhealthy behaviours that are risk factors to NCDs such as sedentary behaviours, smoking and poor diet, and (ii) lower incidence of NCDs themselves.

For the evidence on educational attainment, more research is needed to understand why the evidence base is so mixed. In particular, it is recommended that studies are undertaken that take account of arts engagement outside of school as well as in school settings, and that focus on longer-term arts interventions and long-term outcomes.

In relation to social prescribing of arts interventions, much more research is needed across all areas reviewed here. In particular it is highlighted that there is no research on the use of arts-based SP amongst children and young people as a mechanism to engaging them with arts activities. In addition, further research would be helpful on the following general research questions:

1. Whether referring individuals to arts activities through arts-based SP leads to long-term changes in arts behaviours.
2. Whether there are sufficient arts activities available within communities for link workers in all parts of the country to refer patients too.
3. Why some individuals might be declining arts-based SP services, and whether these individuals are those with poorer health outcomes who could stand to benefit most.
4. Whether the link worker is an effective component within arts-based SP for supporting individuals to identify and engage with community arts activities.

APPENDIX 2: Modified FORM Grading Tables

Body of evidence matrix

Component	A Excellent	B Good	C Satisfactory	D Weak
Evidence base	Multiple good quality RCTs with a low risk of bias	One or two good quality RCTs with a low risk of bias or several good quality non-randomised quantitative studies with a low risk of bias	One or two good quality non-randomised quantitative studies with a low risk of bias, or several quantitative studies with a moderate risk of bias	One or two non-randomised quantitative studies with a moderate or high risk of bias, or only qualitative evidence
Consistency	All studies consistent	Most studies consistent and inconsistency may be explained	Some inconsistency reflecting genuine uncertainty around clinical question	Evidence is consistent
Generalisability	Population/s studied in body of evidence are the same as the target population in the guideline	Population/s studied in the body of evidence are similar to the target population for the guideline	Population/s studied in the body of evidence differ to the target population guideline but it is clinically sensible to apply this evidence to the target population ³	Population/s studied in the body of evidence differ to the target population and hard to judge whether it is sensible to generalize to target population
Applicability	Directly applicable to the relevant intervention context	Applicable to the relevant intervention context with a few caveats	Probably applicable to the relevant intervention context with some caveats	Not applicable to the relevant intervention context
Potential impact	The intervention has the potential to have a large effect on the outcome as demonstrated by large statistical effect sizes or the ability to have a substantial impact on the outcome	The intervention has the potential to have a meaningful effect on the outcome as demonstrated by moderate statistical effect sizes or the ability to have a tangible impact on the outcome	The intervention has the potential to have only a small effect on the outcome as demonstrated by small statistical effect sizes or the ability to only have modest impact on the outcome	The intervention has the potential to have little tangible effect on the outcome

Definition of grades of recommendation

Grade of recommendation	Description
A	Body of evidence can be trusted to guide policy and practice
B	Body of evidence can generally be trusted to guide policy and practice in most situations
C	Body of evidence provides some early-stage support for developing recommendation(s) for policy or practice but caution should be taken in its application
D	Body of evidence is weak and is not recommended for developing recommendations for policy or practice at present

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