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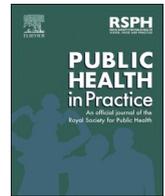
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## Allied health professionals: A promising ally in the work against health inequalities- A rapid review

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### ABSTRACT

**Objectives:** Allied Health Professionals (AHPs) have a crucial role in reducing health inequalities. However, there is a lack of evidence regarding the ways they can fulfil this role. This rapid review explores the ways in which AHPs can decrease health care or health outcome inequalities; address inequalities in the social determinants of health; and support disadvantaged groups at an individual, organisational and system level.

**Study design:** Rapid review following Cochrane criteria and narrative synthesis.

**Methods:** MEDLINE, EMBASE, CINAHL, Web of Science and AMED were searched combined with grey literature, to identify quantitative or qualitative review articles published between January 2010 and February 2021.

**Results:** From 8727 references, 36 met the inclusion criteria. The methodological quality of the studies was assessed with the AMSTAR tool and was generally low. Meta-analysis was not possible due to the heterogeneity of the studies, and a narrative synthesis was produced. Three themes emerged at patient and organisational level: 1) access to AHP services; 2) quality of care; and 3) social determinants of health. Two themes emerged at system level: 1) unequal workforce distribution and 2) lack of inclusive clinical guidelines.

**Conclusions:** This rapid review offers a broad range of evidence on the ways AHPs can contribute to the reduction of inequalities in health care, both in terms of access and quality of care and in health outcomes. More research is needed to further understand the impact of AHPs on inequalities affecting specific groups and their contribution to equitable distribution of social determinants of health.

### 1. Introduction

Health inequalities refer to differences in health between or within populations on the basis of socio-economic status, ethnicity, gender, ability, sexuality or other dimensions that reflect social stratification hierarchies operating in a given context [1]. They involve inequalities in health care (e.g., access, utilisation, quality of care) and health outcomes (e.g., morbidity, and mortality) [2]. They result from the unequal conditions in which people are born, grow, live, and work (i.e., the social

determinants of health), and therefore, are considered systematic and avoidable [3,4].

Allied Health Professionals (AHPs) have a crucial role in addressing health inequalities as they are an essential component of health and care services, working in multiple settings beyond health, including social care, education, independent and voluntary sectors (see Appendix 1 for a definition and list of professions as defined by NHS England). They build bridges between clinicians, social care workers, and communities, and promote the health of groups with intersecting vulnerabilities (e.g.,

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patients with chronic conditions and low socio-economic status) [5,6]. Due to their position at the interface between sectors, professional groups, and levels of care, AHPs can affect health inequalities directly through targeted interventions and equity focused care and indirectly through facilitating access to other care services and social determinants of health like employment [7,8].

However, given that policies vary across countries and patients' groups, AHP services are not universally accessible, and it has been found that socio-economic deprivation is associated with barriers in access to AHP services even in contexts where there is universal access to healthcare overall [9,10]. Furthermore, AHP services when provided without serious consideration of the recipients' needs can in their turn increase inequalities [11–13]. Such findings obscure the landscape around the role of AHPs in reducing health inequalities and stress the need for comprehensive evidence. This is a global study addressing this gap and exploring the ways in which AHPs can directly or indirectly decrease health care or health outcome inequalities.

## 2. Methods

### 2.1. Literature search

We conducted a rapid review, based on an a priori protocol (not registered) in line with Cochrane's guidelines [14]. We focused on reviews published between January 2010 and February 2021. Our search took place on February 2, 2021 and covered MEDLINE, EMBASE and AMED via Ovid, CINAHL via Ebsco, and Web of Science Core Collection. We used three groups of search terms: 1) allied health professionals terms based on Fowler-Davis et al. [8], 2) equity terms based on Prady et al. and inclusion health terms [15], and 3) quantitative and qualitative review terms adapted from SIGN terms [16]. Searches were piloted with the review team and an expert panel of AHPs. The template of the full search strategy for Medline is provided in Appendix 2 and was translated for the rest of the databases.

In our protocol, we stated that we would undertake forward and backward citation tracking of the included articles. However, as the searches resulted in a large volume of relevant articles, this was not necessary. Additionally, for each of the AHP roles, we reviewed grey literature using a web search engine and a targeted search of organisations' websites (e.g., Royal College of Speech and Language Therapists). Finally, we consulted AHP experts to identify any missing key literature.

We included reviews of studies of any design which focused on care or interventions delivered by AHPs and assessed the impact of AHP provided services on health care or health outcome inequalities, or social determinants of health, or the effectiveness of interventions targeted to disadvantaged groups. Reviews including studies only from low- or middle-income countries were excluded due to the heterogeneity of health care services. Conference abstracts and editorials were also excluded.

Titles and abstracts were screened by three reviewers (OOA, MRJA and KRJ) using Rayyan [17], with 20% of records double screened by JF. Articles with unclear eligibility status were reviewed by a second reviewer and agreement was reached through discussion. Full-text articles were screened also by OOA, MRJA and KRJ with 20% of eligible studies additionally screened by JF to ensure consistency and accuracy. The included articles at full-text stage were shared with AHP experts who were also consulted about the relevance of articles with unclear eligibility status.

Data were extracted using a bespoke data extraction table by OOA, MRJA, KRJ and AG and checked for accuracy and completeness by JF. Extracted data items included: study aim, design, target population, AHP group, type of intervention and key findings. We assessed the studies for quality and risk of bias using the AMSTAR 2 tool [18]. Due to the heterogeneity of the studies, meta-analysis was not possible. Instead, we produced a narrative synthesis of the main themes and principles discussed in the literature.

## 3. Results

### 3.1. Study characteristics and quality

The literature search yielded 8727 results, of which 97 were taken forward to full-text screening and 36 met the inclusion criteria (see Fig. 1). The number of primary studies covered in the included reviews ranged from 4 to >900 including qualitative, quantitative, and mixed methods designs. A summary of the included reviews is available in Table 1. Of the 36 included reviews, 22 (61%) were of critically low quality, six (17%) of low quality and eight (22%) of moderate quality. Assessment of study quality for all included studies is reported in full in Appendix 3.

### 3.2. Themes

The reviewed literature included studies reporting on inequalities in accessing AHP services, quality of care, AHPs' role in promoting social determinants of health, workforce distribution and inclusive practice guidelines. However, we did not find any studies on the direct impact of AHPs on inequalities between groups in health care provision or health outcomes. Below we present the main themes identified mapped across patient, organisational and system level (see Fig. 2).

#### 3.2.1. Patient & organisational level

**3.2.1.1. Inequalities in access.** Much of the reviewed literature focused on inequalities in access to AHP services [19,20], and interventions aiming to increase access [21–23]. Data from the Netherlands and the United States (US), show that people with lower levels of education, and ethnic minorities are less likely to access AHP services for arthritis (e.g., physiotherapy), post-stroke rehabilitation, hip-fracture rehabilitation, spinal cord injury care and brain injury care [20]. Importantly, this is often the case even when these groups report greater need than groups in higher socio-economic strata (e.g., highly educated) [19]. A characteristic example concerns homeless people who are less likely to use podiatric services, whilst the prevalence of foot problems in these groups often exceeds 50% and care is sought in shelters or emergency departments [24]. Similarly, people on the autistic spectrum are often excluded from AHP services despite their increased need and often intersecting vulnerabilities (e.g., lower income, minority background and severe symptoms) [25].

Telehealth and rapid access processes seem to be an effective way of increasing access to AHP services for marginalised groups who face increased geographical or transport barriers [21–23]. Similarly, mobile services, like mobile mammography units, seem to increase access and service utilisation for ethnic minority and lower income groups [26].

**3.2.1.2. Quality of care: effectiveness.** The literature suggests that access to AHP services is likely to impact on both health and social and behavioural outcomes [27]. Indicatively, access to music therapy is associated with lower anxiety and better sleep for people who have experienced domestic abuse [28]. Occupational and dietetic therapy improve overall wellbeing among people with severe mental illness, especially when interventions focus on client-centred goals and include cognitive and social-based components [29,30]. Speech and language therapy is a necessary component of effective rehabilitation interventions for patients with aphasia after a stroke and depression [31]. Finally, access to nutrition interventions is associated with improvements in self-efficacy and health behaviours [32].

**3.2.1.3. Quality of care: patient experience and need for tailored services.** Quality of care also concerns patient experience among disadvantaged groups when accessing AHP services. Research reveals that stereotyping based on various demographic characteristics such as sex, gender, race,

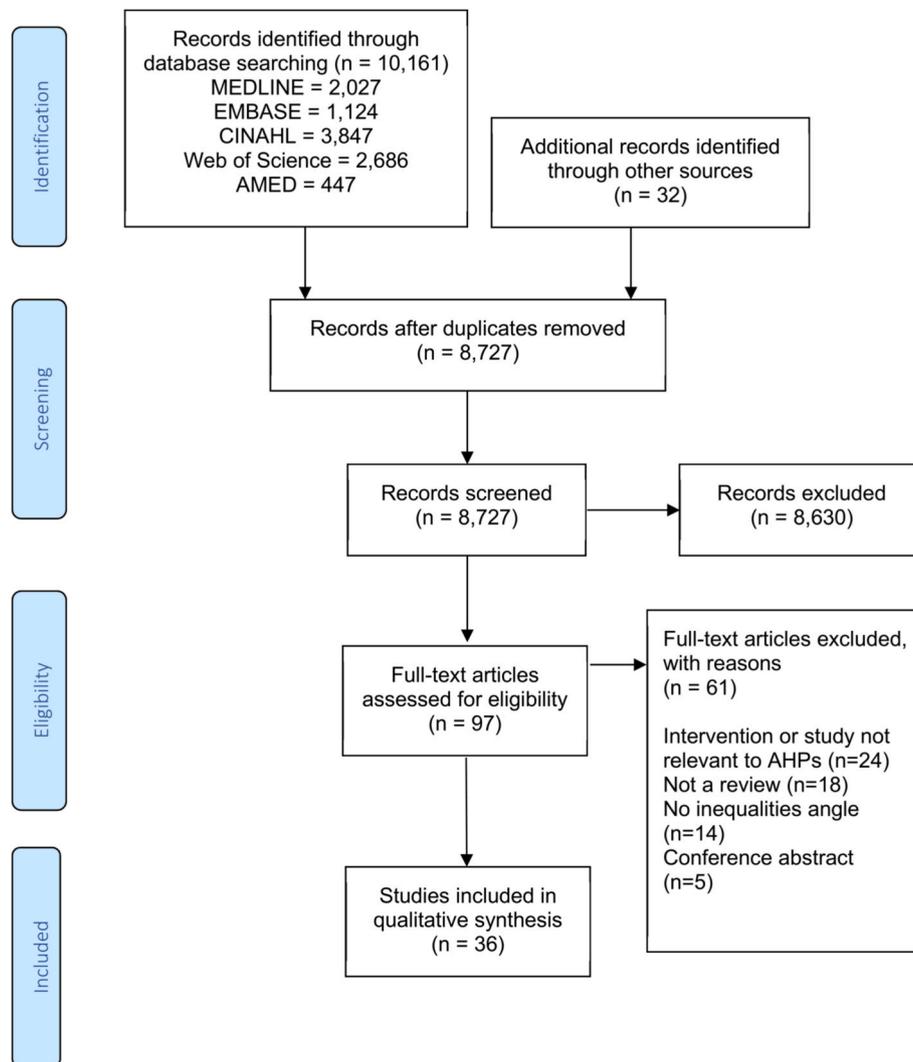


Fig. 1. PRISMA search flow diagram.

ethnicity, socioeconomic status, age, sexual orientation, mental health, weight, speech intelligibility, and drug use often result in biased decision making among AHPs which harms people with multiple intersecting vulnerabilities [33,34].

Interventions to tackle stereotyping and discriminatory treatment (e.g., rude behaviour) include the use of inclusive language, relevant cultural education pre- and post-qualification, and building an affirming health care environment [34]. Additionally, studies highlight the importance of culturally tailored interventions for ethnic minority groups as they seem to be more effective than usual care [35,36]. Evidence suggests that shifting away from western cultural assumptions facilitates the cultivation of reciprocal relationships and an affirming environment [37], while tailoring involves much more elements than language. Studies discuss the importance of tailoring in terms of active and passive strategies, gendered influences on pain management, cultural-spiritual beliefs, illness perceptions and expression of pain, satisfaction with treatment, and access to services [38].

**3.2.1.4. Social determinants of health.** Services provided by AHP promote access to social determinants of health especially for disadvantaged groups but are also affected by social determinants. On the one hand, there is evidence that occupational therapy interventions, particularly goal setting for obtaining work, as part of rehabilitation programmes for low back injuries or depression increase return to work rates [39,40] and improve occupational performance among people

with serious mental illness [27]. Moreover, improving access to occupational therapy whilst also advocating for long-term housing solutions can support occupational engagement among homeless people [41,42]. These interventions contribute to recipients' financial stability and living conditions that eventually improve health.

On the other hand, social determinants of health interfere with the outcomes of services provided by AHPs. Moorcroft et al. reviewed the barriers and facilitators to the provision and use of Augmentative or Alternative Communication (AAC) systems (i.e., systems to supplement or replace verbal communication through low-tech means or high-tech electronic devices) for people with complex communication needs and their families [43]. They concluded that interventions need to be modified, considering financial resources and suitable home environments, while AHPs need to work in partnership with communities to address social determinants of health.

### 3.2.2. System level

**3.2.2.1. Unequal workforce distribution and lack of inclusive clinical guidelines.** Literature at system-level is limited. Two reviews [44,45] highlight the underrepresentation of AHPs in rural areas which may disproportionately affect people with increased and complex social and health needs e.g., through limited appointments or treatment duration. The reviews suggest that addressing workforce inequalities requires a longitudinal, multifaceted approach including education strategies,

**Table 1**  
Summary of included reviews (N = 36).

Characteristics		Number of reviews (%)	
<b>Location(s) of included studies</b>	International	30 (83)	
	US	5 (14)	
	UK	1 (3)	
<b>Review type</b>	Systematic	20 (56)	
	Scoping	11 (31)	
	Integrative	3 (8)	
	Narrative	2 (6)	
<b>Number of studies included</b>	<10	4 (11)	
	10–30	18 (50)	
	31–50	4 (11)	
	51–100	6 (17)	
	>100	4 (11)	
<b>AHP groups in focus</b>	Mixed AHPs	11 (31)	
	Occupational therapists	8 (22)	
	Dietitians	5 (14)	
	Radiographers	4 (11)	
	Art or music therapists	4 (11)	
	Physiotherapists	3 (8)	
	Podiatrists	1 (3)	
	<b>Target population</b>	Mental health	6 (17)
		Ethnic minority groups	6 (17)
		Mixed disadvantaged populations	5 (14)
Rural populations		4 (11)	
People with disabilities		4 (11)	
People who are homeless		3 (8)	
Lower socio-economic groups		3 (8)	
Offenders or those at risk of offending		1 (3)	
Sexual and gender minorities		1 (3)	
Autism		1 (3)	
Women		1 (3)	
Intimate partner abuse		1 (3)	
<b>Focus of interventions</b>		Routine AHP services	28 (78)
	Health promotion	2 (6)	
	Workforce intervention or placements	2 (6)	
	Telehealth	2 (6)	
	Depression support specific interventions	1 (3)	
	Decision making	1 (3)	
	<b>Relevant outcomes reported</b>	Access and use of services	10 (28)
		Mental wellbeing	7 (19)
		Employment, employability and life skills	5 (14)
		Inclusive care and implicit bias	4 (11)
Diabetes outcomes		3 (8)	
Functioning or mobility		2 (6)	
Weight or dietary outcomes		2 (6)	
Recruitment of workforce		2 (6)	
Health promotion		1 (3)	

regulatory change, financial incentives, personal and professional support, and clinical placement models with motivational components such as community development. Finally, a review of 36 published low back pain physiotherapy clinical practice guidelines [46] shows that only 15 of these include sex and gender terms. Most of these are used in relation to epidemiology, risk, or prognostic factors and less so in relation to diagnostic or management recommendations [46].

## 4. Discussion

### 4.1. Statement of principle finding

This review explored the ways in which AHPs can directly or indirectly decrease health care or health outcome inequalities. We analysed data from 36 reviews and organised our findings across patient, organisational and system level themes in line with previously published frameworks [47]. Risk of bias assessment showed that the reviews were generally of low quality. Overall, there is a lack of evidence regarding

the direct impact of AHPs on health inequalities between groups. However, there is a large body of research describing how AHPs can impact health outcomes inequalities indirectly. There is a larger body of literature discussing the patient and organisational level factors than system factors, which seems to reflect the dominant trend in public health interventions that tend to focus on modifying individual rather than structural factors.

### 4.2. What the results mean

At the patient and organisational level, ensuring equitable access to AHP provided services is key for the reduction of health care inequalities and indirectly for the reduction of health outcomes inequalities. This involves targeting AHP provided services to specific disadvantaged groups, including ethnic minorities, homeless people, people with lower socio-economic status, learning and communication disabilities, or living in rural areas [31,33,45]. Furthermore, ensuring high-quality of care when disadvantaged groups access allied health services is also crucial. This study highlights that both the effectiveness of interventions and patients' experience can be undermined by stereotyping and unrecognised biases against disadvantaged groups affecting AHPs' decision making and behaviour [35,37]. Co-developing culturally appropriate services with communities and ensuring alignment with their needs, worldviews and cultural references is suggested as an effective way to both enable access and tackle inequalities in quality of care [37–40].

Research exploring the impact of AHP provided services on social determinants of health focuses on occupational therapy and the way it may enable access to housing and employment [41,48]. However, more evidence is needed to understand who is more or less likely to benefit from such interventions. Importantly, this review shows that social determinants of health influence the effectiveness of health promoting interventions rendering social determinants of health and their fair distribution as a strategic domain of action against health inequalities for AHPs regardless of their professional category.

### 4.3. Strengths and limitations

A major strength of the review is the broad view of AHPs and identification of key patterns and principles in the data. The focus on breadth, rather than depth, allowed us to highlight the extent of the impact that AHPs can have on health inequalities through multiple pathways and levels of action.

There are also some limitations. First, the review was not systematic and therefore, we may have missed important primary studies. However, we are confident that by undertaking an additional broad grey literature search, seeking advice from experts in the field and co-designing the search with an experienced information scientist, we minimised the risk of missing key studies. Also, given that our review covered a broad range of international literature from high-income countries, 14 different groups of AHP and a broad range of target groups, it is likely that our results are not equally generalisable and transferrable across countries, AHPs and target groups. Finally, most of the reviewed studies were conducted before the Covid-19 pandemic and did not identify evidence regarding the role of AHPs and the range of interventions that could effectively address inequalities that have emerged during this period. Accounting for these limitations, we abstracted data to a transferable level to ensure relevance across a range of contexts, professional and target groups. Although, the definition of AHPs varies across countries, there is a consensus that the scope of AHPs practice encompasses the individual, household and community level and includes components that are relevant with health care administration. From this viewpoint, we consider that equitable access to services, inclusive professional practices, patient centred and culturally tailored services and a holistic approach that includes the social determinants of health are principles that are relevant in AHPs service

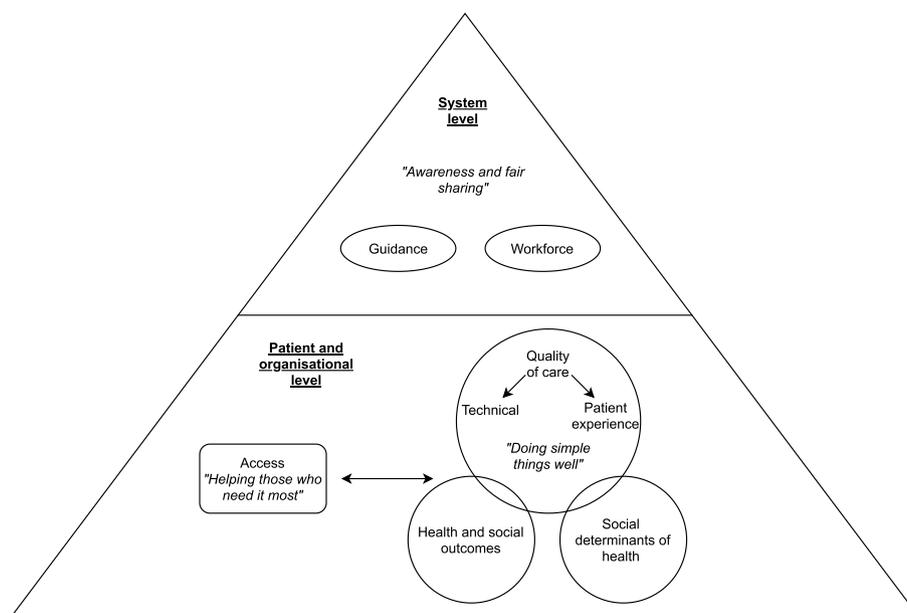


Fig. 2. Map of evidence relating to how AHPs can impact health inequalities.

delivery regardless of the specificities of national or professional context.

#### 4.4. Comparison with existing literature

There are a few existing reviews and policy documents which examine the impact of AHPs on public health outcomes. Fowler-Davis and colleagues studied the contribution of AHPs to the wider public health workforce in 2017 which was updated in 2020 [43,44]. They identified two main areas of intervention, namely health intervention/public health and secondary prevention/health improvement. In contrast to our work, they did not identify interventions that could be categorised as addressing the social determinants of health. On the contrary a framework published in the UK in 2019 [49] highlights the potential impact of AHPs on public health and health inequalities through supporting the wider determinants and health protection. In this review, we found a few studies examining the wider determinants as described and we assume that evidence in this domain is currently emerging.

#### 4.5. Policy implications

It is paramount that policy makers recognise the important role of AHPs in addressing health inequalities. Policy makers need to adopt a broader conceptual framing of inequalities that captures the breadth of inequalities in access to quality care and system factors and shifts away from narrow definitions (e.g., the life expectancy gap between socio-economic groups), which create a sense of fatalism and powerlessness among the AHP workforce. It is important that AHPs are enabled to identify connections between their roles with individuals and social determinants of health across the population (e.g., offering rehabilitation services to people with a traumatic brain injury enables recipients to return to work which in turn has an overall positive health impact that is likely to go beyond the individual). Policy makers should also ensure that AHP practice and national guidance is inclusive, encompassing the diversity of communities and populations. Finally, policy should adopt a multi-level perspective as interventions at the individual level can mitigate imbalances at the system level. For example, both workforce distribution and inclusive practice that emerged as system level factors affecting health inequalities are linked with interventions at the patient level and specifically with the provision of mobile services to groups

who deal with increased geographical or transport barriers; and with the tailoring of services for the creation of an inclusive atmosphere that will improve marginalised patients' experience. A framework for AHP published recently by King's Fund offers guidance in these directions [50].

#### 4.6. Future research

Future research should seek to build the evidence base for specific inequalities for certain AHP and target groups, for example, reviewing the primary research for physiotherapy interventions which improve the quality of care for deprived groups and ethnic minorities. Second, to understand the range of impact of AHPs on inequalities in the social determinants of health, AHP research should include social outcomes (e.g., employment, housing, education) in addition to traditional biomedical ones.

### 5. Conclusions

Allied Health Professionals have an important role in addressing inequalities in health care and health outcomes. This is likely to call for action at different levels of health care systems: national, local systems, organisational and individual. Patient and organisation level actions should focus on ensuring equity of access and high-quality patient experience for disadvantaged groups and supporting the social determinants of health. System level actions should aim to ensure a fair workforce distribution and inclusive national practice guidance.

#### Ethical approval

This study is based exclusively on secondary data; hence, no ethical approval is necessary.

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#### Author contributions

All authors contributed to the protocol and study design. JF led the

project. IK led the development of the search strategy. AK, MA, OO, KvD were responsible for screening and data extraction. KT, RB, RS and ETM provided clinical expertise. JF is the guarantor of the work.

### Declaration of competing interest

The authors declare that the research was conducted in the absence of any commercial or financial relationship that could be construed as a potential conflict of interest.

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhip.2022.100269>.

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