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Scoping review on Physical Health Conditions in Irish Travellers (Mincéiri)

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ABSTRACT

Objective The objective of this scoping review was to collate physical health conditions in Mincéiri—Irish Travellers.

Design Scoping review.

Search strategy and charting method MEDLINE/PubMed, EMBASE, PEDro, AMED, CINAHL, PsycINFO, SCOPUS as well as reports and grey literature were searched for primary data reporting physical health conditions of Irish Travellers up to 4 April 2023. Data was extracted, described and organised meaningfully into tables according to reported physical health conditions.

Eligibility criteria The population was Travellers. The concept referred to physical health conditions. The context was Irish Travellers based in any location or setting. Exclusion criteria was data/research other than primary data relating to physical health conditions of Irish Travellers.

Results From 198 citations generated from the database search, 11 unique studies (20 reports) were included in this scoping review, including n=7397 participants. Driven by the data, physical health conditions were categorised into cardiovascular diseases, respiratory diseases, injuries/musculoskeletal/arthritic disorders, genetic disorders and gut/bowel conditions. This review showed that the metabolic syndrome, asthma, bronchitis, tuberculosis and intentional injuries were 2–3 times more prevalent in Irish Travellers compared with the background population. Genetic conditions were also described in a proportion of Travellers.

Conclusions Overall, Irish Travellers experience a disproportionate burden of physical health conditions compared with background populations. Healthcare providers need to be aware of the unique physical health burden experienced by many Irish Travellers. Multifaceted strategies are needed to improve the health profile of this vulnerable and marginalised group.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The methods for this scoping review were informed by the scoping review guidance from the Joanna Briggs Institute and it was reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews Checklist.
⇒ Screening and data extraction processes were performed in duplicate.
⇒ Stakeholder involvement was integral to this review, as a member of the Travelling community was one of the coauthors of this work.
⇒ This was the first time all studies, reports and grey literature were comprehensively reviewed and collated to provide a broad picture of physical health conditions of Irish Travellers.
⇒ As is the convention in scoping reviews, quality assessment was not undertaken—results must be interpreted in light of this.

INTRODUCTION

Irish Travellers or 'Mincéiri', as known in their language of Shelta,[1 2] are a traditionally nomadic minority group primarily based on the island of Ireland.[3] They also reside in the UK with smaller populations in Europe and the USA. The term 'Travellers' is used as a generic term to refer to people who have a historical and cultural tradition based on a mobile lifestyle and includes English and Welsh Gypsies, Irish Travellers and Scottish Travellers. Each of these groups has a separate ethnic identity that is particularly evident from their different languages but they share many aspects of a common cultural identity as traditional Travellers or Romani people.[3 4] In this review, we specifically included 'Irish Travellers' only. As Irish Travellers in Ireland are known as 'Travellers' rather than 'Irish Travellers, the term 'Travellers' is used hereafter, recognising that the authors are referring to Travellers of Irish descent.

The number of Travellers recorded in the Irish Census of 2016 was reported to be 30,987 accounting for 0.7% of the general population.[5] In the 2011 Census for England and Wales, 58,000 people identified as Gypsy or Traveller (Irish origin) which may be an underestimation of the actual number.[4]

Travellers have been recognised formally as a distinct indigenous ethnic group in Ireland since 2017, which should have marked a positive step towards an inclusive society.[6] Yet, Travellers are 22 times more likely to experience discrimination than the general population[7] and they remain a severely marginalised group.[8 9] Consequently, Travellers face poor health and experience a higher burden of mortality and morbidity than the general population.[8]

Traveller life expectancy has been reported to be 66 years, 11.5–15.1 years less than that of the general population.[8] The infant mortality rate is 3.6 times higher than the general population[8] and 10% of Travellers do not reach their second birthday.[10] The disproportionate mortality may be due to poor health as well as other factors such as inadequate housing, education and literacy levels.[8] Mental health disorders are prevalent, with reported suicide rates sixfold to sevenfold higher than the general population.[8] Physical health appears to be poorer[8] but the scale and range of physical health conditions experienced by Travellers is not well known. The aim of this review was to summarise available data and categorise physical health conditions in Travellers. Due to the exploratory nature and lack of delineation of this area identified by an initial test review, a scoping review methodology was chosen.

The objectives of this review were:

1. To explore the extent, breadth and nature of the literature with regard to physical health conditions experienced by Travellers.
2. To categorise the evidence about physical health in Travellers.
3. To compare physical health conditions of Travellers to the background population where possible.

METHODOLOGY

The protocol for this review was published on Open Science Framework (https://osf.io/v6etg/). This review followed the Joanna Briggs Institute's (JBI) methodology for scoping reviews[11] and was also informed by the original framework of Arksey,[12] and enhancements proposed by Levac.[13] It was checked against the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) extension for Scoping Reviews Checklist.[14] The six stage framework developed by Arksey and O' Malley[12] was used to structure this review.

Stage 1 refers to identifying the research question. The primary research question was; what is known about the physical health of Travellers. The secondary research question was; how does the physical health of Travellers compare to the background population, and where this information was available.

Stage 2 refers to identifying relevant studies. A comprehensive search strategy was developed collaboratively with a skilled research librarian (DM). The following electronic databases were searched: MEDLINE/PubMed, EMBASE, PEDro, AMED, CINAHL, PsycINFO, SCOPUS (see extended data). The original search was performed on 9 March 2021 (rerun on 2 November 2021 and 4 April 2023). The search strategy was generated from a combination of free text search terms, text words, Medical Subject Headings terms and keywords with Boolean operators. The full search details are outlined in online supplemental box 1. Authors of abstracts included in this review were contacted to ascertain if full text versions were available. Reference lists of included studies were examined for relevant studies. Grey literature was searched using the CADTH Grey Matters tool and the following websites were checked: Lenus, ProQuest E-Thesis Portal and RIAN. For each of these sources, the terms 'Travellers' and 'Health' were searched. For each, the website was 'hand searched' for potentially relevant documents. The first 10 pages of each search's hits were reviewed for potentially relevant material. A targeted search of Google Scholar and WorldCat search engines was also performed.

Stage 3 refers to study selection. This was based on the population, concept and context mnemonic.[11] The population was Travellers. The concept referred to physical health conditions. There is no single definition of physical health conditions. We took this to mean any condition, including a disease or event (eg, injury) that impacts the physical health system. The context was quite broad and included Irish Travellers based in any location or setting. It was originally envisaged that this review would encompass 'health' in a more holistic way including mental and physical health conditions. Given the large scope of a review including both dimensions of health, a pragmatic decision was taken to consider physical health conditions only in this review and refine the search strategy accordingly.[12 13 15] This included primary data documenting prevalence of physical health conditions as well as perceptions of Travellers regarding physical health conditions experienced. Only English language sources were searched as it was expected the literature would be concentrated mainly in Ireland and the UK/other English-speaking jurisdictions. No date restriction was applied to generate a purposefully broad scope of the available literature. Both quantitative and qualitative study designs were included, although it was expected data would be primarily quantitative in nature. Studies that examined physical health conditions of Travellers (>18 years) as a primary or secondary outcome measure were included. If intervention studies were included, only baseline data was extracted. Exclusion criteria were data which did not relate to physical health conditions of Irish Travellers.

Duplications were removed and studies were imported into Covidence for title and abstract screening which took place independently by two reviewers (JB and FK). Both authors then conducted a full-text evaluation. If necessary, discrepancies were resolved by consensus by including a third author.

Stage 4 refers to charting the data. Relevant data pertaining to physical health conditions of Travellers were retrieved. Two reviewers (JB and FK) independently extracted data using a bespoke data extraction instrument.[11] The data extraction process took place from October 2021 to March 2022. The data extraction instrument was designed by review authors (JB and FK) based on the JBI template source of evidence details, characteristics and results. Two review authors (JB and FK) independently extracted data from the first ten studies using the initially developed data extraction form and met to ascertain its suitability. Minor changes to the data extraction tool were made at this stage. The data extraction instrument collected the following data relating to included studies (author, title, year of publication, study aims/objectives, research design, living arrangements, location of participants, inclusion/exclusion criteria, data collection method,

number of participants, age (mean and SD), biological sex, details of physical health condition reported and physical health conditions in the background comparison population). Any differences were resolved by consensus discussion. A third author (DM) was available if disparities emerged between reviewers.

Stage 5 refers to collating, summarising and reporting of results. Data were reported for each selected study within each category as agreed in the previous stage. Findings were mapped to summarise the range of evidence to present the breadth and depth of the field.[13] Tables were also presented to outline the research findings as defined in stage 4. According to scoping review methodological enhancements proposed by Levac *et al*,[13] results were presented numerically and in a data driven approach were categorised meaningfully into the following subcategories of physical health conditions; cardiovascular disease (CVD), respiratory, genetic, injuries/musculoskeletal/arthritic disorders and gut/bowel conditions. Where available, data were compared with the background population. Implications for policy, practice and research were identified. Entries were independently checked by two authors (JB and FK).

Patient and public involvement

Stage 6 refers to patient and public involvement. Stakeholder/public involvement was integral to this review. The initial research question was generated by the principal author who has an interest broadly in the physical health of marginalised groups. In the planning phase, the research question evolved and was refined by engaging informally with the research team and a member of the Travelling community (AW) about this topic. In conversation, AW identified the poor physical health and prevalence of physical health conditions among many Travellers which consolidated the purpose of conducting this review. AW was then personally invited to join the review team. Her involvement began after the initial database search and continued throughout the data synthesis and write-up phases. A number of online meetings took place during which AW shared her perspectives verbally and in written form on early results, drafts and conclusions of the review as they emerged.

RESULTS

Studies identified

After removal of duplicates, 197 studies were identified. After excluding irrelevant studies, a total of 11 studies and 20 reports were deemed eligible for inclusion. Quantitative studies predominated (n=8), with 2 qualitative studies[16 17] and 1 mixed methods study.[18] Three were reports generated from the grey literature search,[9 17 18] while the remaining were generated from the systematic database search. The PRISMA flow chart summarises the search strategy (figure 1).

Study characteristics are shown in online supplemental table 1. A total of 7397 participants were included with more than half (n=4141) from the All Ireland Traveller Health Study (AITHS).[8] One study took part in [18] England and Wales and the remaining studies were based in Ireland. Living arrangements of participants were reported in three studies.[9 18 19] In one study, a quarter (n=515) lived in a caravan, a trailer or a chalet[19] and in another, participants' accommodation included encampments, halting sites and social housing.[20] All (Traveller) participants in Mac Gabhann's study (n=296) resided in prisons in England and Wales.[18]

Participants' characteristics are shown in online supplemental table 2. The majority of studies included males and females with overall 61% of participants were female. The UK based study included mostly male participants (93.6% male),[18] while one study included females only.[16] The age profile of participants was predominantly young, with the majority in their second, third and fourth decades. Tables 1–4 summarise physical health conditions from included primary studies.

Three studies reported CVDs (table 1). Tan *et al*[21] reported the following CVD risk factors among study participants (n=47): high triglyceride levels (23%), low HDL cholesterol levels (62%), impaired fasting glucose levels (19%) and hypertension (systolic blood pressure (BP)≥130 mm Hg 43% and diastolic BP≥85 mm Hg 38%). The prevalence of diabetes, pre-diabetes and the metabolic syndrome evaluated in a series of pilot studies was higher than the general population.[22] The incidence of metabolic disease was over two times higher among Travellers (53.2%) compared with the background population (21%).[22] Self-reported CVD was approximately 5%, compared with a self-reported CVD rate of 16.1% in the general population.[8]

Two studies explored respiratory conditions (table 2).[23 24] One study reported a 5 year tuberculosis (TB) cumulative crude incidence rate of 81.4/100 000 in Travellers compared with 45.5/100 000 and 27.3/100 000 in the general population and white Irish-born population, respectively.[23] The rates of TB were therefore threefold higher in Travellers than in the white Irish-born population.[23] Nolan *et al* reported that 41% of Travellers were smokers and 86% of these smokers reported respiratory symptoms including cough, wheeze and shortness of breath, while 23% had an obstructive respiratory disease pattern.[24] Respiratory conditions (bronchitis and asthma) were rated as the second most common physical health condition, with a prevalence of 24.5% among Travellers in Ireland and 35.1% in Northern Ireland.[8] This is considerably higher than available comparison data of 3% with chronic bronchitis in the Irish background population.[25]

Abdalla *et al* evaluated injuries[26] (table 3). They demonstrated that the prevalence of unintentional non-fatal injury in Travellers<65 years was lower (standardised incidence ratio (SIR)=40), while the prevalence of intentional injury was higher (SIR=213) than the general population. Travellers > 65 years had higher injury rates for both unintentional (SIR=137) and intentional injuries (SIR=517). Common physical

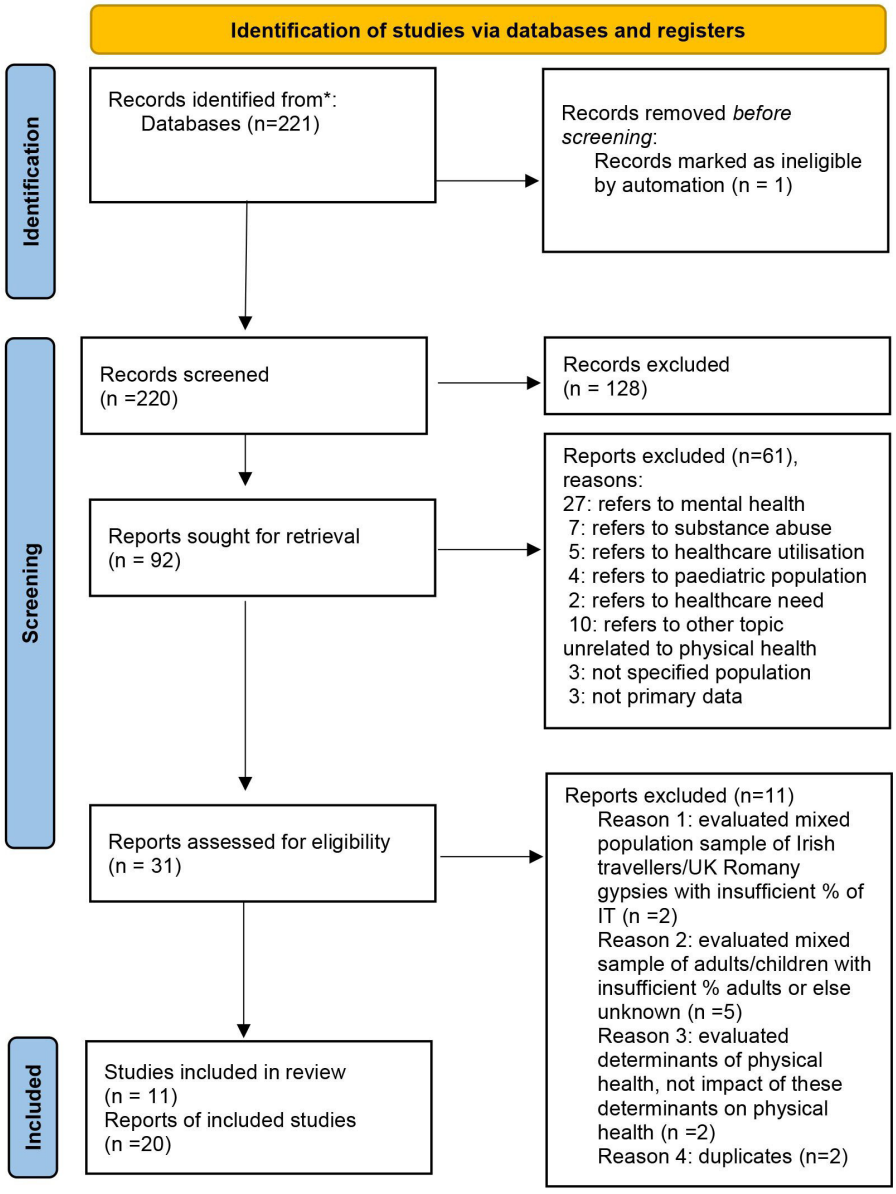

Figure 1 Preferred Reporting Items for Systematic Reviews and Meta-Analysesflowchart describing the process of study selection.* The following databases were searched: MEDLINE/PubMed, EMBASE, PEDro, AMED, CINAHL, PsycINFO, SCOPUS and Grey Literature.

health problems reported by a population of 281 Travellers in prison in the UK were asthma (n=12), 'back' problems (n=10), epilepsy (n=9) and arthritis (n=7).[18]

Two studies (table 4) examined genetic disorders both inherited in an autosomal recessive manner. One was a case report of a 32 year-old woman who inherited a rare leucoencephalopathy and severe central nervous system (CNS) impairment was reported.[27] Flynn *et al* also reported CNS dysfunction in Travellers due to the presence of type 2 hyperprolinaemia.[28]

One study examined the effects of lifestyle changes on the microbiome and its associated risks for chronic disease.[20] The results demonstrated that Travellers retained a microbiota similar to that of non-industrialised populations due to halting site dwelling, number of siblings and animal ownership. Another study evaluating the prevalence of inflammatory bowel disease found no records of idiopathic bowel disease in the Traveller population.

Most Travellers described their health as very good (59%) or good (28%).[8] Comparable figures among the general population are similar at 62% and 29%, respectively.[25] Overall, 12% of Travellers described their health as fair, bad or very bad.[8] The corresponding figure for non-Travellers was 9%.[25] Breaking this down to 34–54 year age group, 31% of Travellers[8] categorised their health as 'very good' compared with 57% among non-Travellers.[25] In this age group, 29% of Travellers[8] had health categorised as 'fair', 'bad' or 'very bad' while the comparable figure in non-Travellers was 8%.[25]

Table 1 Cardiovascular diseases

Physical health Variable	Authors	Result
Triglyceride levels	Tan *et al*[21]	High triglyceride level 23% (n=49%), males 89% (n=8), females 40% (n=15)
HDL cholesterol	Tan *et al*[21]	Low HDL level, 62% (n=29), males 78%, females 58% (n=22)
Impaired fasting glucose	Tan *et al*[21]	Total: 19% (n=9), males: 22% (n=2), females 18% (n=7)
Angina	All Ireland Traveller Health Study[8]	4.3% Travellers, Ireland (background population 2%) 2.1% Travellers, Northern Ireland
Diabetes mellitus	All Ireland Traveller Health Study[8]	6.1% Travellers, Ireland (background population 3%) 6.1% Travellers, Northern Ireland
	Slattery *et al*[22]	5.9% Traveller sample (background population 4.3%)
	Tan *et al*[21]	8.5% Traveller sample (background population 4.3%)
Prediabetes	Slattery *et al*[53]	9.3% (background population 6.2%)
	Tan *et al*[21]	11.6% Traveller sample (background population 6.3%)
Heart attack	All Ireland Traveller Health Study[8]	2.3% Travellers, Ireland (background population<1%) 2.1% Travellers, Northern Ireland
Systolic blood pressure≥130 mm Hg	Tan *et al*[21]	Total 43% (n=20), males: 22% (n=2), females 47% (n=18)
Diastolic blood presssure≥85 mm Hg	Tan *et al*[21]	Total 38% (n=18), males: 44% (n=4), females 37% (n=14)
Metabolic syndrome	Slattery *et al*[22]	39.3% Traveller sample (background population 21%)
	Tan *et al*[21]	53.2% Traveller sample (background population 21.0%)
Self-reported CVD	McGorrian *et al*[30 54]	► -Self-reported CVD was 5.6% (5.8% in men and 5.5% in women), compared with 16.1% in the general Irish population. ► The prevalence of CVD increased with age and the Travellers who reported CVD were older (mean age 54.06±14.48 vs 34.99±13.85). ► No significant difference in the prevalence of reported CVD, hypercholesterolaemia and hypertension between the comparator groups was found. ► However, diabetes, smoking, consumption of salt and fried food and physical inactivity are more frequent in Travellers. ► Significant positive association was found between CVD and age, high cholesterol, hypertension, diabetes and current/former versus never smoking, drinking alcohol and increasing discrimination.
	Kelleher *et al*[19]	► Significant negative association was found between CVD and self-rated health, consumption of fried food and trust of others. ► Self-reported blood pressure, cholesterol, diabetes screening by GP (48%, n=1996)

CVD, cardiovascular disease; GP, general practitioner; HDL, high-density lipoproteins.

Three studies conducted qualitative or mixed methods research. In the Mac Gabhann's study, which explored experiences of Travellers in prison in the UK,[18] prison staff completed 296 surveys, while 57 Travellers (of Irish origin), predominantly male (93.6%), participated in focus groups and semi-structured interviews. Almost a quarter (24.6%) of prisoners reported physical health problems and Travellers reflected negatively on the use of healthcare prison facilities to manage their health condition.

"I'll never go back to them, they've done nothing for me".

Murphy[17] explored the experiences of homelessness for Travellers through qualitative interviews of 14 Travellers in one county in Ireland. They vividly described the negative impact of homelessness had on their physical health.

"I never had blood pressure in my life. Now, the last year and a half, ever since the time we had to leave (the rented house), I'm taking blood pressure tablets".

Collateral relevant to family members was also reported.

"My mother is on a breathing machine because she has a sleeping disorder so in the, in the night time if she would knock it off, she goes into her, what's it a coma. And with the sleeping disorder it cut's your oxygen from your throat to your brain, so that leads to a heart attack or a stroke".

Murphy also described health problems that participants directly attributed to their homeless state or living conditions (on a site with no toilet) such as chronic kidney infections. Limited access to electricity was a problem identified which resulted in a lack of refrigeration to store medication such as insulin.[17]

Table 2 Respiratory diseases

Disease and variable measured	Authors	Result
TB: incidence rate	O'Toole *et al*[23]	► Higher incidence rate and younger age in Irish Travellers than white Irish-born population and general population. ► CIR of TB in the Traveller population was <5/100 000 population per annum from 2002 to 2009. This increased after 2010 and CIR>10/100 000 population per annum 2011–2013. ► From 2002 to 2013, the CIR of TB decreased in the general population (from 10.5/100 000 in 2002 to 8.3/100 000 in 2013). ► CIR for TB in Travellers was about threefold higher than that of white Irish-born population in 2011 and 2012. ► In 2013, the CIR in Travellers increased to 40.6/100 000 following an outbreak. ► 5-year cumulative CIR 2009–2013: – Travellers: 81.4/100 000 – General population: 45.5/100 000 – White Irish-born population: 27.3/100 000 ► When All Ireland Traveller Health Study population data was used to calculate CIR rather than the Central Statistics Office Census data, the CIR was lower. Regardless of the method of data collection of CIR, the rate was still higher in Irish Travellers than the general population/white Irish-born population. ► Average incidence by age was higher for the Traveller population, majority in 0–34 age group, compared with the general population where the majority was in the 25–65 age group and in the white Irish-born population where the majority was in the 55–65 age group.
Chronic obstructive pulmonary disease: number of smokers, presence of respiratory symptoms, diagnosis of asthma and spirometry	Nolan *et al*[24]	► 41% were current smokers, 6/14 non-smokers regularly exposed to passive smoke. ► 86% of smokers reported respiratory symptoms including cough, wheeze and shortness of breath. ► 10/35 had GP diagnosis of asthma. ► 23% (7/30) had an obstructive pattern.
Chronic bronchitis	All Ireland Traveller Health Study[8]	► 12% Travellers Ireland, 9.4% Travellers Northern Ireland, (background population 3%).
Asthma	All Ireland Traveller Health Study[8]	► 12.5% Travellers Ireland, 25.7% Travellers Northern Ireland, (background population 6%).

CIR, cumulative incidence ratio; GP, general practitioner; TB, tuberculosis.

Hodgins *et al* explored, through focus groups, perceptions of illness causation and health inequalities in 41 Traveller women in two regions in Ireland.[16] Themes of poor living conditions, discrimination, stress, anxiety, depression and violence described their perceptions of the cause of their poor health. Traveller women attributed other health conditions such as heart disease to the stresses of their life and considered risk factors such as smoking as less important factors and often beneficial to health status.

> "People have a lot of worry, a lot of stresses and can develop heart disease and heart attacks….".

The interaction of poor accommodation and health was also noted.

> "An awful lot of it comes from bad accommodation and discrimination. I keep sayin' those two words an' I know well it's those that are causing' the most problems, causin' heart problems and depression".

DISCUSSION

This scoping review appears to be the first time that data relating to physical health conditions of Travellers has been synthesised. Pooling the evidence together underlines two key findings. Firstly, the disproportionately high burden of physical health conditions such as the metabolic syndrome, asthma, bronchitis, TB and intentional injuries which were 2–3 times higher in Travellers compared with the background Irish population. Secondly, the unique health considerations such as rare genetic diseases experienced by a proportion of Travellers and the possibility of health benefits associated with their distinct gut microbiome linked to the traditional Traveller way of life.

Over 7000 Travellers were included in this review with the largest source of data from the AITHS.[8] One study took place in England and Wales, while the rest of the studies were based in Ireland. Living conditions were not specified in the majority of studies. This is important to note as living conditions are a key driver of health[29] which is rated higher by Travellers when living conditions are better.[20]

There was a higher representation of females (61%) within this review. This may be explained by findings from the AITHS highlighting that female Travellers were more likely to engage in research studies.[8] The majority

of participants were in their second to fourth decades, which concurs with Central Statistics Office (2016) data[5] demonstrating that Travellers are a young population. The paucity of older participants means that the effects of ageing and extent of geriatric syndromes in this population are not fully known.

This review showed high rates of the metabolic syndrome, CVD risk factors and established CVD disease compared with the background population, yet lower self-reported CVD of approximately 5.6%[30] vs 16.1% for the general population.[25] This likely underestimation of CVD among Travellers may be due to a reluctance to divulge information and/or a lack of disease awareness, fewer attendances for preventive services as well as late presentation and higher case fatality rates of CVD.[8] Evidently, improved targeted primary and secondary care strategies for Travellers are required.

Respiratory conditions (bronchitis and asthma) were rated as the second most common physical health condition, with a prevalence of 24.5% among Travellers in Ireland and 35.1% in Northern Ireland.[8] This is markedly higher than the comparison background population of 3% with chronic bronchitis[25] in Ireland. The rates of TB were threefold higher in Travellers than in the white Irish-born population.[23] Proposed risk factors were cited as higher house occupancy, smoking and the presence of diabetes or pre-diabetes.

Travellers suffer a greater burden of injuries and a higher risk of dying from injuries than the general population.[26] Notably, a higher rate of intentional injuries, and a lower rate of unintentional injuries were reported, compared with the general population. The high rate of intentional injuries likely links to mental health crises among Travellers with a suicide rate of six times than the general population.[8] The true intentional injury rates may be in fact higher as Travellers may not present themselves to care settings for minor injuries and may be more inclined to self-treat or present late for care.[8] Conversely, there may be actually a lower unintentional injury rate due to lower participation in sport and recreational activities in young Travellers. Travellers over 65 years, however, were two times as likely to be injured, highlighting their vulnerability. The AITHS cited the home as the most likely location for an injury, which may be due to poor living environments.[8] This is in accordance with a recent report, which highlighted grossly inadequate living conditions among Travellers.[31]

This review highlighted genetic conditions such as type 2 hyperprolinaemia[28] and leucoencephalopathy.[27] These represent an important factor affecting physical health in Travellers as autosomal recessive conditions are commonly reported.[32] Of note, some studies (n=5) examining inherited disorders such as congenital atrichia, a rare autosomal recessive disorder, were excluded from this review as they did not meet the age eligibility criteria. Given that genetic conditions are prevalent in Travellers, consideration of 'grown up' genetic conditions should be an area of emerging focus.

Positive physical health factors, linked to the gut, were discussed in two studies.[20 33] McCormick and Manning noted the absence of consultant-diagnosed inflammatory bowel disease possibly due to exposure to enteric bacteria and infection in early life.[33] Keohane *et al* suggested the 'non-industrialised microbiome' of Travellers may be due to living conditions and animal ownership.[20] How the gut microbiome changes with modernisation should be evaluated in future studies.

Table 3 Injuries/musculoskeletal/arthritic disorders

Details of non-fatal injuries	Authors	Result
Back condition	All Ireland Traveller Health Study[8]	► 30.4% Travellers, Ireland (background population 16%). ► 25.2% Travellers, Northern Ireland.
Arthritis	All Ireland Traveller Health Study[8]	► 13.8% Travellers, Ireland (background population 11%). ► 13.2% Travellers, Northern Ireland.
Injury (prevalence of injury and intentional/unintentional)	Abdalla *et al*[26]	► Travellers (aged 15-64 years) had a higher incidence of intentional injuries, SIR=213 for intentional injuries (male=170, female=258). ► Travellers (aged 15-64 years) had a lower incidence of unintentional injury than the general population: SIR=40 (male=39, female=42). ► Travellers over 65 years were two times as likely to report an injury than the general population. – Overall injury SIR for Travellers aged 15–64 years=59 and 65 years+=208. – Intentional injury SIR for Travellers>65 years=517. – Unintentional injury SIR for Travellers>65 years=137. Overall injury SIR for Travellers>65 years=208.
Injury (question from dimension 4 lifestyle and health behaviour of the health status interview)	Kelleher *et al*[19]	'Free of injuries in the last 2 years versus one or more injury': 88.7% (n=1800).

SIR, standardised incidence ratio.

Table 4 Genetic diseases, other conditions and self-rated health

Details of genetic disease		Author	Result
Phenotype	Medical history, clinical observation and physical examination	Cullinane *et al*[27]	Case of leucoencephalopathy described. Patient presented with short stature, pes planus, hypotonia, history of osteogenic sarcoma. Participants' medical history: epilepsy, multiple cerebral cysts (removed by craniotomy/cyst excisions over the course of 15 years from age 5), left ventriculoperitoneal shunt inserted and later removed, multiple vascular malformations of the capillary–cavernous type with associated haematomas, surrounding gliosis, haemosiderin deposition, Rosenthal fibres and areas of white matter calcification.
	Blood and urine testing	Flynn *et al*[28]	Type 2 hyperprolinaemia (n=13, including 7 adults). Mild hyperprolinaemia (n=50, proportion of adults unclear). Seizures from hyperprolinaemia: 4 adults suffered grand mal seizures, 1 of whom had a severe learning disabilities, 1 suffered from petit mal seizures.
Genotype	Whole exome sequencing	Cullinane *et al*[27]	Identified a homozygous variant of the *SNORD118* gene. The sister of this case, with milder symptoms were homozygous for the same variant.
Other conditions			
Chronic inflammatory bowel disease		McCormick and Manning[33]	No recorded Traveller with idiopathic inflammatory bowel disease.
Cancer		All Ireland Traveller Health Study[8]	1% Travellers, Ireland (background population 1%). 0.3% Travellers, Northern Ireland.
Physical health problems		Mac Gabhann[18]	Out of sample n=281 Travellers in a UK prison, the following physical health conditions were reported: asthma (n=12), 'back' problems (n=10), epilepsy (n=9) and arthritis (n=7).
Self-rated health: Chronic health condition Physical health Daily activity or work		Kelleher *et al* (Dimension 6 in health status interview)[19]	41.5% (n=2022), chronic health condition diagnosed by GP 59.3% (n=1843), physical health not good≥1 day in last month 17.2% (2012), daily activity limited due to a long-term illness, health problem or disability

GP, general practitioner.

When comparing Travellers to non-Travellers (35–54 age group), Travellers are approximately three times as likely to have poor health or some type of difficulty or disability, with the health gap rapidly increasing with age, which mirrors the pattern in other ethnic minority groups.[34] A UK based study found that compared with white British people and 17 different ethnic minority groups, Gypsy and Irish Travellers (with the exception of younger and older age groups) had markedly high levels of multiple long-term conditions.[35] Another study found that inequalities in health-related quality of life were widest for Gypsy or Irish Travellers, Pakistani and Bangladeshi women.[36]

In a similar way to Travellers experiencing a high burden of physical health conditions compared with the background population, poorer health is experienced by Roma people compared with non-Roma people across Europe.[37] For instance, a high prevalence of TB has been detected in the Roma population.[38] Other diseases have been described in Roma people, such as hepatitis A[39] and hepatitis C virus and HIV.[40] An outbreak of hepatitis A in Travellers was described in the literature,[41] but was not included in the current review due to the high proportion of participants under 18 years. A high prevalence of measles was documented in Roma people,[42] a number of papers also described measles outbreaks in Irish Travellers[43] but similarly were also excluded from the present review due to the proportion of children in these papers.

A strength of this review is the synthesis of data relating to physical health conditions of Travellers based in England and Wales, Ireland and Northern Ireland. A further strength was the active stakeholder involvement by the inclusion of a member of the Travelling community as an integral and valued member of the review team. This ensured the real-world relevance of this research and is likely to increase the chances of implementation of research findings into real-life settings.[44]

There were a number of limitations. As is the general convention in scoping reviews, a formal quality assessment of included studies[11 12] was not conducted therefore, the robustness of evidence[12] could not be judged. We acknowledge that definitive recommendations are not possible and the review must be interpreted in light of this.[11 12] We therefore see this work as a useful accessible summary of the evidence base regarding physical health

conditions in Travellers.[11 45] As previously stated, the initial intention was to perform a review encompassing physical and mental health conditions; however, a pragmatic decision was taken to include physical health conditions only which we acknowledge is somewhat unidimensional as physical and mental health conditions are inter-related and multimorbidity can straddle both.

The AITHS which is over 10 years old remains the most comprehensive report of Traveller health and is quoted widely in subsequent reports. It highlighted four priority areas for intervention: mother and child services; men's health; cause-specific issues for respiratory and cardiovascular disease; and a new model of primary care delivery. The importance of using a 'social determinants' approach linking inequalities in healthcare, accommodation and other factors such as racism and discrimination to poor health was also advocated.[8] With a stark 39% of Travellers estimated to be homeless, this negatively affects overall health and well-being and compounds health inequalities.[46] The long awaited recently published National Traveller Health Action Plan (2022),[47] relevant to Ireland, contained 45 key actions around resourcing, identifying, reinstating and expanding Primary Health Care for Travellers Project and engaging with public health. It also echoed a social determinants approach with targeted and mainstream strategies to overcome inequalities. This was also advocated in the National Traveller and Roma Inclusion Strategy 2017–2021.[48] Another important approach of the National Traveller Health Action Plan is a 'whole-of-government approach' with integrated cross-sectoral working. All of these approaches, if implemented, should impact the burden of physical health conditions in Travellers but there is a sense of policy conflict,[49] policy fatigue and policy failure in the absence of tangible action on previous recommendations.

More is known about physical health conditions in Irish-based Travellers and policies described are relevant to this setting. Less is known specifically about the physical health conditions of UK based Irish Travellers. Some research collectively pooled data from gypsies and Irish Travellers as well as other Traveller groups. Although all these groups experience discrimination, poor living conditions and health inequalities, how these groups vary in relation to physical health conditions is not well known.

Ethnic identifiers would enable physical health conditions to be more accurately tracked but this would need to be conducted sensitively. This is in line with a key recommendation of the National Traveller Health Action Plan (2022–2027),[47] which recommends systematic ethnic equality monitoring, including the introduction of ethnic identifiers on health data sets. Due to the inter-relationship between living conditions and health, living conditions need to be radically improved and studies including Travellers should include data on living arrangements.

It should also be considered that the extent of physical health conditions may be underestimated due to Travellers not presenting or presenting late for care as well as a mistrust of healthcare professionals.[8] The co-development of trust-building mechanisms and improved co-operation between Travellers and healthcare professionals has been recognised as important strategies to improve Travellers' access and engagement with mainstream health services.[50] Non-communicable diseases such as cancer and arthritis in Travellers featured minimally within this review. The health of older Travellers was not specifically explored, which may be partly due to the mortality gap. Further work is needed on how best to build confidence and empower Travellers to self-manage their health without 'talking at them'. Functional literacy and health literacy levels need to be optimised while also reducing the stigma associated with accessing healthcare.[8] Supporting Traveller groups to co-design culturally appropriate health literacy resources has been identified as crucial to improve understanding of pathways to access services and signs and symptoms of different health conditions.[50] Healthcare staff can be discriminatory in their attitudes[51] which also needs attention. At a broader level, healthcare service design needs to be culturally appropriate. A recent study exploring Travellers' views about how existing healthcare provision could be more responsive to their needs found that employing members of the community within the health service, embedding an ethos of cultural safety and humility and delivering Traveller Cultural Awareness Training to healthcare staff would improve the cultural appropriateness of mainstream health services.[50]

Ultimately, inequalities in health, relevant to Travellers and other ethnic minority groups, are closely linked to racism and discrimination as well as the social determinants of health such as housing, education, employment and income which are strongly associated with poor health.[52] These underlying factors therefore need to be tackled to impact health.

Conclusion

This scoping review highlights marked inequalities in the burden of physical health conditions experienced by Mincéiri. Many common physical health conditions were 2–3 times more prevalent in Travellers compared with the background population. Multifaceted and tangible action is required including better targeted approaches and accommodations within mainstream healthcare, underpinned by a social determinants approach, to bridge the gap in physical health conditions experienced by this marginalised group.

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