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Title: Nature-based integration of migrants : A cross-national systematic literature review

Year: 2023

Version: Published version

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Please cite the original version:

Rai, S., Kangas, K., Turtiainen, K., Stamm, I., & Tolvanen, A. (2023). Nature-based integration of migrants : A cross-national systematic literature review. *Urban Forestry and Urban Greening*, 88, Article 128089. <https://doi.org/10.1016/j.ufug.2023.128089>



Review

Nature-based integration of migrants: A cross-national systematic literature review

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ARTICLE INFO

Keywords:

Nature-based integration
Social integration
Migration
Inclusion
Participatory approach

ABSTRACT

Migration is as old as humankind, and the integration of people with a migration background is a hot topic worldwide. The focus on nature-based integration has increased over the last 20 years. Previous reviews discussing nature-based integration have focused mainly on Europe and the USA; this systematic quantitative review provides a global overview of the nature activity patterns, nature experiences, and possible hindrances migrants face. We reviewed 42 studies focusing on nature activity and the experiences of migrants. Our specific research questions were: (1) In the studies, what type of nature activities can be found in which people with a different migration background have participated or preferred? (2) How do nature activities and experiences affect the integration of people with different migration backgrounds? (3) What kind of negative nature experiences can act as hindrances in the integration of people with a migration background? Walking, sport, and gardening are the most reported physical activities by people with a different migration background, but migrants' nature activity patterns differ at the levels of ethnicity and the individual. Nature activity patterns cannot be generalised for everyone with a different migration background, and tailored individual nature-based integration measures are needed. Elements that can promote integration are social interaction, emotional attachment, and a sense of belonging, whereas possible hindrances to the migrant's integration are discrimination, the accessibility of nature, and a lack of information and communication. We conclude that nature activities have positive impacts on the integration of people with a migration background, and the human–nature relationship can be further extended to the human–nature–social relationship, but the empirical evidence is lacking, and nature-based integration effectiveness requires further investigation. We identify the need for a shift from nature-based integration to nature-based inclusion. This shift will require a participatory approach to incorporate the voices and experiences of people with a different migration background.

1. Introduction

The number of international migrants increased from 51 million in 2010 to an estimated 272 million in 2019, the present proportion being 3.5 per cent of the global population (UNDESA, 2019). Almost half of all international migrants reside in Europe and North America (UNDESA, 2019). In the European Union (EU) alone, 2.7 million migrants entered the EU from a non-EU country, and 1.4 million people previously residing in one EU member state migrated to another in 2019 (EU, 2019). In January 2020, migrants comprised 5.1 per cent of the EU's total population (EU, 2020). Migrants face a greater risk of social exclusion, which is a state of isolation, a rupture in social bonds between individuals and society, and less active participation in social life (Silver,

2010). It also includes employment, education, health, and social services, which require tailored integration measures (EPR/EU, 2016). The integration of migrants is important for social cohesion, i.e. the extent of connectedness and harmony among groups in society (Manca, 2014) and inclusive growth, and it is a prerequisite for the host society's acceptance of further immigration (OECD/EU, 2018).

Migration is as old as humankind, and it can be voluntary or involuntary (Castelli, 2018; IOM, 2022). Voluntary migration can be economic or for family reunification, whereas forced migration happens for various reasons such as political persecution or escaping instability in the country of origin (Castelli, 2018; IOM, 2022; UNHCR, 2020). The major drivers of migration are deeply embedded in environmental, social, economic, political, and demographic contexts, and the decision to

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<https://doi.org/10.1016/j.ufug.2023.128089>

Received 24 November 2022; Received in revised form 30 May 2023; Accepted 16 September 2023

Available online 20 September 2023

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migrate is made at the individual level and is influenced by obstacles or facilitators such as social networks, the cost of moving, and the legal framework (Castelli, 2018).

The term integration is a much contested topic in the domain of migration studies (Singleton, 2020a). Its meaning differs between countries, has changed over time, and depends on the interest, values, and perspectives of the people concerned (Robinson, 1998). The term integration concerns the socioeconomic and sociocultural absorption of migrants in the host society (Saharso, 2019; Singleton, 2020b), whereas migrants' integration is multidimensional and goes beyond economic integration. Migrants learn to negotiate cultural differences between themselves and adjust to local societal norms, and the anxiety initially felt by migrants decreases with a growing understanding of their place in the new society (Berry, 2006; Masgoret and Ward, 2006; Stodolska et al., 2017). Some researchers use the term 'integration' very critically, as integration is often defined as something only migrants do (Klarenbeek, 2019; Singleton, 2020a). In line with the previous study by Singleton (2020a), successful integration is measured by the adoption of the essential characteristics of the host society, which is based on a false image of the host country as a homogenous society. Furthermore, the adoption of the essential characteristics of the host society for 'integration' is even considered racist and coercive (Favell, 2019; Schinkel, 2018; Singleton, 2020a).

Humans have a genetic tendency to connect with nature (Clayton and Opatow, 2003; Wilson, 1984) and there is increasing interest in the human–nature (H–N) relationship in research (Allen and Ferrand, 1999; Clayton and Opatow, 2003; Iwata, 2001; Mayer and Frantz, 2004; Pooley and O'Connor, 2000). Natural environments have been found to have several beneficial impacts on human health and well-being (e.g. Gascon et al., 2017; James et al., 2015; Bowler et al., 2010; Fong et al., 2018). In addition, public green spaces such as urban parks and forests offer opportunities for social interaction between the host society and migrants, which promotes social cohesion and integration (Peters et al., 2010). Nature activities can help people with a migration background to learn about the host society, which can help in developing an attachment to the host society (Peters et al., 2010; Stodolska et al., 2017). Moreover, access to regular leisure activities is necessary for leading an adequate life (EU, 2021). However, different social groups have unequal access to power, resources, privilege, and opportunities (Singleton, 2020b; Timmons et al., 2018). Nature-based Integration (NBI) should help improve equal access to nature (Gentin et al., 2019; Singleton, 2020b). The idea behind NBI is that the exposure of diverse groups to local nature increases the likelihood of successful integration into the host society (Gentin et al., 2019; Singleton, 2021). According to Jay and Schraml (2009), emotional attachment to forests helps in migrants' identification process. Identity can be collective or personal, whereby collective identity is formed in interaction and experience within social groups such as those with a Muslim identity, whereas personal identity is based on biography, experiences, and personal characteristics (Kloek et al., 2017). The understanding of nature extends beyond physically present objects such as memories of the experience, images of distant lands, myths, stories, and shared history which construct social or environmental identity (Kaplan and Kaplan, 1982; Rishbeth and Finney, 2006).

A recent review summarising eleven studies from Europe shows that natural environments have positive impacts on migrants' integration, health, and well-being (Gentin et al., 2019). In addition, the review by Ordóñez-Barona (2017) shows how ethnoculturally diverse people perceive, prefer, and assign different meanings to urban nature and suggests further research on capturing intra-ethnic variations. Furthermore, the review by Kloek et al. (2013) studies the concepts of and approaches to migrants' recreational use and perceptions of nature in Northwest Europe, showing that more information about the diversity in immigrants' perspectives is required, as immigrants come from different countries. Gentin's (2011) review shows that there is a difference in recreation patterns, access, and images of the landscape between

Western and non-Western migrants. Most of these previous reviews focused on Europe and the USA (Gentin, 2011; Gentin et al., 2019; Kloek et al., 2013; Ordóñez-Barona, 2017), while migration is a global phenomenon. Although the environment differs across the globe, countries can learn from each other through the common patterns found in the studies. Moreover, the previous reviews did not focus on negative perceptions of nature, which can act as barriers or hindrances in the integration of people with a migration background.

This paper examines nature activity patterns and experiences of people with different migration backgrounds around the world. A knowledge of positive and negative nature experiences and their effects on migrant's integration will help develop specific integration approaches. We conducted a systematic quantitative literature review that focused on the integration of migrants using public natural environments. Our specific research questions were: (1) In the studies, what type of nature activities can be found in which people with a different migration background have participated or preferred? (2) How do nature activities and experiences affect the integration of people with different migration backgrounds? (3) What kind of negative nature experiences can act as hindrances in the integration of people with a migration background? Finally, the results of the review are discussed based on the human–nature (H–N) relationship.

2. Materials and methods

2.1. Design and search procedures

The systematic quantitative literature review (Pickering and Byrne, 2014) began with a literature search that was guided by the research questions. The search was limited to peer-reviewed studies published in English; this means we may have excluded some relevant studies in other languages. Three keyword groups were formulated, based on the research topic, nature-based integration of migrants, and after preliminary reading about NBI. For keyword Group 1, we have taken an umbrella term related to the natural environment and nature activities. For example, green space itself includes parks, community gardens, cemeteries, rooftop gardens, vertical gardens, meadows, and woods. The general term is used to avoid complexities and redundancy. Because there are many synonyms under each category, we have included only the common term. For keyword Group 2, our objective is migration, which is why we have included the terms migrant, immigrant, and refugee and excluded other terms such as ethnic minority or race to avoid complexity. For keyword Group 3, the focus is on social integration rather than on structural/legal integration, which is mostly undertaken by governments, such as granting a visa or asylum, housing, etc. Integration and well-being are very related, and this correlation can play a major role in the migrants' integration (Gentin et al., 2019). The databases used for searching for peer-reviewed studies were the Web of Science (WoS) and Scopus. WoS and SCOPUS are world-leading and competing citation databases (Zhu and Liu, 2020). The databases were selected based on the preliminary search and the relevant studies found in the database. In addition, the reference lists of the selected literature and review papers were checked to include more relevant studies..

Table 1

Keywords used in the literature search. Table 1 presents the keyword groups used. Group 1: natural environment and activities; Group2: migrant and synonyms; Group 3: iIntegration and well-being.

Group 1	Group 2	Group 3
Nature	Migrant	Social integration
Green space	Immigrant	Well-being
Outdoor recreation	Refugees	Health
Animal-assisted		
Nature-based		
Forest therapy		

2.2. Screening and Eligibility

We found a total of 400 peer-reviewed studies in the two databases, and the final search was conducted on 30 Nov 2021. We used Zotero, which is an open-source reference management software tool for managing literature and bibliographic data and for the initial screening of studies. After removing duplicates, 283 studies were screened. We defined the inclusion criteria to select the relevant studies for the review: (1) studies focusing on nature activity and/or nature experiences; (2) studies including people with a migration background; (3) peer-reviewed English-language studies with no geographical and time limitations. In the Sweden studies, three out of the four studies were conducted in Örebro county and examined the same NBI projects (Singleton, 2021, 2020b, 2020a), but we have decided to include them all. The rationale for their inclusion is that they used different concepts to examine the impact of nature activities such as guided nature walks on integration. One study examined rituals used by nature guides on guided walks (Singleton, 2021); another analysed group dynamics (Singleton, 2020a). Another study (Singleton, 2020b) investigated the consequences of NBI projects concerning environmental racism and injustice and reported how migrants were disciplined or taught to adopt Swedish norms through NBI projects. A total of 42 studies was included after the inclusion criteria. A data extraction sheet was developed for classification and analysis.

2.3. Classification and analysis

Three thematic groups are distinguished in the reviewed studies based on the research questions for classification and analysis: 1) nature activity patterns; 2) the effect of nature activities and nature experiences on migrant's integration; 3) and hindrances in nature-based integration of migrants. In a data extraction sheet, the data were extracted from each study based on the research questions, which included the country, the location (urban vs rural) of the study, the natural environment, the nature activity used (active and passive), and/or the perceived experiences of nature (positive and negative) of people with a different migration background (Table 2). After data extraction from each study, we have further classified nature activities as physical and passive activities (Table 2). The physical activities were those in which participants moved around and used a lot of energy, including walking, hiking, and gardening, and passive activities or sedentary behaviour were mainly relaxation or leisure with low energy expenditure (WHO, 2020).

The perceived experience of nature includes positive and negative experiences in nature, and the rationale for this classification is that nature activities help generate experiences which may either help in integration or act as a hindrance in the integration of people with a different migration background. These experiences are important because in the long term, people settle in a host country because of a more or less satisfactory experience (Berry, 2006; Stodolska et al., 2017), and a positive outcome improves the fit between individuals and the environment. Meanwhile, a negative outcome may lead to resistance or separation (Berry, 2003; Stodolska et al., 2017). Positive experiences included those in which migrants felt happy, peaceful, safe, or secure, had positive social interaction or sensory experiences (such as hearing water, feeling the warmth of the sun, etc.), or a sense of belonging. Negative experiences included those in which migrants felt concerned about safety, racism, a loss of identity, litter and vandalism, or a fear of animals.

3. Results

A total of 42 studies published between 1988 and 2021 was included in this review. The 42 studies were carried out in developed countries such as the UK (16 studies), the USA (8 studies), the Netherlands (7 studies), and Sweden (5 studies), Germany (3 studies), Australia (1 study), Canada (1 study), Denmark, (1 study), Finland (1 study), Korea

(1 study), Poland (1 study), and Switzerland (1 study, Table 2). They focused mainly on urban and semi-urban areas. Only seven studies were conducted in rural areas (Askins, 2009; Ekstam et al., 2021; Kloek et al., 2018; Lisberg Jensen and Ouis, 2008; Moore, 2007; Poulsen et al., 2020; Tolia-Kelly, 2008). Only five studies were experimental, including both qualitative and/or quantitative methods, which assessed the impact before and after the intervention (Ekstam et al., 2021; Gray et al., 2014; Moore, 2007; Poulsen et al., 2020; Rishbeth and Finney, 2006).

In all the studies, walking (22 studies), sports (10 studies), biking (9 studies), and gardening (9 studies) were the most reported physical activities in the different natural environments for people with a different migration background. Animal-assisted therapy was used in only one study (Every et al., 2017). In terms of passive activities, sitting and relaxing, and barbecuing and picnicking were the most reported. Social interaction (22 studies), experiencing nature including sensory experiences (Askins, 2009; Burgess et al., 1988; Gobster, 2002; Keith et al., 2018; Kloek et al., 2017; Kloek et al., 2018; Lee and Kim, 2014; Moore, 2007; Rishbeth, 2004; Tolia-Kelly, 2008; Woolley and Noor ul Amin, 1995; Woolley and Noor ul Amin, 1999) were the most frequently reported positive experiences. However, two thirds of the reviewed 42 studies also reported negative experiences such as safety concerns (17 studies), including racism and discrimination. This was the most reported and may hinder the integration of people with a migration background.

The studied migrants differed among countries: in the USA, the studies focused mostly on Africans, Latinos, and Hispanics; in the UK, most studies focused on Africans, Caribbeans, and Asians; in Denmark and Sweden, the focus was on mainly Arabic- and Farsi-speaking migrants. In the Netherlands, the focus was on migrants from Turkey, Morocco, and China.

3.1. Different nature activity patterns

The most reported physical activities were walking, biking, gardening, and sports among people with a different migration background. Gardening was done or preferred by Latinos, Asians, Africans, and Arabs. Gardening and horticultural activities were conducted in both rural and urban areas and were observed to lead to many positive experiences such as increased social interaction and finding a familiarity with the past. The link to the past was one of the key factors for the sense of belonging or attachment, and in general, gardening studies helped migrants find familiarity (Bishop and Purcell, 2013; Ekstam et al., 2021; Gray et al., Rishbeth, 2004; Saldivar-Tanaka and Krasny, 2004). For example, an experimental qualitative study by Ekstam et al. (2021) showed that after 24 months of intervention, gardening and horticulture helped migrants have a sense of belonging to the garden and improved their social interaction. These gardening and horticulture studies reported very few negative experiences such as a lack of resources (Saldivar-Tanaka and Krasny, 2004) compared with other physical activity interventions.

Similarly, barbecues/picnics are more important to non-Western migrants as passive activities (Peters et al., 2010), and our findings in this review confirm this (11 studies, Table 2). In the earlier studies by Jay and Schraml (2009) and Peters (2010), migrants' leisure behaviour was found to be related to their ethnic and religious backgrounds. For example, people with a Turkish background preferred barbecuing and picnicking in nature compared with the host society (Jay and Schraml, 2009; Kloek et al., 2017; Peters et al., 2010; te Kloeze, 2001).

In the Swedish case (Singleton, 2021, 2020b, 2020a), most of the migrant population was from Syria (Arabic speaking). The most common nature activities conducted in Sweden were guided walks and a language café in nature. These studies examined the NBI and reported that migrants were disciplined or taught Swedish norms through NBI (Singleton, 2020b). There are occasions when NBI activities lead to societal conflicts (Singleton, 2021) and conflict over landscape use (Singleton, 2020b).

Table 2

Table presents a summary of the reviewed studies regarding the authors, country, location (urban or rural), and the natural environment considered in the study, the conducted or preferred nature activities categorised as active and passive activities, perceived positive and negative experiences of nature, and the migration background. *Sports such as football, basketball, and cricket. *Other sports such as kayaking and abseiling.

Authors	Country	Location	Natural Environment	Nature Activity		Experiences of Nature		Migration Background
				Active	Passive	Positive	Negative	
(Askins, 2009)	UK	Rural	National parks	water sports, climbing, gardening	watching view	experiencing nature	concern about safety	African, Caribbean and Asian
(Bishop and Purcell, 2013)	UK	NA	Horticulture/gardening		N/A	social interaction, achieving new skills, link to the past	N/A	NA
(Buijs et al., 2009)	Netherlands	Urban	Landscape	N/A	N/A	functional and inclusive image of nature	N/A	Turkey and Morocco
(Burgess et al., 1988)	UK	Urban	Urban green spaces	walking, running, sports	enjoying the view, watching animals, learning about nature	sensory experiences, opportunity to escape, reduced isolation, social interaction	anxieties, fear, racism in open space, poor quality of play equipment	Asian
(Cattell et al., 2008)	UK	Urban	Public open space	walking	informal leisure activities, observing others	social interaction, sense of belonging, sense of well-being	bullying and racism	Black African and Black Caribbean and minority ethnic groups (Indian, Pakistani, Bangladeshi)
(Comber et al., 2008)	UK	Urban	Urban greenspace	N/A	N/A	N/A	limited access	African and Caribbean and other Black, Indian, Pakistani, Bangladeshi, other Asian, Chinese, other white, and other ethnic groups
(Coughlan and Hermes, 2016)	USA	Urban	Green space, farms, gardens, community gardens	gardening	N/A	link to the past, health and well-being	N/A	Somali Bantu
(Coutts and Miles, 2011)	USA	Urban	Greenways	walking, running, biking, gardening	N/A	social interaction	N/A	African American and non-Hispanic whites
(Ekstam et al., 2021)	Sweden	Rural	Rehabilitation garden		N/A	sense of belonging, social interaction	N/A	Arabic and Farsi speaking
(Every et al., 2017)	Australia	Urban	Animal-assisted therapy	interaction with animals	N/A	social interaction	timid around animals	Sri Lanka, Iraq, Pakistan, Myanmar, Afghanistan, Vietnam, south Sudan, Liberia, Yugoslavia, Cambodia, Zimbabwe and Egypt.
(Gobster, 2002)	USA	Urban	Urban parks	walking, swimming, biking, gardening	picnicking, barbecuing, relaxing	experiencing nature	litter and vandalism	Black, Latino, Asian and White
(Gray et al., 2014)	USA	Urban	Home gardens		N/A	social interaction, link to the past	N/A	Latino
(Jay and Schraml, 2009)	Germany	Urban	Urban woodlands/forest	walking, sports	picking fruit, mushrooms, barbecuing	sense of belonging, social interaction	animal fear; litter	Turkish, Balkans, Russia-Germans
(Keith et al., 2018)	USA	Urban	Greenway trail	walking, running, biking	relaxing	social interaction, experiencing nature, health & well-being	concern about safety, difficulty accessing the trail, lack of information	Hispanics, Blacks and other non-white
(King et al., 2015)	USA	Urban	Community parks	walking, sports	sitting in shady area, socialising, relaxing	increase in physical activity in the park	concern about safety	Non-white
(Kloek et al., 2017)	Netherlands	Urban	Urban greenspace	walking, running, biking	picnicking and barbecuing, collecting food and consumption	experiencing nature	discrimination, dislike of rules, time constraints, less accessibility, no company, possibility of getting dirty	Chinese, Turkish

(continued on next page)

Table 2 (continued)

Authors	Country	Location	Natural Environment	Nature Activity		Experiences of Nature		Migration Background
				Active	Passive	Positive	Negative	
(Kloek et al., 2018)	Netherlands	Urban and Rural	Forest and parks	N/A	N/A	experiencing nature	N/A	Chinese, Turkish
(Lee and Kim, 2014)	Korea	Urban	Forest	walking, playing with children, hiking	NA	experiencing nature, emotional development	NA	China, Vietnam and Mongolia
(Leikkilä et al., 2013)	Finland	Urban	Urban nature	walking, biking, jogging, fishing	picnicking, barbecuing, picking mushrooms	social interaction, positive memories	lack of communication and information	Russia, Belarus, Latvia, Estonia, Germany, Turkey, Iraq, Thailand, Uzbekistan, Italy, Zimbabwe, Nepal and Israel
(Lisberg Jensen and Ouis, 2008)	Sweden	Rural	Lake Arrie	NA	picnic	nature as pathway for integration	potential of conflict due to increased access of area by migrants	Arab and Somali
(Madge, 1997)	UK	Urban	Parks	N/A	N/A	N/A	racial attack, fear of dogs, bad weather, lack of time	Asian and Afro-Caribbean
(Mawani and Ibrahim, 2021)	Canada	Urban	Urban greenspace	community-based peer walking and rolling programme	mentoring, information about greenspace, leadership training	social interaction, link to the past, improved health and communication skills	N/A	NA
(Moore, 2007)	UK	Rural	Trip to countryside	walking	photographs	experiencing nature	staring and unwelcoming, racism	African, Black Caribbean, Asian, mixed race
(Neal et al., 2015)	UK	Urban	Public green space	walking, sports	park events and celebratory occasions, picnicking, relaxing	social interaction, sense of belonging	concern about safety, anxiety, fear of dogs	Black British, Black Africans, South Asian, East Europeans, Muslim and others
(Peters et al., 2010)	Netherlands	Urban	Urban parks	walking, biking	picnicking, watching, relaxing	social interaction	excessive regulation	Turkey, Morocco, Suriname, the Dutch Antilles
(Peters, 2010)	Netherlands	Urban	Parks	walking, sports, playing with children	watching people	social interaction and attachment to place	N/A	Morocco, Turkey, Suriname, and the Dutch Antilles
(Poulsen et al., 2020)	Denmark	Rural	Eco-village	horticulture/gardening	N/A	social interaction, improved participation, achieving new skills	N/A	Syria, Congo, Iran Iraq, Afghanistan, Kurdistan, Eritrea, and Chechnya, a federal subject of the Russian Federation
(Ravenscroft and Markwell, 2000)	UK	Urban	Parks	N/A	N/A	N/A	concern about safety; fewer and poorly maintained facilities, less accessibility	Black, Asian
(Rishbeth and Finney, 2006)	UK	Urban	Urban green spaces	sports	community festivals	place for freedom and escape from worries, link to the past, social interaction	concern about safety, less confidence, bad weather	Afghanistan, Rwanda, Somalia, Zimbabwe, Liberia
(Rishbeth et al., 2019)	Germany & UK	Urban	Urban green space (Parks)	walking, biking, sports	spending time in local recreation spaces, outdoor language classes	social interaction, sense of belonging	less confidence, anxiety, safety concern	Different nationalities, majority Syrian
(Rishbeth, 2001)	UK	Urban	Parks	gardening, planting	culture fest, visitor centres, and cafés	new community; sense of well-being	fear of animals; concern about safety, racism, lack of multilingual information	Asian (Indian sub-continent and South-East Asian) and Black (Afro-Caribbean and African) ethnic origin

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Table 2 (continued)

Authors	Country	Location	Natural Environment	Nature Activity		Experiences of Nature		Migration Background
				Active	Passive	Positive	Negative	
(Rishbeth, 2004)	UK	Urban	Gardens	gardening, playgroups, training groups	English class, community groups and festivals	experiencing nature, peaceful, link to the past	dog mess, vandalism	African and Asian
(Saldívar-Tanaka and Krasny, 2004)	USA	Urban	Community gardens	gardening	gatherings and meetings, barbecues, cultural events	sense of belonging, citizenship building, social interaction	lack of resources	Latinos
(Seeland et al., 2009)	Switzerland	Urban	Urban forest & parks	walking, running, sports	barbecuing, socialising, relaxing	social interaction	N/A	NA
(Singleton, 2020a)	Sweden	Urban	Nature/ cultural reserves	guided walks	language café in nature, education for nature	feeling happy, social interaction	tension while disciplining participants	Different countries, mainly Syria
(Singleton, 2020b)	Sweden	Urban	Nature/ cultural reserves	guided walks	education for nature, language cafés	fun activities are possible in wild places	danger of getting lost, fear of wild animals, conflict over landscapes' use	Different countries, mainly Syria, Afghanistan
(Singleton, 2021)	Sweden	Urban	Nature/ cultural reserves	guided walk	language café in nature, nature education	opportunity for fun, friendship, and learning	N/A	Different countries, mainly Syria, Afghanistan
(Stodolska et al., 2017)	US, Netherlands, Germany, Poland	Urban	Parks, forest, gardens	walking, biking, gardening	barbecuing, family celebrations	social interaction, sense of belonging	excessive regulation, fear of attack and discrimination, less access to distant trips	China, Latin America, Morocco, Turkey, Ukraine, and Vietnam
(te Kloeze, 2001)	Netherlands	Urban	Parks, playgrounds	N/A	picnicking and barbecuing	N/A	fewer facilities and less access, dog mess, bad weather	Turkish
(Tolia-Kelly, 2008)	UK	Rural	Lake District landscape	walking	N/A	sensory experiences	fear of attack, racism	Eastern European and South Asian
(Woolley and Noor ul Amin, 1995)	UK	Urban	Urban public open space (parks and playgrounds)	children playing hide and seek, swings and slides	listening to birds or watching sport	experiencing nature	racism, bullying, feeling unsafe, lack of facilities, less access	Pakistani
(Woolley and Noor-Ul-Amin, 1999)	UK	Urban	Urban open spaces	sports, running	meeting friends, watching sport, relaxing	experiencing nature, meeting a friend	bullying, racism, concern about safety, lack of facilities	Pakistani

However, it is difficult to discern a nature activity pattern in people with different migration backgrounds from the publications, because most studies have presented results considering migrants as homogeneous groups and have not specified the different nationalities or ethnic groups (Table 2).

3.2. Effect of nature activities and nature experiences on migrant's integration

There were some common elements in the studies that promoted the integration of migrants. These elements were positive experiences such as social interaction and emotional attachment to places that helped in the integration of people with a migration background. Thirteen studies had elements such as social interaction, emotional attachment, a sense of belonging, and a link to the past which promoted the integration of migrants.

Social interaction was the most common element in all the studies which reported the integration of people with a migration background. Seeland et al. (2009) reported that urban public green spaces played a role in facilitating social interaction, which was a prerequisite for social inclusion. The study by Leikkilä et al. (2013) also found that urban nature had the potential to facilitate social interaction among people from different ethnic groups. Animal therapy could also help reduce social isolation, and people who were timid around animals could be engaged with culturally appropriate animal therapy (Every et al., 2017).

The study by Cattell et al. (2008) found that social interaction in public open spaces could lead to a sense of community and increase tolerance, which helped in integration. Bishop and Purcell (2013) reported that gardening activities had positive outcomes such as social interaction, achieving new skills, and improved participation, which led to a positive impact on integration. The study by Mawani and Ibrahim (2021) found that peer support walking and exposure to green spaces could reduce social isolation and supported the participatory approach in having a positive impact on integration.

The study by Stodolska et al. (2017) supported the idea that nature recreation developed feelings of attachment and established social interaction, but the interaction was mostly limited to members of their own ethnic community rather than strangers. Social interaction was one of the important motivations for forest visits in a study by Jay and Schraml (2009). It could help migrants in building an identity in the host society through emotional attachment to a forest. The study by Peters et al. (2010) also supported the idea that social interaction among different ethnic groups in urban parks could promote social cohesion, and involvement in parks could lead to attachment to these places. Gray et al. (2014) used home gardens as the intervention, reporting that migrants used these spaces for cultural preservation and helped integration into the new society by linking them to the past or their country of origin. The study by Rishbeth and Finney (2006) found that a familiar landscape could provide a link to the past for people with a migration background. Emotional attachment helped identification and the

integration of people with a migration background into a new society (Jay and Schraml, 2009; Lee and Kim, 2014). A positive experience of forest recreation activities helped in emotional development among migrants, which contributed to their integration into the host society (Lee and Kim, 2014). Green spaces such as gardens had restorative capacities and helped the resettlement of migrants in a new country (Coughlan and Hermes, 2016).

Integration is a contested topic, and successful integration depends on a combination of factors that need to be understood holistically (Ekstam et al., 2021). A positive experience of the local environment and meaningful participation in it can lead to integration into a new society. In a multicultural society, an open green space should address the needs of all ethnic groups, and open spaces are required to have a positive quality in a variety of physical settings, sociability, and cultural diversity (Burgess et al., 1988). The wild nature promoted by planners does not value visitors; it requires local identity and embeddedness as a prerequisite for emotional attachment (Lisberg Jensen and Ouis, 2008). Leikkilä et al. (2013) discussed the role diverse migrant groups played in urban planning, which resulted in integration and intercultural development. There was a need for cultural sensitivity and the building of trust for participatory urban planning to facilitate integration (Leikkilä et al., 2013). The participation of migrants in the urban planning process can enhance intercultural understanding (Leikkilä et al., 2013). Similarly, the findings by Rishbeth (2001) advocate inclusive landscapes because ethnicity plays an important role in the perception and use of public landscapes. A landscape with symbolic elements can act as a welcoming place for people with different migration backgrounds.

3.3. Hindrances in nature-based integration of migrants

Negative experiences can act as hindrances, and some are found frequently in the studies (Table 2). They can be grouped as (1) safety concerns, (2) individual characteristics, (3) socioeconomic status, and (4) a lack of communication and information. These hindrances are presented in detail below.

Safety concerns, including racism and discrimination (17 studies, Table 2), are one of the most reported negative experiences in natural environments. There were cases of unpleasant looks and negative remarks and being seen as suspicious (Kloek et al., 2017), and migrants felt they were being observed in natural environments (Stodolska et al., 2017).

Individual characteristics can influence the extent of cross-cultural communication (Stodolska et al., 2017). Acculturation does not happen at the same rate for all ethnic groups because migrants are considered a homogenous group, and participation in a nature activity at an individual level is overlooked (Kloek et al., 2017). Negative experiences were influenced by individual characteristics such as feeling alone in public spaces or lacking company (Kloek et al., 2017), time constraints, the prioritisation of work over leisure activities (Kloek et al., 2017; Madge, 1997), less confidence in exploring new places (Rishbeth and Finney, 2006; Risbeth et al., 2019), not enjoying nature in bad weather (Madge, 1997; Rishbeth and Finney, 2006; te Kloeze, 2001), a dislike of rules, getting dirty in nature, and preferring comfort and hygiene (Kloek et al., 2017). Cultural differences and clashes further exacerbated the hindrances that made migrants uncertain in initiating conversations (Stodolska et al., 2017).

Migrants generally belong to the lower socioeconomic strata of society (Seeland et al., 2009), and many forests or parks are in places with wealthier inhabitants (Stodolska et al., 2017), which makes access to the natural environment difficult (Keith et al., 2018; Madge, 1997). In an earlier study, Stodolska et al. (2017) reported that accessibility depended on socioeconomic status. Migrants with a higher socioeconomic status visited distant nature parks and reserves more than migrants from lower socioeconomic strata. The lack of accessibility forced migrants to remain within their own ethnic groups (Seeland et al., 2009).

Migrants (often) lack proper information about the host country's

nature or receive fragmented information when they arrive in a new country. There is often no multilingual information, and migrants are unaware of places where they can relax or socialise. Out-of-date contact information may also make it difficult to reach migrants to involve them in the participatory urban planning process (Gentin et al., 2019; Leikkilä et al., 2013).

4. Discussion

4.1. Need for tailored integration measures

Migrants are a heterogeneous group, as they come from different cultural backgrounds, which requires an understanding of different nature activity patterns, elements of integration, and removing hindrances to effective nature-based integration (NBI). Migrants come from different countries, cultures, and natural environments, so the same nature activity in a particular environment cannot be applied to people with a different migration background, and individual characteristics are important in migrants' integration. There are also intra-ethnic differences in the use of the natural environment and perception of nature, which is often overlooked, as migrants are considered homogenous entities (Carr and Williams, 1993; Floyd, 1998; Gentin, 2011; Li et al., 2007). However, there is a need to identify common nature activities which interest both the host society and migrants to bring people together. Kloek et al. (2018) show that the idea of nature differs among ethno-cultural groups: Dutch people born locally had strict boundaries for nature, while the Chinese idea of nature was anthropocentric, and the Turkish idea of nature was based on religious factors. The findings related to the nature activity for migrants in Sweden (Singleton, 2021; Singleton 2020b; Singleton 2020a) cannot be generalised to a large extent because the intervention was designed based on the Swedish landscape, not on the perceptions and culture of migrants. The landscape has different social and material impacts: the Swedish landscape reflects solitude, and infrastructure is based on this dominant norm, which may not reflect migrants' preferred activity (Singleton, 2020b). The host society's nature activities should be more inclusive of migrants' perceptions of the natural environment and preferred nature activity. Moreover, the generalisation of picnicking and barbecuing to the Turkish groups (Jay and Schraml, 2009; Kloek et al., 2017; Peters et al., 2010; Stodolska et al., 2017; te Kloeze, 2001) on a large scale may be insufficient for integration into the host society, as individual characteristics like a lack of company (Kloek et al., 2017), a lack of confidence to explore new places (Rishbeth and Finney, 2006; Risbeth et al., 2019), and not enjoying nature in bad weather (Madge, 1997; Rishbeth and Finney, 2006; te Kloeze, 2001) may affect integration. The greater diversity between different ethnic groups and within ethnic groups resulted in more heterogeneity than with migrants and people from the host society (Kloek et al., 2017). A nature activity popular in one ethnic group may not interest other groups, and activity use patterns and preferences may differ, even within a single ethnic group (Gobster, 2002; Woolley and Noor-Ul-Amin, 1999). It is also difficult to identify nature activity patterns in different nationalities because of the intra-ethnic difference within nationalities, and individual characteristics such as a dislike of rules, less confidence, etc. play a major role in integration. Tailored individual nature-based integration measures are needed for the integration of people with different migration backgrounds.

4.2. Relevance of context in nature-based integration activities

The natural environment and resources differ in different countries. Different environments and the different social, physical, and psychological approaches of migrants can hinder the integration process in the new environment of the host society (Jay et al., 2012; Kloek et al., 2017; Seaman et al., 2010). The aim of the findings of this review is not to generalise nature activities to different nationalities or to replicate the

same nature activity in different countries facing integration issues; the idea is to learn about what nature activities have been done in a different natural environment, what the positive and negative experiences are, and what elements can promote integration. We understand that the context in developing countries and developed countries differs, and this difference can be political, social, economic, and environmental. However, migration is a global phenomenon, and countries can learn from each other. In this review, although the literature search had no geographical limitation, none of the studies from developing countries fulfilled the inclusion criteria. The nature-based integration of migrants may not be a priority for all countries because the natural environment differs in different countries, and the idea of nature is also affected by religious or ethnic identities (Kloek et al., 2017). This review may be helpful for those countries with structured or systematic integration programmes for migrants, and nature is promoted as one of the identities of a host society. Nature-based integration has the potential to be a cost-effective and efficient way to integrate migrants better (Pitkänen et al., 2017).

4.3. Creating an identity through the human–nature relationship (H–N)

There is a human desire to connect with nature (Clayton and Opatow, 2003; Wilson, 1984). Positive nature experiences such as social interaction, emotional attachment, a link to the past, and a sense of belonging are some of the elements that can promote integration in the host society. The creation of host society identity in terms of integration is difficult, but the elements that can promote integration in nature, such as emotional connections, a sense of belonging, and a link to the past, can be used for place attachment to create an environmental identity (Clayton and Opatow, 2003). For example, creating a host society identity is a difficult task for an immigrant. Part of this is done in terms of structural/legal integration such as residence permits or citizenship provided by the government. For social and cultural integration, people have their own cultural and ethnic identity, which may differ from the host country's social and cultural identity. This difference in social and cultural identity sometimes leads to tension between the host society and migrants which can be a lack of trust, fear, stereotypes, or misunderstanding. However, such social and cultural identity changes with time, and nature can be used to strengthen it. Identities are dynamic, which affords an opportunity to establish links between groups (Peters, 2010). Identities are formed in daily routines and interaction with places (Peters, 2010; Stedman, 2006).

Identities have meaning for people and behaviour implications, including in recreation behaviour (Kloek et al., 2017). People can have multiple identities, and all identities have different behaviour patterns. Collective and personal identity can influence outdoor recreation (Ashmore et al., 2004; Kloek et al., 2017; Stets and Burke, 2000). There is a well-established link between leisure and identity (Aitchison, 2001; Henderson, 1998; Peters, 2010). Leisure is a place for expressing social and individual identity (Peters, 2010; Williams, 2002). In the case of individual identity, people can have a strong attachment to nature (Clayton and Opatow, 2004; Kloek et al., 2017), and positive experiences in nature help in the integration of people with a migration background (Gentin et al., 2019; Rishbeth and Finney, 2006). This human–nature relationship leads to the creation of an environmental identity (Clayton and Opatow, 2003). However, individual differences or variability are connected with nature (Nisbet et al., 2009). Different nationalities bring their own social, cultural, physical, and psychological experiences to nature (Buijs et al., 2009; Leikkilä et al., 2013). The interplay between the environmental and social shapes the environmental identity (Clayton and Opatow, 2004).

4.4. The establishment of new relationships through human–nature–social relationships (H–N–S)

The H–N relationship can further be used to establish social

relationships, i.e. human–nature–social (H–N–S) relationships. Integration cannot be forced on either party, the host society or people with a migration background, but nature offers a platform for the exchange of culture, relationships, and understanding through social interaction in a calm environment. One of the positive experiences which is most reported in this review is social interaction in nature. Social interaction between the host society and people with a migration background may lead to a reduction of tension and an increase in social cohesion between them. These intercultural encounters can promote tolerance and integration and reduce conflict (Allport, 1954; Hewstone et al., 2007). However, these intercultural encounters in public spaces may not lead to wider changes in the intergroup relations of different ethnicities (Valentine, 2008).

To promote intercultural encounters, we need to address hindrances/negative experiences, and there is a need to transform these hindrances into opportunities for successful integration. In this study, we found that negative experiences caused by other humans, such as racism and discrimination, were more widely reported than negative experiences perceived in nature itself. UK studies reported more incidents of concern about safety (Table 2), and most were reported in urban parks. Parks are more visited than nature areas, especially by ethnic communities, because they have a more inclusive character than other nature areas (Peters et al., 2010), and this may be the cause of the high incidence of racism in urban parks. These hindrances may affect the migrant's attachment or sense of belonging to a host society. Discrimination is a constraining factor for migrants' outdoor recreation (Kloek et al., 2013; Kloek et al., 2017; Stodolska, 2005), and a strong negative predictor of migrant adaptation in the host society (Berry and Sabatier, 2010). The establishment of a new relationship between the host society and migrants does not necessarily need to be long-term, but it can at least be understanding and respectful.

5. Conclusion and directions for future research

The aim of this review is to provide an overview of the conducted or preferred nature activities and perceived experiences of nature by people with a migration background and to discuss the implications of these findings on integration. There is only one race, i.e. the human race, but people are diverse in ethnicity, language, and culture, among other things. Although there were some patterns in nature activities, they cannot be generalised: migrants are heterogeneous groups, and individual characteristics play a major role in nature-based integration, and tailored individual nature-based measures are needed. In general, walking, sports, and gardening are the most reported physical activities, and sitting and relaxing, and barbecuing and picnicking were the most reported passive activities. There are some elements that can promote integration, including social interaction in nature, a sense of belonging, emotional attachment, and a link to the past. One of the most reported hindrances to nature-based integration is a concern about safety, including discrimination.

The creation of a host society identity through a human–nature relationship and establishment of a new social relationship through social interaction requires an understanding of the migrant's perceptions and experiences of nature and their preferred nature activities. For this, we need the participation of people with a migration background. This transformation requires a shift from social integration to social inclusion, which requires more effort to find more inclusive practices to include the voices of people with a migration background and bring people together. Participation empowers the marginalised and offers opportunities to improve community relationships and enhance community feeling (Kirby et al., 2003), helping in social inclusion (UN-Habitat, 2013). Social inclusion is a prerequisite of effective participation (Silver, 2010). Participation comprehends involvement in the social, cultural, economic, and political aspects of life (UNRISD, 2015). In this transition, social work practice could play a crucial role, as social workers are trained to enable the participation of the people with whom

they work. They can ensure people can participate in society's planning and decision making. Another important principle of social work is empowerment, making people self-reliant through community participation. Social workers can act as initiators and provide a platform for advocacy in the early stages of intervention, and these interventions may later become self-sustainable by the community. More research needs to be undertaken on the role of social work in nature-based integration of people with a migration background.

Moreover, further studies are needed to discover how effective participation can be achieved. Here, participatory methods like Public Participatory Geographic Information System (PPGIS) help in the inclusion of marginalised populations in development (Brown and Kyttä, 2014; Tolvanen et al., 2019) and can be a tool for including the voices of people with a history of migration and ensuring inclusion in the host society. PPGIS provides a platform for the participation of people with a migration background by collecting spatial data, but this can be further extended to achieve discussion and collaboration in the planning process (Brown et al., 2014). The migrant's hindrances in accessing nature and motivations to visit nature need to be studied further: if we address hindrances like racism, it can make nature more accessible to migrants, which is necessary to establish an emotional connection or sense of belonging to the host country's nature. This may lead to the creation of an environmental identity and further lead to improved social relationships between the host society and people with a migration background. Furthermore, more experimental studies are needed in which the human–nature relationship in the integration of migrants would be further tested using different scales such as the Nature Relatedness Scale (Nisbet et al., 2009). Finally, people with a history of migration should be considered as heterogeneous groups, and more inter- and intra-ethnic variations studies are needed.

Funding

The project received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 955518, Applying Sustainability Transition Research in Social Work tackling Major Societal Challenge of Social Inclusion (ASTRA) project. This article reflects only the authors' views, and the European Commission is not responsible for any use that may be made of the information it contains. The study was also financially supported by The Natural Resources Institute Finland (Luke), Solutions project [41007-00183800], and PPP-project Peatland restoration and biodiversity [41007-00167401] projects.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors would like to thank Dr Oili Tarvainen, Senior Specialist Researcher, Natural Resources Institute (LUKE) Finland, for her help in the creation of tables. We are also grateful to anonymous reviewers for their valuable comments.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.ufug.2023.128089](https://doi.org/10.1016/j.ufug.2023.128089).

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