



Influences on Outdoor Recreation Behavior Among Immigrant Women in Norway

CATHERINE ANNE NICOLE LORENTZEN 

BERIT VIKEN

**Author affiliations can be found in the back matter of this article*

RESEARCH

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ABSTRACT

Excessive mental and physical health challenges among immigrant women in Norway call for a response. Interaction with nature has proven to benefit mental and physical well-being among immigrant women, but knowledge about the determinants of such behavior in this target group is scarce. This study thus aims to explore the influences on outdoor recreation behavior among immigrant women in Norway. Data were gathered through individual interviews with 14 women from Iran (2), Poland (2), Palestine, Afghanistan, Congo, Kenya, Thailand, Russia, Portugal, Latvia, Colombia, and Bulgaria. These were analyzed using qualitative content analysis. Interviewees' outdoor recreation behavior was influenced by multiple, mostly interrelated factors, including attitudes towards nature, perceived control over making use of nature, role models, access to outdoor companions, cultural norms, access to attractive natural environments, climate and light conditions, available time, and access to economic resources. The factors influencing the women's outdoor recreational behavior are related both to their immigrant or ethnic backgrounds and to their other identities and can be found at the personal, social-environmental, and physical environmental/structural socio-ecological levels. Findings suggest that efforts to promote outdoor recreation among immigrant women would benefit from a multi-identity, multilevel socio-ecological approach.

CORRESPONDING AUTHOR:

Catherine Anne Nicole Lorentzen

University of South-Eastern
Norway, Vestfold, NO

catherine.lorentzen@usn.no

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Immigrant populations in Western countries, including Norway, are particularly vulnerable to numerous mental and physical health challenges (Abebe 2010; Rechel et al. 2013). The female population seems to be especially at risk (Abebe 2010). Mental health issues generally relate to stressful processes prior to, during, and/or following immigration (Abebe 2010; Walker, Halpenny & Deng 2011), whereas physical ailments relate mostly to lifestyle behaviors, including low levels of physical activity (Abebe 2010).

An increasing amount of research demonstrates the beneficial mental and physical health effects of interaction with nature (Bowler et al. 2010). Presence, as well as social and physical activities, in nature may facilitate improvements in stress and mental fatigue (Hansmann, Hug & Seeland 2007), mood, attention, immune system, heart activity, blood pressure (Bowler et al. 2010; Park et al. 2010), outlook on life, well-being, social cohesion (Maller et al. 2006), and obesity-related diseases (Reiner et al. 2013). There is support for such effects across ethnic and cultural backgrounds (Gentin 2011). Some studies suggest that the use of natural sites may be particularly beneficial for immigrants' health by accelerating the process of adaptation through increased feelings of attachment to and belonging in the new society and the maintenance and development of social capital (Gentin 2011; Stodolska, Peters & Horolets 2017b). However, immigrants in Western European countries, including Norway, generally engage less in nature-based activities than the majority populations of their new countries of residence (Derwo et al. 2014; Jay et al. 2012). Against this background, Norwegian public health authorities have indicated that the promotion of outdoor recreation among immigrants is a priority (NMHCS 2014; NME 2015).

Success in promoting health-related behaviors presupposes an in-depth understanding of the behaviors' determinants (Bauman et al. 2002). Three hypotheses have been put forward to explain the observed differences in engagement with nature among immigrants when compared to the majority populations in Western countries (Krymkowski, Manning & Valliere 2014; Washburne 1978). The ethnicity hypothesis points to the distinct cultural norms and values of immigrants and of the majority populations; the marginality hypothesis highlights issues related to limited socio-economic resources among immigrants, and the perceived discrimination hypothesis underlines constraints around the use of natural environments related to discrimination.

A number of studies support the above hypotheses. For instance, in terms of the ethnicity hypothesis, research indicates that some groups of immigrants prefer managed and adapted green spaces over wilder landscapes to a greater degree than the majority population because of the opportunity for social interaction and meal-sharing (Byrne, Wolch & Zhang 2009; Jay & Schraml 2013; Kloek et al. 2017). Other studies suggest that cultural or religious factors, such as limited free time and restriction on mixed-gender interactions, may constrain some immigrant women's use of natural environments (Stodolska & Livengood 2006). In support of the marginality hypothesis, multiple studies show that immigrants experience more socio-economic-related constraints on outdoor recreation than the majority population, including lack of money and inadequate access to appropriate natural sites (Byrne 2012; Byrne et al. 2009; Carlson et al. 2010; Kloek et al. 2013; Lovelock et al. 2011; Wolch, Byrne & Newell 2014). In line with the perceived discrimination hypothesis, several researchers have found that perceived discrimination and perceptions of not feeling at home or welcome impede immigrants' use of natural environments (Byrne 2012; Gobster

2002; Kloek, Peters & Sijtsma 2013). In their qualitative interviews with Muslim women in the Netherlands, Kloek et al. (2013) found that this was especially true for women who wore the veil, as they reported experiencing discriminatory actions, such as unpleasant looks and negative remarks, for example, during walks in the forest.

More recently, researchers have pointed to a need to apply a more critical approach when explaining immigrant populations' outdoor recreation behavior (Dahinden 2016; Kloek et al. 2017). The 'immigrant/non-immigrant' binary entailed by the presented hypotheses has been criticized as oversimplifying and stereotyping—which is not only problematic ethically but also results in other significant contributing factors being overlooked (Kloek et al. 2017). The concept of identity has successfully been applied in an attempt to capture the numerous conditions informing immigrants' outdoor recreation practices (Kloek et al. 2017). In this perspective, people have multiple identities, both personal and collective, which together help shape their behavior. As such, an immigrant woman may not only identify as being an immigrant and behave accordingly but also identify as being a woman, a 'nature lover', an elderly person, and so on—all identities which would impact her outdoor recreation practices. Accordingly, in a group interview study among young Dutch adults with Chinese, Turkish, or non-immigrant backgrounds, Kloek et al. (2017) found that, in addition to ethnic identity, identities based on age and attachment to nature also informed the interviewees' outdoor recreational behavior.

Although there is an increasing amount of research concerning the determinants of outdoor recreation among immigrants, it is still limited (Gentin 2011). Most studies have been performed in North America and in a few European countries; peer-reviewed research on this topic from the Norwegian context is nearly non-existent (Figari, Haaland & Krange 2009). Because of differences in both the composition of immigrant populations and various factors in the new countries of residence (e.g., natural environments, weather conditions, and the culture around outdoor recreation), it is of interest to investigate these issues among immigrants in Norway. Highlighting the voices of immigrant women, in particular, seems warranted, as previous research indicates that this group has a greater potential for improved health yet may face specific barriers to using natural environments. Thus, based on a case study including both Western and non-Western immigrants, the aim of the present research was to obtain a preliminary understanding of the factors facilitating and inhibiting the use of natural environments among immigrant women in Norway.

METHODS

The present study is part of a larger research project aimed at illuminating immigrant women's interactions with natural environments in Norway and the facilitators for, barriers to, and health-related effects of such practices. An exploratory qualitative research design was selected to investigate these issues in depth. Data were collected through individual interviews, which allowed for clarification in case of language difficulties (Barriball & While 1994).

Interviewees were accessed through Norwegian language conversation groups and a public health center in South-Eastern Norway. All immigrant women at the recruitment sites who were willing to participate in the study were included. In total, 14 women—from Iran (2), Poland (2), Palestine, Afghanistan, Congo, Kenya, Thailand, Russia, Portugal, Latvia, Colombia, and Bulgaria—agreed to participate. They were between 27 and 70 years of age and had resided in Norway for between 1 and 43 years at the time of the interview. They had all emigrated as adults, seven for work-

related reasons (for themselves or their husband), four as refugees, and three to marry a Norwegian man. The sample was also markedly heterogeneous regarding civil status, place of residence (both residence type and location, i.e., rural/urban surroundings), educational background, and employment status. **Table 1** provides an overview of country of birth, age group, and length of stay in Norway for the 14 interviewees. To be able to distinguish between interviewees when presenting results from the study, we will refer either to their nationality or to their interviewee number.

INTERVIEWEE NUMBER	COUNTRY OF BIRTH	AGE GROUP	LENGTH OF STAY IN NORWAY
1	Iran	40–50 years	Between 10 and 20 years
2	Iran	70–80 years	Over 40 years
3	Poland	30–40 years	Between 1 and 5 years
4	Poland	30–40 years	Between 5 and 10 years
5	Palestine	40–50 years	Between 5 and 10 years
6	Afghanistan	20–30 years	Between 1 and 5 years
7	Congo	20–30 years	Between 1 and 5 years
8	Kenya	50–60 years	Between 1 and 5 years
9	Thailand	30–40 years	Between 1 and 5 years
10	Russia	30–40 years	Between 10 and 20 years
11	Portugal	40–50 years	Between 1 and 5 years
12	Latvia	30–40 years	Between 5 and 10 years
13	Columbia	60–70 years	Between 20 and 40 years
14	Bulgaria	40–50 years	Between 1 and 5 years

Table 1 Country of birth, age group, and length of stay in Norway among interviewees.

The interviews were semi-structured and contained questions intended to cover the overall study’s three main topics: (1) access to nature and actual practices and preferences (e.g. ‘How far is it to natural areas from where you live?’, ‘What types of natural areas are there?’, ‘How do you use the natural areas?’, ‘What kind of natural areas do you like best?’); (2) the health-related aspects of interacting with nature (e.g. ‘If you tend to use nature—how does it feel when you are out?’, ‘Is there anything positive about it?’, ‘Have you experienced anything negative about being in such areas?’); and (3) perceived barriers and facilitators for interacting with nature (e.g. ‘Do you sometimes find it difficult to use the natural areas? What is it that makes it difficult?’, ‘What might make it easier for you to use the natural areas?’, ‘If you could help develop a natural area near your home that you think you would use, what would this natural area look like – and why?’). Based on the participants’ experiences, ‘nature’ was defined in the study as any type of natural environment, both nearby and far away. Interviews commenced with open-ended questions and the more detailed queries were used for follow-up when necessary. Data for the present study were obtained from different parts of the interviews, although the majority were acquired from answers to the last group of questions. Findings concerning the overall study’s two other main topics are reported in two prior articles (Lorentzen & Viken 2020; Lorentzen & Viken 2021).

The interviews were conducted between November 2016 and March 2017, either in the interviewees' home or in a meeting room at a local library. Interviews were conducted in Norwegian by either the first or the second author, both of whom are female with a Western European background. Linguistic challenges arose in two of the interviews; they were solved by switching to English or rewording questions when necessary. The researchers ended the interviews when they felt that no new information on the topic would be obtained. The interviews lasted between 33 and 74 minutes and were audio-recorded and transcribed verbatim. The Norwegian Center for Research Data approved this project, and the interviewees provided written informed consent prior to the interviews.

The data were analyzed according to the qualitative content analysis method developed by Graneheim and Lundman (2004). This method is grounded in a phenomenological and hermeneutic approach and includes both descriptions that are 'close to the text' and interpretations of the underlying meaning of the text. The transcripts were first read several times to obtain an overall sense of the data. An inductive approach was then used to abstract meaning units into codes. Differences and similarities between codes were identified and the codes were then sorted into tentative sub-categories, categories, and themes. A complementary deductive analysis was then performed, in which data were viewed in light of the existing literature. The first author led this process and discussed findings with the second author. The analysis ended when the researchers agreed on themes and categories. This process was carried out in Norwegian and the quotes were later translated into English.

INFLUENCES ON OUTDOOR RECREATION BEHAVIOR

The analysis revealed that the interviewees' interactions with natural environments were influenced by multiple interrelated factors, including their attitudes towards nature; perceived control over their use of nature; various role models; access to outdoor companions; cultural and religious norms and values; access to natural environments and nature-based activities; weather, light, and surface conditions; available time; and access to economic resources.

ATTITUDES TOWARDS NATURE

Although there were variations among the interviewees, nearly all of them interacted with nature in a number of ways. In general, they visited natural areas in their neighborhood and farther afield, on a day-to-day basis and during holidays, and for a variety of purposes and activities. The Afghan and Congolese interviewees visited natural sites to a lesser extent than the others. It appeared that the (1) interviewees' use of nature in general, (2) their use of specific natural sites, and (3) their performance of specific nature-based activities were facilitated and influenced by their attitudes toward these three elements.

With varying levels of intensity, all interviewees expressed a positive general view of nature, reflected in different ways in the interviews. Some described a preference for performing physical and recreational outdoor activities in natural areas, or in urban areas with elements of nature, rather than in urban environments with only asphalt and residences, as did this Iranian interviewee (1): 'When I go for a walk, I like to look at nature. It gives me more energy [...]. Otherwise I think I wouldn't go for a walk if I could not go through nature...' Two of the interviewees had specifically chosen

to live in a rural location in Norway in order to enjoy the beauty of nature and quiet surroundings. Some described a strong need to retire to calming natural environments after having spent time in crowded and noisy urban environments. The Latvian interviewee expressed it this way: ‘... I am very fond of Oslo [...], but I would not live there. For me it is quite important that I am out in nature, although I am not so keen on skiing or stuff, but that nature is nearby..., so I can go out whenever I want...’

The interviewees’ positive attitudes toward nature were also reflected in statements concerning their expectations about mental health benefits, positive social interactions, and acquiring skills (such as learning about Norwegian botany) through visits to natural sites. The Bulgarian and Columbian interviewees expressed a particularly strong fascination with nature, highlighting their beliefs about the unity of humans and nature and nature’s power to ease people’s suffering. The Columbian interviewee articulated the following: ‘Yes, I am very focused on watching *everything*, really... the sky..., taking pictures of sunsets or sunrises, the stars and the moon and... I feel I am part of nature...’

The interviews suggest that interviewees’ previous experiences with nature in their home country were of particular importance in shaping their attitudes toward nature. Many interviewees described numerous positive encounters with natural environments as children and adolescents. The Polish and Latvian interviewees referred to long, unrestricted, and happy summer vacations at their grandparents’ places in the countryside, where days were filled with outdoor play and nature-based chores. Some, such as the Portuguese and Palestinian interviewee, reflected upon the frequent, strongly positive experiences they had at the beach in their youth. Some expressed explicitly that their positive relationship with nature had always been there, including one of the Iranian interviewees (2): ‘...[We lived in] a big city [...]. But still, we always liked nature... We used to go out of town and go to the places that were nice and green...’

Besides helping to create a generally positive view of nature, such experiences seem to have influenced the interviewees’ preferences for specific natural sites and nature-based activities in Norway. For example, the interviewees who described having many good memories of beach outings in their home countries also expressed a preference for natural sites on the coast in Norway. When the Palestinian interviewee was asked whether she liked the woods, she responded, ‘No, it’s not that exciting for me. I like it... I’m getting used to it. But if you offer me two choices, I prefer to go on a beach trip, not a woodland hike’. Furthermore, the interviewees who grew up cultivating vegetables, herbs, and flowers in their family’s garden, such as the Latvian and one of the Polish interviewees (4), appeared particularly interested in these kinds of environments and activities in Norway. Likewise, some interviewees described how, when they were children, their parents, grandparents, and neighbors taught them about edible and non-edible plants found in nature, how to conserve self-cultivated or self-collected food, and how to produce medicine out of natural ingredients—nature-based activities they still pursued and enjoyed.

PERCEIVED CONTROL OVER THE ABILITY TO USE NATURE

Certain aspects of interviewees’ perceived control, including feelings of safety, the possession of certain knowledge and skills, and mental health ailments, seemed to impede or facilitate their use of natural environments.

Feeling Safe

Many interviewees expressed that feeling safe and in control in specific natural environments was a prerequisite for visiting them. Here, they were primarily referring to feeling insecure when visiting the woods alone. In most cases, interviewees described a fear of assault, but many were also afraid of getting lost. They pointed to a lack of familiarity with wooded areas and poor orientation abilities, as one of the Iranian interviewees (1) explained,

... So sometimes me and my friend go on a walk together. And otherwise [when alone], I go for a walk on the street alongside the woods, and I dare not go all the way into the woods because I am afraid of getting lost. [...] Because I'm not very familiar with the woods here [...].

Many stressed that they had not been accustomed to visiting the woods in their home country—and certainly not alone, either because such natural environments were limited or associated with soldiers and dead bodies, or because visiting the woods alone as a woman was not culturally acceptable.

Possessing the Necessary Knowledge and Skills

Interviewees' perceived control over their ability to use nature in Norway was also dependent on certain types of knowledge, skills, and competencies. First and foremost, they expressed lack of knowledge about existing outdoor recreation opportunities and where to learn about new nature-based activities as a barrier to engaging with nature. This was especially true for interviewees who desired hiking companions and sought information about local organized hiking groups and how to get in touch with them; one of the Iranian interviewees (1) stated that she would have joined such a group long before had she been aware of its existence. Other interviewees reported a desire to learn typical Norwegian nature-based physical activities, such as cross-country skiing, but felt inhibited by a lack of knowledge about how to get started or how to get in touch with someone who could help them. The Bulgarian interviewee explained, 'I want to [ski], but I haven't tried. But I want to! But I don't know how and where. I don't know how to start using skis'. Some interviewees were concerned about the challenges of performing outdoor activities in winter, pointing to the considerable knowledge that one had to have beforehand about appropriate clothing and equipment and how to purchase these at a reasonable price.

Other interviewees' interactions with nature were impeded by a lack of knowledge regarding outdoor activity regulations. For instance, one of the Polish interviewees (3) reflected on the uncertainty she felt about the legality of using a large, nicely trimmed urban grassy area, as she never saw people using it and there were no signs or facilities indicating that this area was meant for recreational use: '...Sometimes you have places, but you think, "Ah, can I be there? Is it for people or is it just to look at?"'

Mental Health Ailments

Interviewees' perceptions of control over their ability to use nature seemed to also be influenced by their health condition. Several interviewees mentioned that they visited nature less than they wished to because of feelings of mental fatigue. For some, such as the Kenyan interviewee, this was explained by long days filled with work, Norwegian language classes, and language training work placements. For the Palestinian interviewee, the lack of energy could be traced back to a long and

difficult period following her settlement in Norway as a refugee. She expressed feeling confused after her arrival in Norway, as she understood very little of the new language and social system. She pointed to the stress of trying to live ‘the Norwegian way’, where everything had to be planned and organized well ahead of time, where her children had to be constantly driven to and from leisure activities, and where they had to have the same school and sporting equipment, cell phones, and weekend activities as their classmates. She found it very difficult to live in a society so different from the one she was used to and emphasized that, although she knew physical activity in nature would benefit her health, she had neither the desire nor the motivation to seek out nature.

ROLE MODELS IN NORWAY

Besides continuing with nature-related practices from their home country, many interviewees’ outdoor recreation patterns seem to have been shaped by role models in Norway, either Norwegians or other immigrants who had lived in Norway longer. For example, the interviewees married to Norwegian men were introduced early on—by their husbands, their in-laws, or others in their husbands’ social network—to typical Norwegian outdoor activities; they thus had more knowledge about, and positive experiences with, these kinds of activities and were more likely to adopt the typical Norwegian outdoor lifestyle. The Columbian interviewee reminisced about her first years in Norway: ‘[...] and [my Norwegian husband’s] whole family was very interested in outdoor recreation. So, everyone was very good at hiking and was familiar with the woods here. [...] I have never hiked as much as after I got together with [my husband]’.

A few interviewees recounted how Norwegian friends and networks had introduced them to typical Norwegian nature-based activities (e.g., cross-country skiing) or passed along information about local hiking trips, appropriate clothing for cold weather activities, Norwegian flora, and edible species. Others described being inspired to engage with nature in new ways merely by observing Norwegian people’s practices in nature. Some, such as the Latvian and one of the Polish interviewees (3), expressed a fascination with what they described as ‘Norwegian outdoor culture’, referring to frequent nature outings with one’s nuclear family in all kinds of weather conditions simply to enjoy nature and family rather than for practical purposes; these interviewees discussed how they were in a process of adopting the practice of caring less about the weather and focusing more on the enjoyment of nature. Others related how they had been inspired to adopt ‘the Norwegian way’ of picnicking. For example, the Palestinian interviewee recounted, ‘We always try to [go out to the beach]... In the beginning, we did it our way, we made food, but afterwards, no, in the Norwegian way [laughter]. We buy sausage and stuff like that, very easy things, and just go. It doesn’t take time’.

ACCESS TO OUTDOOR COMPANIONS

For many interviewees, a clear barrier to engaging with nature was the lack of companions for such outings. They explained that they would visit nature much more often if they had someone with whom to go to natural sites. They cited multiple reasons for wanting company. Many interviewees, including the women from Afghanistan, Latvia, Portugal, Palestine, and Iran, found solitary trips boring, for example; some stressed that they were social types and liked to chat and share their nature outing experiences with others, which made such trips more fun. Several reflected on how,

in their home country, they were used to being with people; in Norway, their social network was much more limited. Some interviewees wished specifically for Norwegian outdoor companions to learn the Norwegian language and about Norwegian botany; however, they found it particularly challenging to get acquainted with Norwegians. Many interviewees also emphasized that they felt safer in nature if accompanied, particularly in wooded areas. Others wished for company to distract from the physical discomfort of exercise—or, for one interviewee, from the mental discomfort caused by worries about her family's future in Norway that arose when she was alone in nature: 'If I have a friend [...], then it will be fun. If we can be together and talk... then it becomes like... it is not just exercising, but we have the opportunity to talk to each other. Being alone is... sad. [...] So, if I have someone else, I get a little distracted...' (Palestinian interviewee).

CULTURAL AND RELIGIOUS NORMS AND VALUES

Interviewees' engagement with nature was clearly influenced by their cultural and religious background. The influence of interviewees' experiences in their home country on their attitudes toward nature and social network-related constraints may partly be interpreted as culture-based. However, other cultural influences on interviewees' interactions with nature were identified. The Palestinian interviewee discussed how, for many years following her arrival in Norway, she struggled to adjust to the more structured way of living in Norwegian society, as in her home country things happened more spontaneously. She described the stress she experienced when Norwegians invited her or her family to join outings in nature: she felt too much information was given too far ahead of time and she felt pressured to pay attention to scheduled appointments: 'Appointments, that is... I wake up and I have it in my head that today I will have to do that and that and that! You get a little stressed'.

The two interviewees who wore hijab clearly emphasized their clothing as a barrier to using specific natural environments. They recounted how wearing such garments in the park or by the harbor felt uncomfortable, and that they would readily have taken them off but could not in the presence of men. They reflected on how this limited their sense of freedom in such places and expressed a desire that access be regulated in such areas according to gender, as is the case in their home countries—for instance, by having private female-only spaces or female-only days.

ACCESS TO NATURAL ENVIRONMENTS AND NATURE-BASED ACTIVITIES

Generally, easy access to attractive natural areas appeared to both promote interviewees' desire to use nature and facilitate their actual use of it. Most interviewees, both those living in urban and those in rural areas, reported having beautiful and easily accessible natural sites very close to their homes. They emphasized qualities such as good access to various lush environments and sites where water featured prominently, well-signed hiking trails, and well-graveled and well-illuminated paths in the winter. Several portrayed Norway as one large park, including the Latvian interviewee. She had lived in a larger city in her home country but now lived on the outskirts of a Norwegian city and when asked whether she found the parks to be too far away she enthusiastically responded, '[...] but everything is a big park here! You can go anywhere!'

However, for some interviewees, a lack of or limited access to specific natural environments or nature-based activities appeared to be barriers to expanded engagement with nature. For instance, several expressed a strong desire for nearby

natural areas to be altered so they could function more as social meeting places: for example, by the addition of benches and picnic areas or the integration of cultural activities, such as concerts, movie theaters, and festivals. As one of the Polish interviewees (3) stated,

[...] In Norway, families go to the woods and use nature together, but in other countries you are not as used to doing such things alone or with just the family. You use nature with other people, and you do it in parks... There are not many parks here. [...] Maybe you just want to be out, but not go for a long hike in the woods... [...] It is just to relax, meet other people.

Some, such as one of the Iranian interviewees (1), emphasized that parks in Norway should be designed to be more aesthetically attractive, for example with fountains and flowers, and believed that these kinds of natural sites would attract many immigrants. Further, in line with their reported lack of knowledge about specific nature-based activities, some interviewees, such as the Polish, Congolese, Afghan, Kenyan, Thai, and Bulgarian interviewees, mentioned that easy access to courses for immigrants on different nature-based activities would lower the threshold for participating in outdoor recreation; among other things, they expressed the desire to learn to ice-fish, ski, play golf, and bicycle.

WEATHER, LIGHT, AND SURFACE CONDITIONS

By and large, all interviewees reported that their outdoor recreation patterns were influenced by seasonal weather, light, and surface conditions. They generally found it more difficult to go outdoors in winter because of the cold weather and the darkness and an accompanying fear of assault. Some, such as this Iranian interviewee (2), avoided the outdoors in winter because of slippery surfaces and an accompanying fear of falling and getting injured: 'So, the pavement is always slippery, and it is sometimes very difficult to go out. Therefore, one gets scared in the winter and one is afraid to go out'. Although some interviewees expressed that they had become more used to it, or cared less about it, most were more reluctant to seek out natural environments in freezing, cloudy, rainy, and windy weather.

AVAILABLE TIME

Time-related issues appeared to either restrict or facilitate interviewees' use of natural environments. Some interviewees highlighted lack of time as an impediment to visiting nature as often as they wished. For some, this was because nature visits were prioritized less than other competing indoor leisure and cultural activities, such as going to concerts and movies or visiting friends and family. Others, such as the Congolese interviewee, explained that little leisure time remained once work, household, and family duties had been attended to and this hindered their ability to engage with nature: '... there is a lot of activity in nature that is important, but sometimes we do not have time because the children are very small and they need us'. However, a couple of the interviewees described how having more time had led to enhanced interaction with nature. For instance, the Bulgarian interviewee enthusiastically explained that the Norwegian work-life balance permitted her to spend significantly more time on nature-based pursuits on both weekdays and weekends. She reflected on how, in Bulgaria, she had held three jobs to get by economically, so there had never been time to seek out nature on weekdays.

The interviews revealed that, for a few interviewees, participation in specific nature-based activities or visits to specific natural areas were constrained by limited economic resources. This was most pronounced in the case of the Palestinian interviewee, who reflected on how her family's financial situation did not permit them to buy the equipment and clothing necessary for outdoor activities in winter:

I think we refugees are struggling a lot. [...] Because if we are going to ski, then we have to have ski equipment... and clothes... and... I like to go for a walk when it is cold, but when I think that I have to get dressed, I have to buy wool clothes and have to buy.... You know, you need different things, for the children, for yourself, and everything is expensive...

The Portuguese interviewee stressed that she could not afford the cost of public transportation or parking required by specific nature sites she wanted to visit, such as public beaches.

DISCUSSION

The aim of this study was to explore the factors influencing immigrant women's interactions with natural environments in Norway. Our findings suggest multiple interrelated determinants, including attitudes towards nature, perceived control over the ability to use nature, role models, access to outdoor companions, cultural norms, access to attractive natural environments, climate-related conditions, available time, and access to economic resources. In the following, we discuss how these results might be understood through different theoretical lenses and help lay the foundation for policy and management in this aspect of public health work.

IMMIGRANT WOMEN'S OUTDOOR RECREATION PRACTICES VIEWED THROUGH THE ETHNICITY, MARGINALITY, AND DISCRIMINATION HYPOTHESES

Although this was not a comparative study, some findings seem to support prior explanations for the differences in outdoor participation rates and practices between immigrants and non-immigrants in Western countries (Krymkowski et al. 2014; Washburne 1978). For instance, in line with the ethnicity hypothesis (Washburne 1978), some of the barriers we identified regarding interviewees' interactions with nature are clearly rooted in their cultural background—for example, difficulties adapting to the 'Norwegian way of planning and organizing' around nature outings. On the other hand, cultural customs and values may also facilitate interactions with nature in Norway, such as when interviewees continued their practices of cultivating herbs and vegetables in their garden after they moved to Norway. The latter finding corresponds well with previous research showing that nature-based preferences and practices in new countries of residence are influenced by prior socialization into such practices in home countries (Byrne 2012; Hordyk, Hanley & Richard 2015; Stodolska et al. 2017b). However, findings from this study suggest that outdoor recreation patterns in the new country, over time, and through the influence of role models, seem to develop more in line with the majority population's practices.

The marginality hypothesis (Krymkowski et al. 2014; Washburne 1978) is also supported by the study's findings. Because of Norway's large natural areas and 'right of common

access' (which makes visits to green spaces legal and free for anyone) (Outdoor Recreation Act 1957), access to natural environments in Norway is generally considered to be very good (Gundersen et al. 2006; Gundersen et al. 2016). As such, Norwegian public health authorities highlight outdoor recreation as a low-threshold health-promoting activity (NMHCS 2014). This 'very good' access to nature in Norway was generally confirmed by the study's findings, as most interviewees highlighted the many attractive and easily accessible natural sites quite close to their homes. This appeared to be a prerequisite for visiting and using nature. However, findings indicate that actual access to many natural sites and nature-based activities may also depend on factors such as having certain language skills, possessing different types of knowledge, and having sufficient economic resources and time—all of which are factors related to marginality. The perceived discrimination hypothesis (Krymkowski et al. 2014), which has previously been supported by other studies (Byrne 2012; Kloek et al. 2013), was not confirmed in this study.

EXPANDING THE MIGRATION/ETHNIC EXPLANATION WITH IDENTITY THEORY IN UNDERSTANDING IMMIGRANT WOMEN'S OUTDOOR RECREATION PRACTICES

In line with the findings of Stodolska, Peters, and Horolets (2017a), it is clear that some of the determinants of outdoor recreation identified in this study are directly related to the women's immigrant status: for example, poor mental health because of acculturative stress; lack of companions with whom to go out in nature because of a limited social network; limited available time because of days filled with Norwegian courses and practice; and economic constraints. In contrast to the ethnicity hypothesis, such barriers may generally be less dependent on country of origin or cultural background; some of these determinants may also be less dependent on specific characteristics of the new country of residence. However, in line with the findings of Kloek et al. (2017), several determinants of outdoor recreational behavior identified in our study appeared to be more dependent on other identities than that of an immigrant, including 'a mother of young children', 'a spontaneous type', 'a garden type', 'a social type', 'a nature lover', and 'a woman'. In line with the ethnicity hypothesis, some of these identities may be related to their ethnicity or the cultural traits of their home country, whereas others may be similar to the identities influencing the outdoor recreation behavior of the majority population. For instance, non-immigrant women in Western countries also report that their participation in some nature-based activities is constrained by fear of attack by humans or wild animals, a fear that is presumably related to a gender-based identity (Wesely & Gaarder 2004). Including other explanatory approaches to outdoor recreation behavior besides the immigrant/ethnicity one, contributes to the 'de-migrantization' of migration research, which is seen as necessary to counteract a tendency to automatically overemphasize migration-related or ethnic factors (Dahinden 2016). This appears to be of particular importance in this highly diverse sample of immigrant women.

INTEGRATING MIGRATION/ETHNIC AND IDENTITY EXPLANATIONS IN A SOCIO-ECOLOGICAL APPROACH TO PRACTICE

In sum, these theoretical discussions support the need to address outdoor recreation behavior among immigrant women as a complex, multidimensional phenomenon. To be more efficient and ethical, the design and management of measures to promote outdoor recreation should therefore take into consideration both immigrant and ethnic identities and other relevant identities. However, the principle objective when

performing this type of research should be to identify and obtain a good overview of the various determinants that are susceptible to change or should be considered when implementing measures in this domain of public health (Bartholomew et al. 2001). Socio-ecological models have been highlighted as helpful for structuring all types of determinants of a specific health-related behavior and thereby function as a basis for practice (Eriksson et al. 2018; Stokols 1992). Such frameworks, which are at the heart of health promotion approaches, emphasize the need to consider the multiple levels that influence a person's behavior—including the personal, social-environmental, and physical environmental/structural levels—and how determinants at these various levels interact with each other (e.g., in a cascading or reciprocal manner).

The determinants identified in this study can clearly be categorized in terms of personal (attitudes and perceived control), social-environmental (role models, outdoor companions, and cultural and religious norms and values), and physical environmental/structural (access to preferred natural environments, weather and light conditions, available time, and economic resources) levels of influence. Further, several of them also appear to interact when it comes to influencing interviewees' outdoor recreation practice. For instance, although several interviewees, in line with their 'nature lover' identity, displayed positive attitudes toward, and a desire to engage with, nature (personal level), their actual interactions with nature appeared somewhat impeded by a perceived lack of control over their ability to do so (personal level). This perception seemed to be influenced by factors at the personal level (e.g., knowledge about how to get started with certain outdoor activities), the social-environmental level (e.g., access to companions), and the physical environmental level (e.g., access to natural sites that facilitate social interactions). In line with this complex web of influences, the socio-ecological approach suggests that the work of promoting immigrant women's outdoor recreation behavior will be optimized if multiple strategies targeting different levels of influence are implemented simultaneously.

CONCLUSION

This study, as one of only a few that have investigated factors influencing immigrant women's interaction with nature in Norway, adds important information to the field. It demonstrates that interaction with natural environments is influenced by interrelated factors at the personal, social-environmental, and physical environmental/structural levels. Some of these factors are related to their immigrant status, whereas others are related to their other identities. This supports the use of a multiple-identity, multifaceted, multilevel socio-ecological approach to promoting outdoor recreation behavior among immigrant women. However, although the study's explorative design allowed a deeper understanding of the research question, the small and highly heterogeneous sample suggests that further investigation of the subject is warranted, including both larger qualitative studies with multimethod approaches to provide further insights on the topic and quantitative surveys to assess the generalizability of findings. To further illuminate the role of identities in outdoor recreation behavior, future research should investigate the heterogeneity between and within ethnic groups and the homogeneity between immigrants and non-immigrants.

COMPETING INTERESTS

The authors have no competing interests to declare.

AUTHOR CONTRIBUTIONS

The first author initiated and designed the project. Both authors collected and analyzed the data. The first author wrote the first draft of the article, which was critically reviewed by the second author.

AUTHOR AFFILIATIONS

Catherine Anne Nicole Lorentzen  orcid.org/0000-0002-5500-4522

University of South-Eastern Norway, Vestfold, NO

Berit Viken

University of South-Eastern Norway, Vestfold, NO

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