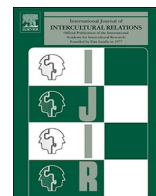


Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

## International Journal of Intercultural Relations

journal homepage: [www.elsevier.com/locate/ijintrel](http://www.elsevier.com/locate/ijintrel)

## Brief report

## Modern health worries in Pakistani immigrant women in Oslo, Norway

Victoria T. Hjellset<sup>a</sup>, Camilla Ihlebæk<sup>a,b,\*</sup><sup>a</sup> Department of Public Health Science, Norwegian University of Life Sciences (NMBU), Ås, Norway<sup>b</sup> Faculty of Health and Welfare, Østfold University College, Halden, Norway

## ARTICLE INFO

## Keywords:

Modern health worries (MHW)

Immigrants

Education

Acculturation

Integration

Assimilation

## ABSTRACT

**Background:** The main study objective was to investigate modern health worries (MHW) in a group of Pakistani immigrant women in Norway, and to compare it with a group of ethnic Norwegian women. A further aim was to examine differences in MHW with level of education and acculturation in this immigrant group.

**Methods:** The Pakistani women (N = 101) completed a questionnaire to assess MHW and sociodemographic variables. MHW data were obtained via telephone interviews for the subsample of Norwegian women (N = 344).

**Results:** The Pakistani women generally showed lower levels of MHW than did the ethnic Norwegian women. However, when stratified on education, the difference was mainly apparent in the low and middle educational groups. The Pakistani women with high levels of education tended to report higher levels of MHW than those with lower education levels. They reported significantly higher levels of worries about avian flu, radiation from computer screens, and vaccination programmes than did the ethnic Norwegian women on the same high educational level. Their different degrees of acculturation in the Norwegian society appeared to influence their levels of MHW, as the assimilated women showed the highest levels of MHW, whereas the separated women showed the lowest levels.

**Conclusions:** The group of Pakistani immigrant women was very heterogeneous in terms of MHW, and health authorities and health care workers should therefore adapt health and risk information according to different levels of integration and education.

## Introduction

Many people are concerned about how new technology and other aspects of modern life influence their health, and such concerns are commonly referred to in the literature as modern health worries (MHW) (Petrie et al., 2001). MHW are reported to be frequent in developed countries (Dörmötör, Nordin, Withhöft, & Köteles, 2019). In Norway, most immigrants from South-East Asia, including those from Pakistan, come from rural farmland areas with poor infrastructure and low levels of technological development (Statistics Norway, 2017). Migration to a modern society with a high level of technology, such as Norway, may lead to worries about the new environment in general, and its impact on health in particular. Still, there are scarce knowledge on MHW in immigrants.

MHW are commonly reported in different patient populations (Andersen & Jensen, 2012; Bailer, Withhöft, & Rist, 2008; Baliatsas,

\* Corresponding author at: Department of Public Health Science, Norwegian University of Life Sciences (NMBU), PO Box 5003, NO-1432 Ås, Norway.

E-mail address: [camilla.ihlebak@nmbu.no](mailto:camilla.ihlebak@nmbu.no) (C. Ihlebæk).

<https://doi.org/10.1016/j.ijintrel.2020.01.003>

Received 15 February 2019; Received in revised form 29 November 2019; Accepted 18 January 2020

Available online 28 January 2020

0147-1767/ © 2020 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

van Kamp, Hooiveld, Lebrecht, & Yzermans, 2015) as well as in the general population (Indregard, Ihlebæk, & Eriksen, 2013; Palmquist, Petrie, & Nordin, 2017; Rief et al., 2012). High levels of MHW have been reported as associated with a wide range of illnesses and complaints (Bailer et al., 2008; Baliatsas et al., 2015; Filipkowski et al., 2010; Indregard et al., 2013), lower health-related quality of life (Rief et al., 2012), and increased use of the health care- and welfare system (Andersen & Jensen, 2012; Fionda & Furnham, 2014; Indregard et al., 2013).

Several mechanisms and factors have been suggested to explain why some people report high levels of MHW (Dömötör et al., 2019). Individual factors such as high cognitive sensitization (Petrie et al., 2001), somatosensory amplification (Köteles, Szemerszky, Freyler, & Bárdos, 2011), and having a holistic orientation (Köteles & Simor, 2014), have been found associated with MHW. Additionally, cultural or contextual factors such as media coverage of health risks (Witthöft et al., 2018) and family environment (Köteles, Freyler, Kökönyei, & Bárdos, 2015) may influence levels of MHW. Palmquist et al. (2017) found higher levels of most MHW in a New Zealand population compared to Swedish and UK populations, and in a cross-cultural comparison of students, students from Turkey had higher scores on all MHW items compared with students from the UK (Ozakinci, Boratav, & Mora, 2011). These findings could be explained by variation in current interest and media coverage, public conceptions, industrialization, and urban lifestyle as compared to a rural lifestyle (Ozakinci et al., 2011; Palmquist et al., 2017). Therefore, the level and nature of MHW seems to show geographical and cultural differences.

Another factor that could affect the level of MHW in immigrants, is the degree of acculturation. Acculturation can be described as a psychological process of adjustment when an individual from one culture interacts with members of another culture (Berry, 1997). According to the bidimensional acculturation model (Berry, 1997), four levels of acculturation can be identified: *integration*, whereby immigrants understand and appreciate both the new and their old culture; *assimilation*, whereby immigrants understand and accept the new culture, but avoid their old culture; *separation*, which occurs when immigrants do not adapt to the new culture but continue to live and act according to their old culture; and *marginalization*, which happens when immigrants fail to adapt to the new culture, and at the same time have mixed and negative feelings about their old culture (Berry, 1997).

It could be hypothesized that the degree of acculturation together with the level of education, may influence how immigrants will interpret and worry about modern technology and their potential threats to health in their new environment. An association between low levels of education and higher levels of MHW has been reported (Bailer et al., 2008; Baliatsas et al., 2015) and Pakistani immigrants in Norway tend to show lower levels of education (Statistics Norway, 2017). Immigrants, who must face new cultural and environmental surroundings, and in general have lower levels of education, might therefore be expected to show higher levels of MHW. Furthermore, women in general tend to report more MHW compared to men, to be explained by women's special social role and responsibilities (Dömötör et al., 2019), and this role might be especially important in immigrants. Still, no studies to date have investigated MHW in this group.

The aim of this research was therefore to investigate the level of MHW in a group of Pakistani immigrant women and to compare it with ethnic Norwegian women. A further aim was to examine differences in MHW with level of education and acculturation in this immigrant group.

## Methods

### *Participants and recruitment*

We used baseline data (N = 188) collected from November 2012 to April 2014 in an intervention trial involving Pakistani immigrant women in Oslo. The inclusion criteria were; women, in the age range 18–65 years, born in Pakistan, and lived in Norway for at least three years. Recruitment of the Pakistani women was conducted in a local community in which approximately 40 % of the population are immigrants. Multi-strategic recruitment with emphasis on personal contact was used to recruit Pakistani women, as suggested by Hussain-Gambles et al. (2004). A total of 87 women who had not answered the MHW questionnaire were excluded, resulting in a sample of N = 101 women.

A subsample of ethnic Norwegian women in the same age range as the Pakistani immigrant women was used for comparison with regards to levels of MHW (N = 344). The subsample was derived based on data relating to 1000 individuals from the general population in Norway, collected in 2008 by a market research company, TNS Gallup AS, as part of a monthly national omnibus survey. The data were collected by computer-assisted telephone interviews (Indregard et al., 2013).

### *Measurements*

Trained multilingual (Urdu, Punjabi, Norwegian, and English) study personnel filled out all questionnaires during face-to-face interviews with the Pakistani immigrant women. To ensure that all study personnel asked each question in the same way, the interviews were regularly observed by a third person. The questionnaires covered a range of factors, including demographic variables and MHW. The number of years spent in education was categorized as low ( $\leq 9$  years of education), middle (10–12 years of education), and high ( $\geq 13$  years of education) in both samples.

A bidimensional acculturation variable was constructed by combining the level of acculturation (i.e. adaptation to Norwegian society, such as through the acquisition of Norwegian language skills and employment) and level of self-reported Pakistani identity (Hjellset & Ihlebæk, 2019). Those who reported high acculturation and high Pakistani identity were categorized as *integrated*. Those who reported high acculturation and low Pakistani identity were categorized as *assimilated*. Participants who reported low acculturation and high Pakistani identity were categorized as *separated*, and participants with low acculturation and low Pakistani

**Table 1**

Descriptive data for Pakistani immigrant women (N = 101) and ethnic Norwegian women (N = 344). Differences between groups were tested with Chi-square test and One-way ANOVA. P-value given.

	Pakistani immigrant women N = 101	Ethnic Norwegian woman N = 344	p-value
Age (Mean (95 %CI))	40.9 (39.5–42.5)	39.9 (38.6–41.1)	0.303
Education (%)			
Low ( $\leq$ 9 yrs.)	34.7	4.4	
Middle (10–12 yrs.)	37.6	39.5	< 0.001
High ( $\geq$ 13 yrs.)	27.7	56.1	
Total MHW score (Mean (95 %CI))	38.2 (35.0–41.5)	40.6 (39.1–42.2)	0.164
Years in Norway (mean(95 %CI)) (range)	18.2 (16.6–19.8), (2–38)		
Bidimensional acculturation (%)			
Integrated	23.8		
Assimilated	5.9		
Separated	61.4		
Marginalized	8.9		

identity were categorized as *marginalized* (Hjellset & Ihlebæk, 2019).

The Modern Health Worries (MHW) Scale was used to assess the participants' worries (Petrie et al., 2001). In the current study, we used a Norwegian 19 item version, adapted to reflect the current Norwegian conditions and media focus (Indregard et al., 2013). Concerns about telecommunications towers, antibiotics in food, hormones in food, fluoridation of water, overuse of antibiotics, radiation leakages from microwave ovens, bacteria in air conditioning systems, medical and dental X-rays, and pesticide sprays were considered less relevant and were therefore excluded in the Norwegian version. However, concerns about earth radiation, radiation from computer screens, avian flu, and climate change were added (Indregard et al., 2013). The participants were asked to rate each item on a five-point scale, ranging from 1 (no concern) to 5 (extreme concern). The total MHW score showed high internal reliability with Cronbach's alphas of 0.939 and 0.938 for the total MHW score in Pakistani immigrant women and ethnic Norwegian women respectively.

### Statistics

All analyses were carried out with SPSS version 25.0. A total MHW score were calculated, in addition to prevalence and mean values of the single MHW. Due to significantly different levels of education in the two samples, the analysis was stratified by education when comparing Pakistani immigrant women with ethnic Norwegian women. Differences between groups were investigated by using independent t-tests, ANOVA or Chi-square tests (categorical variables).

### Results

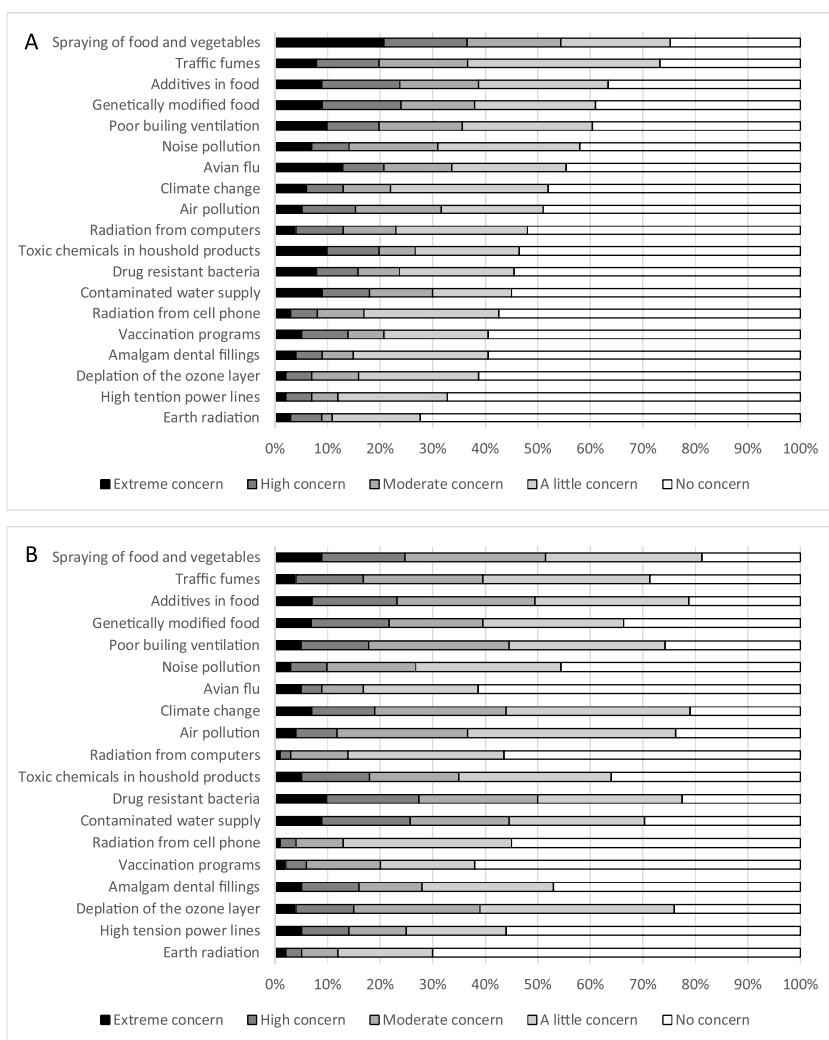
The demographic variables for the Pakistani immigrants and the ethnic Norwegians sample used for comparison are listed in Table 1. Significant differences in educational level existed between the two samples (Table 1). There were also significant differences in educational level between the four different acculturation groups: 25 % of the integrated women had high levels of education whereas the respective percentages for the assimilated, separated, and marginalized women were 83 %, 23 %, and 33 % ( $p = 0.002$ ).

The total MHW score showed no significant differences between the two samples (Table 1).

However, for the Norwegian women, higher levels of education were associated with lower total MHW score (educational level: (mean(SD)); low:49.5(19.4); middle:41.3(14.5); high:39.4(14.3);  $p = 0.030$ ), whereas for the Pakistani immigrant women the opposite pattern was found (low:33.6(16.9); middle:38.0(14.0); high:44.3(17.3);  $p = 0.034$ ).

The prevalence of MHW is shown in Fig. 1. Compared with the Pakistani immigrant women, the ethnic Norwegian women showed higher prevalence of MHW with regard to spraying of food and vegetables ( $p = 0.002$ ), additives in food ( $p = 0.014$ ), poor building ventilation ( $p = 0.007$ ), climate change ( $p < 0.001$ ), air pollution ( $p < 0.001$ ), toxic chemicals in household products (0.002), drug-resistant bacteria ( $p < 0.001$ ), contaminated water supply ( $p < 0.001$ ), and depletion of the ozone layer ( $p < 0.001$ ). However, the Pakistani immigrant women showed significantly higher prevalence for MHW concerning avian flu ( $p = 0.002$ ), vaccination programs ( $p = 0.015$ ), and radiation from computer screens ( $p = 0.003$ ).

When the analyses were stratified on educational level, Pakistani women with low education reported significantly lower levels of worries about traffic fumes, additives in food, climate change, air pollution, toxic chemicals in household products, drug-resistant bacteria, contaminated water supply, amalgam dental fillings, depletion of the ozone layer, and high voltage power lines, compared with ethnic Norwegian women (Fig. 2). Similar findings were made for climate change, drug resistant bacteria, contaminated water supply, amalgam dental fillings, depletion of the ozone layer, and high voltage power lines in the group with middle education (Fig. 2). However, for the group with high education, there was a tendency for Pakistani women to report higher levels of MHW compared with the ethnic Norwegian women, and they reported significantly higher levels of MHW about avian flu, radiation from computer screens, and vaccination programs (Fig. 2).



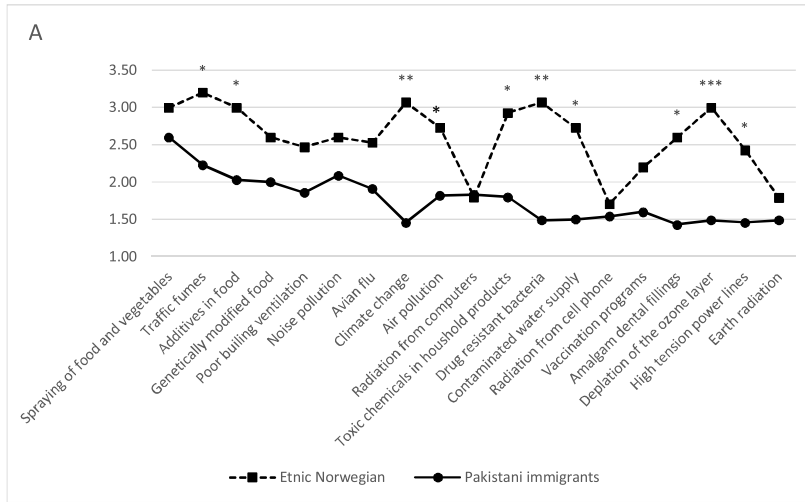
**Fig. 1.** Prevalence of modern health worries in Pakistani immigrant women (N = 101) (A) and ethnic Norwegian women (N = 344) (B) distributed by single items.

When the different bidimensional acculturation groups were compared, the general pattern was that the group of assimilated Pakistani immigrant women showed the highest levels of MHW and the separated group showed the lowest levels (Fig. 3). There were significant differences between the acculturation groups for worries concerning genetically modified food, additives in food, poor building ventilation, toxic chemicals in household products, contaminated water supply, climate change, vaccination programs, depletion of the ozone layer, high voltage power lines, and earth radiation ( $p < 0.05$ ) (Fig. 3).

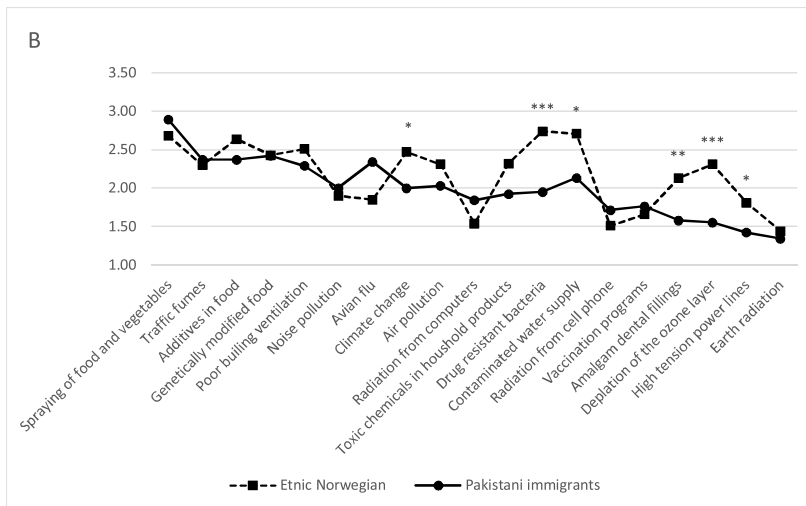
## Discussion

In general, the Pakistani immigrant women showed lower prevalence of MHW compared with ethnic Norwegian women. For the ethnic Norwegian women, higher levels of education were associated with lower total MHW score, whereas for the Pakistani immigrant women the opposite pattern was found. When stratified on education, the lower prevalence of MHW in Pakistani women was mainly apparent in the low and middle educational groups. By contrast, the Pakistani immigrant women with high education reported significantly higher levels of worries about avian flu, radiation from computer screens, and vaccination programmes. The assimilated group showed the highest level of MHW and the separated group the lowest.

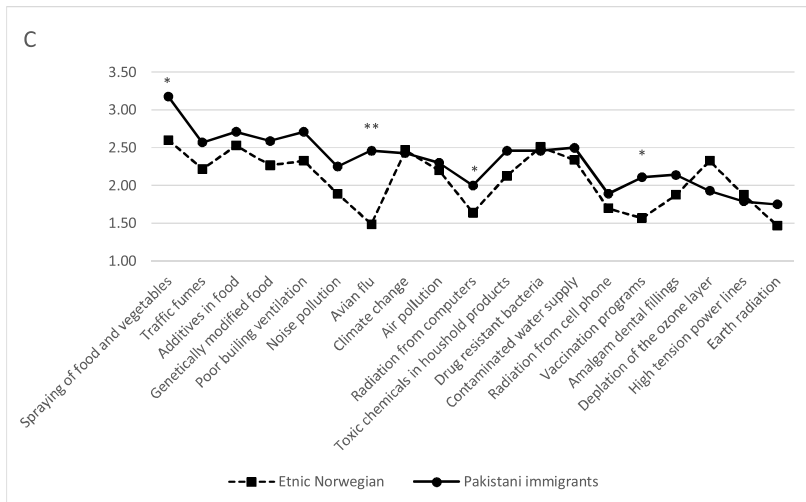
In general, the Pakistani immigrant women were less worried than the ethnic Norwegian women. This finding was unexpected as the immigrants had lower education than the ethnic Norwegian women, and an association between low levels of education and higher levels of MHW has earlier been reported (Andersen & Jensen, 2012; Bailer et al., 2008; Baliatsas et al., 2015; Rief et al., 2012). However, a recent systematic review showed that the importance of education as a determination factor for MHW might be questioned (Dömötör et al., 2019). A more important factor for explaining the lower prevalence of MHW in the Pakistani immigrant women, might be the low acculturation level amongst the Pakistani immigrant women who participated in the study. Although most



\*p≤0.05, \*\*p≤0.01, \*\*\*p≤0.001



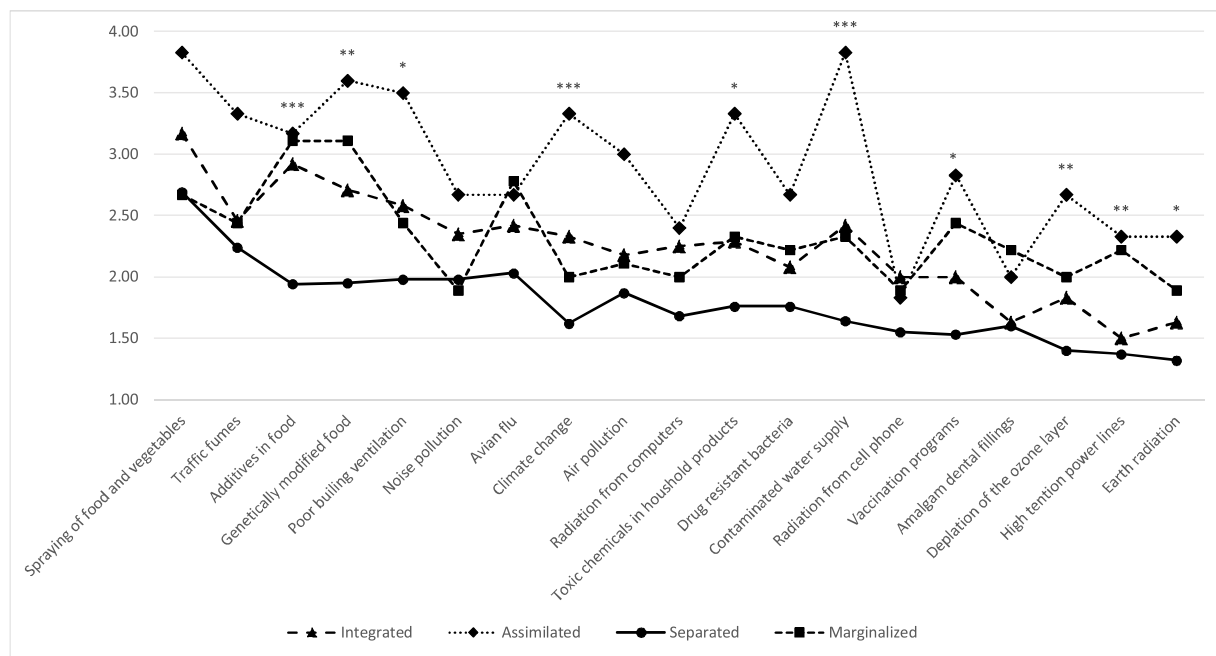
\*p≤0.05, \*\*p≤0.01, \*\*\*p≤0.001



\*p≤0.05, \*\*p≤0.01, \*\*\*p≤0.001

(caption on next page)

Fig. 2. Mean values of single items of modern health worries for Pakistani immigrant (N = 101) and ethnic Norwegian women (N = 344) with low (A), middle (B), and high education (C). Group differences tested with independent sample t-test.



\*p<0.05, \*\*p<0.01, \*\*\*p<0.001

Fig. 3. Mean values of single items of modern health worries for Pakistani immigrant women (N = 101) by level of bidimensional acculturation. Group differences tested with one-way ANOVA.

of them had been living in Norway for a long time, almost two-thirds were classified as separated in terms of acculturation, indicating that they had continued to live and act according to their old culture. When the different acculturation groups were compared, the separated group showed the lowest levels of all MHW. An earlier study showed that most of these Pakistani immigrant women did not interact with the mainstream Norwegian culture or society, did not work, and many had poor language skills in Norwegian (Hjelset & Ihlebæk, 2019). A partial explanation for this finding may therefore be that the Pakistani immigrant women have been ‘protected’ from exposure to sensational and biased information generated by the media, as such information has been shown to influence MHW (Withöft et al., 2018). However, the women’s lack of participation in Norwegian culture could be a concern if they are at risk of missing access to relevant and important health-related information.

Even though the Pakistani immigrant women in general showed a lower prevalence of most MHW, an exception was worries concerning avian flu, vaccination programs and radiation from computer screens. These differences might be due to different points of reference between the two samples, and earlier studies have revealed that worries may vary between different countries or cultures according to what factors that are perceived as relevant threats in people’s immediate surroundings and their wider environment (Ozakinci et al., 2011; Palmquist et al., 2017). For example, the higher prevalence of worries concerning avian flu might reflect an accurate worry, as the risk of this infectious disease is higher in Southeast Asia. According to statistics published in 2017, almost 80 % of Pakistani immigrants in Norway had visited Pakistan the past ten years (Statistics Norway, 2017).

The assimilated group of Pakistani immigrant women showed higher levels of MHW compared to the other acculturation groups. This might partially be explained by level of education, as 80 % in this group had high education and we found an inverse relationship between education and MHW in Pakistani immigrant women. When comparing the two ethnic groups within the high educational group, the Pakistani immigrant women reported significantly higher levels of worries concerning avian flu, radiation from computer screens, and vaccination programmes compared with ethnic Norwegian women. The latter finding is particularly noteworthy because if it also reflects scepticism towards participating in vaccination programmes it could have serious consequences, as seen in outbreaks of epidemics such as measles (Majumder, Cohn, Mekar, Huston, & Brownstein, 2015). When experiencing high levels of anxiety, willingness to interact with intercultural health professionals has been reported to be low (Logan, Steel, & Hunt, 2016), and high levels of MHW might have the same effect.

The reasons for why highly educated and assimilated women have higher levels of MHW are open only to speculation. One possible explanation could be that as educational and acculturation levels increase, the women acquire more information about new technology and possible health risks. However, assimilated women might not experience the buffering and reassuring effect of discussing the validity of such information with their family and peers in the Pakistani community. Ho and Birman (2010) suggest

that different levels of acculturation within a family and community, and especially the loss of original cultural identity, as seen in assimilated groups, have a negative influence on family relationships. Another explanation could be that assimilated Pakistani immigrant women have been shown to have a four times higher risk of high levels of psychological distress compared with integrated women (Hjellset & Ihlebæk, 2019). Experiences of illness and distress might lead to an increased effort to identify explanatory factors and to attribute complaints to modern technology (Freyler, Kohegyi, Köteles, Kökönyei, & Bárdos, 2013). By contrast, other researchers have also suggested that high levels of MHW might increase people's risk of appraisal of symptoms, illnesses, and disease (Filipkowski et al., 2010; Kaptein et al., 2005).

### Methodological issues

This study had several weaknesses that should be taken into consideration. One major weakness was that no information was available about the non-participants in either sample, and therefore selection bias cannot be ruled out. However, the multi-strategic recruitment methods used to select the sample of Pakistani immigrant women might have reduced selection bias, as the women were approached on several occasions and in different arenas. A further potential risk is information bias, since the face-to-face interviews were held in different languages. In order to prevent the risk of bias, the services of three trained interpreters were used. To ensure that the three interpreters asked the question in the same way, a fourth person was engaged to observe some of the interviews. For the sample of ethnic Norwegian women that was done as a part of an omnibus survey, the response rates were not quantifiable. However, according to Buchbinder and Jolley (2005), 30–55 % of eligible subjects respond to such surveys. A further major weakness was the cross-sectional design, which only made it possible to present descriptive data, and therefore no analyses could be performed to draw any causal conclusions could be drawn. As we didn't have standardized measurement on bidimensional acculturation, we constructed a variable based on language skills, work status, and Pakistani identity, and this constitutes a weakness of the study. However, the variables used to construct the variable are all important factors describing level of bidimensional acculturation (Berry, 2005; Blomstedt, Hylander, & Sundquist, 2007; Chaudhry, Husain, Tomenson, & Creed, 2012).

### Conclusions

In general, the Pakistani immigrant women reported fewer MHW than ethnic Norwegian women. However, integrated and assimilated groups of Pakistani immigrant women with high levels of education reported higher levels of some MHW compared with Norwegian women. Hence, the group of Pakistani immigrant women seem to be heterogeneous, and therefore the authorities and health care sector should adapt health and risk information to the different levels of integration and education.

### Compliance with ethical standards

This project was founded by the Norwegian research council (Grant No.: 204590). The authors declare that they have no conflict of interest. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The study was approved by the Regional Committees for Medical Research Ethics in Norway. Informed consent was obtained from all individual participants included in the study.

### Declaration of Competing Interest

The authors declare that they have no conflict of interest.

### Acknowledgements

This project was founded by the Norwegian research council Grant No.: 204590. The authors want to thank Nina Konglevoll for punching the data. We also want to thank all the participants in the study.

### Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.ijintrel.2020.01.003>.

### References

- Andersen, J. H., & Jensen, J. C. (2012). Modern health worries and visits to the general practitioner in a general population sample: An 18month follow-up study. *Journal of Psychosomatic Research, 73*, 264–267.
- Bailer, J., Witthöft, M., & Rist, F. (2008). Modern health worries and idiopathic environmental intolerance. *Journal of Psychosomatic Research, 65*, 425–433.
- Baliatsas, C., van Kamp, I., Hooiveld, M., Lebre, E., & Yzermans, J. (2015). The relationship of modern health worries to non-specific physical symptoms and perceived environmental sensitivity: A study combining self-reported and general practice data. *Journal of Psychosomatic Research, 79*, 355–361.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology, 46*, 5–68.
- Berry, J. W. (2005). Acculturation: Living successfully in two cultures. *International Journal of Intercultural Relations, 29*, 697–712.



- Blomstedt, Y., Hylander, I., & Sundquist, J. (2007). Self-reported integration as a proxy for acculturation: A qualitative study. *Nursing Research, 1*, 63–69.
- Buchbinder, R., & Jolley, D. (2005). Effects of a media campaign on back beliefs is sustained 3 years after its cessation. *Spine, 1*, 1323–1330.
- Chaudhry, N., Husain, N., Tomenson, B., & Creed, F. (2012). A prospective study of social difficulties, acculturation and persistent depression in Pakistani women living in the UK. *Psychological Medicine, 6*, 1217–1226.
- Dömötör, Z., Nordin, S., Witthöft, M., & Köteles, F. (2019). Modern health worries: A systematic review. *Journal of Psychosomatic Research, 124*, 109781.
- Filipkowski, K. B., Smyth, J. M., Rutchick, A. M., Santuzzi, A. M., Adya, M., Petrie, K. J., et al. (2010). Do healthy people worry? Modern health worries, subjective health complaints, perceived health, and health care utilization. *International Journal of Behavioural Medicine, 17*, 182–188.
- Fionda, S., & Furnham, A. (2014). Hypochondriacal attitudes and beliefs, attitudes towards complementary and alternative medicine and modern health worries predict patient satisfaction. *JRSM Open, 5*, 2054270414551659.
- Freyler, A., Kohegyi, Z., Köteles, F., Kökönyei, G., & Bárdos, G. (2013). Modern health worries, subjective somatic symptoms, somatosensory amplification, and health anxiety in adolescents. *Journal of Health Psychology, 18*, 773–781.
- Hjelset, V. T., & Ihlebæk, C. (2019). Bidimensional acculturation and psychological distress in Pakistani immigrant women in Norway: A cross-sectional study. *Journal of Immigrant and Minority Health, 21*, 508–514. <https://doi.org/10.1007/s10903-018-0764-z>.
- Ho, J., & Birman, D. (2010). Acculturation gaps in Vietnamese immigrant families: Impact on family relationships. *International Journal of Intercultural Relations, 34*, 22–23.
- Hussain-Gambles, M., Leese, B., Atkin, K., Brown, J., Mason, S., & Tovey, P. (2004). Involving South Asian patients in clinical trials. *Health Technology Assessments, 8*, 1–109.
- Indregard, A.-M. R., Ihlebæk, C., & Eriksen, H. (2013). Modern health worries, Subjective health complaints, health care utilization, and sick leave in the Norwegian working population. *International Journal of Behavioral Medicine, 20*, 371–377. <https://doi.org/10.1007/s12529-012-9246-1>.
- Kaptein, A. A., Helder, D. I., Kleijn, W. C., Rief, W., Moss-Morris, R., & Petrie, K. J. (2005). Modern health worries in medical students. *Journal of Psychosomatic Research, 58*, 453–457.
- Köteles, F., & Simor, P. (2014). Somatic symptoms and holistic thinking as major dimensions behind modern health worries. *International Journal of Behavioural Medicine, 21*, 869–876.
- Köteles, F., Szemerszky, R., Freyler, A., & Bárdos, G. (2011). Somatosensory amplification as a possible source of subjective symptoms behind modern health worries. *Scandinavian Journal of Psychology, 52*, 174–178.
- Köteles, F., Freyler, A., Kökönyei, G., & Bárdos, G. (2015). Family background of modern health worries, somatosensory amplification, and health anxiety: A questionnaire study. *Journal of Health Psychology, 20*, 1549–1557.
- Logan, S., Steel, Z., & Hunt, C. (2016). Intercultural willingness to communicate within health services: Investigating anxiety, uncertainty, ethnocentrism and help seeking behaviour. *International Journal of Intercultural Relations, 54*, 77–86.
- Majumder, M. S., Cohn, E. L., Mekaru, S. R., Huston, J. E., & Brownstein, J. S. (2015). Substandard vaccination compliance and the 2015 measles outbreak. *The Journal of American Medical Association Pediatrics, 169*, 494–495.
- Ozakinci, G., Boratav, H. B., & Mora, P. A. (2011). Modern health worries, health care utilization, and symptom reporting: A cross-cultural comparison. *Behavioural Medicine, 37*, 35–41.
- Palmquist, E., Petrie, K. J., & Nordin, S. (2017). Psychometric properties and normative data for a Swedish version of the Modern Health Worries Scale. *International Journal of Behavioural Medicine, 24*, 54–65.
- Petrie, K. J., Sivertsen, B., Hysing, M., Broadbent, E., Moss-Morris, R., Eriksen, H. R., et al. (2001). Thoroughly modern worries: The relationship of worries about modernity to reported symptoms, health and medical care utilization. *Journal of Psychosomatic Research, 51*, 395–401.
- Rief, W., Glaesmer, H., Baehr, V., Broadbent, E., Brähler, E., & Petrie, K. J. (2012). The relationship of modern health worries to depression, symptom reporting and quality of life in a general population survey. *Journal of Psychosomatic Research, 72*, 318–320.
- Statistics Norway (2017). *Levekår blant innvandrere i Norge*. (Accessed 27 August 2018) [https://www.ssb.no/sosiale-forhold-og-kriminalitet/artikler-og-publikasjoner/\\_attachment/309211?ts=160ea9e4890](https://www.ssb.no/sosiale-forhold-og-kriminalitet/artikler-og-publikasjoner/_attachment/309211?ts=160ea9e4890).
- Witthöft, M., Freitag, I., Nußbaum, C., Bräscher, A. K., Jasper, F., Bailer, J., et al. (2018). On the origin of worries about modern health hazards: Experimental evidence for a conjoint influence of media reports and personality traits. *Psychology & Health, 33*, 361–380.