

# Health Challenges in the Muslim World



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## INTRODUCTION

**U**nderstanding health inequalities in Muslim communities is a complex issue as there are many factors to take into account.

**The concept of social determinants of health is useful<sup>1</sup> as it seeks to address health outcomes in terms of income differentials, social systems and political choices, and differences in disease prevalence across ethnic groups.**

The main factors cited are often variances in nutrition, education, employment and living environment, but the concept can become rather nebulous when drawn too widely<sup>2</sup> or when population groups with substantial differences are compared.

The existing research tends to show predictable variations between countries due to socioeconomic status and gender, relating to differences in morbidity and mortality. However, much less is known about the cross-national variability of health outcomes and health inequalities tied to ethnicity, race or migration status.

In general, we know that marginalized minority groups often experience earlier mortality and worse overall health relative to majority populations<sup>3</sup>. This begins to point to some of the complexities of the issue.

In some instances the Muslim population is made up largely of migrants, who might suffer from varying degrees of social exclusion, prejudice and problems accessing health care. The COVID-19 pandemic has reinforced long-recognized links between low income and poor health, but in many countries it has also pointed to the ways in which low income is related to ethnicity<sup>4</sup>.

In many countries certain ethnic groups are often Muslim-majority. In Europe, this in part follows the historical patterns of colonialism. Most North African

communities in France, for example, are Muslim. In the UK the same is true of Southeast Asian communities. Some communities, however, such as the Turkish community in Germany, originate in work-related migration. Others are the result of refugee crises.

Equally, the global Muslim population can be split between those who form a minority in the nation in which they reside, and those who live in Muslim-majority countries.

In the former, in addition to their religious identity — and, often, particular ethnic backgrounds — health issues revolve around the degree of social exclusion that exists in that state.

In Muslim-majority countries, on the other hand, the issues can often be linked to questions of governance as much as the actions of the Muslim community itself. For example, Bangladesh, in contrast to Pakistan, is often praised for its sustained efforts to improve population health, including women's access to medical care<sup>5</sup>.

In addition, while the practical interpretation of Islam covers a wide range of practices, it has been suggested that there are aspects of the faith that have positive and negative effects on overall health.

On the one hand, the widespread prohibition of alcohol consumption<sup>6</sup> helps to remove a major source of ill health that affects other social or religious groups. Equally important, Islamic teachings on charity and income equality potentially can have a powerful role in Muslim-majority countries, but are harder to apply when the Muslim community is a minority<sup>7</sup>.

Less positively, a degree of religious fatalism can lead to an acceptance of ill health when it could be treated. And while there are substantial exceptions, the cultural tendency in many Muslim societies to limit the agency of women has substantial health effects on pregnancy, childbirth and early-years mortality<sup>8</sup>.



***“The COVID-19 pandemic has reinforced long-recognized links between low income and poor health.”***



## BACKGROUND IMPACT OF ISLAM

As noted, both religious and social interpretations of the Islamic faith have some bearing on the overall health of the Muslim population in a community. Being Muslim is never an isolated factor, however, so it is useful to distinguish between Muslim-majority countries and Islamic communities in other nations.

A literature review<sup>9</sup> found six main aspects in which there was a direct correlation between faith and health:

- Interpretations of health and/or lack of health based on Islamic theology
- Ethical and/or cultural challenges within the clinical realm stemming from Islamic values or practices
- Perceived discrimination due to, or a lack of cultural accommodation of, religious values or practices in the clinical realm
- Health practices rooted within the Islamic tradition
- Patterns of healthcare seeking based on

Arabic woman active working out in gym.  
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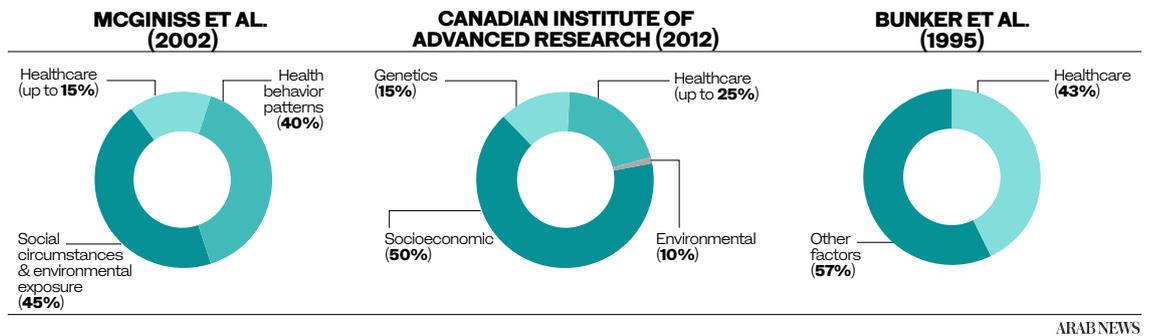
### Islamic values

#### • Adverse health exposures as a result of having a Muslim identity

However, as the authors of the review noted, many studies identify ethnicity rather than religion. While it is often possible to map these onto each other, this can create a slightly distorted perspective on how Muslims access health systems.

The influence of “fatalistic” views on cancer screening was found among American Muslims, while an exploration by Johnson et al. of the views of South Asian women found some respondents viewed breast cancer to be a “disease of fate,” thereby influencing their healthcare-seeking patterns<sup>10</sup>.

The importance of viewing healthcare as being about more than only formal medical interventions cannot be stressed too highly. Good health is not only the absence of a current illness, it is about the wider environment. A study by Donkin et al<sup>11</sup>. reviewed the literature and suggested the following patterns of contributors to good health:



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**Figure 1: Main factors affecting population health<sup>12</sup>**

## MUSLIM MAJORITY COUNTRIES

In the main, Muslim-majority countries are among the poorest in their regions. Even those in relatively affluent regions, such as the Gulf states, are marked by substantial income inequality. The result is relatively low annual per capita expenditure on health and gaps in specialist provisions, such as hospitals<sup>13</sup>.

Other differences that can be found in non-Muslim-majority countries include better access to safe water, a higher rate of contraceptive use and a higher gender-equity index. One repeated finding is that this relative poverty, rather than religious observance, is the cause of many identified health inequalities. There is some evidence of higher rates of resistance to vaccination in Muslim communities but, again, this is not consistent, suggesting that it reflects local factors rather than being related to religious affiliation in general<sup>14</sup>. Other studies note the close correlation between Muslim-majority countries and relative levels of poverty as an important factor in terms of population health<sup>15</sup>. Another related study noted that while there were consistent problems in terms of reproductive and maternal health, there was no evidence that this was caused

in particular by Islamic practices. Of note is the fact that both Niger and Bangladesh have made significant gains in terms of population health despite endemic social problems and low incomes<sup>16</sup>. This all points to state policy choices, rather than religious affiliation, being at the root of many of the identified problems. In conceptual terms, the reduction of poverty and inequality, linked with health and education being valued, are highly valued concepts in Islam, but in many Islamic countries there is a big gap between Islamic teachings and practice<sup>17</sup>. Illiteracy or low levels of education often correlate with poor health outcomes due to related problems of social exclusion and lack of access to services.

This conclusion is broadly supported by Razzak et al<sup>18</sup>. Table 1 compares various health resources in countries with and without a Muslim majority. At first glance it suggests a major shortfall in the former. However, when total expenditure on health as a percentage of gross domestic product is compared (the final line of the table) we can see that health expenditure is more or less in line with what might be expected, although there is substantial variation. However, this also highlights the gaps in terms of available health systems and the fact that more state expenditure tends to go to non-health issues in Muslim-majority countries.

**Table 1: Comparisons of health outcomes<sup>19</sup>**

	Variable	Muslim majority (n=48)	Non-Muslim Majority (n=142)	%95 CI for the difference
	<b>Health service resources</b>	<b>Mean (SD)</b>	<b>Mean (SD)</b>	
1	Physicians' density (per 1000 population)	1.1(1.1)	1.6(1.4)	0.1 to 1.0
2	Nurses' density (per 1000 population)	2.8(3.8)	3.9(3.6)	0.1- to 2.3
3	Hospital beds (per 1000 population)	21.7(18.9)	36.3(31.2)	7.0 to 22.4
4	Government expenditure on health per capita (US\$)	156(165)	627(896)	315 to 627
5	General government expenditure on health (% of total government exp.)	7.6(3.5)	13.3(8.8)	4.0- to 7.5
6	Total expenditure on health (% of GDP)	6.7(10.7)	6.6(2.4)	3.3- to 4.0

There are conceptual approaches within Islamic practice and scholarship that should help to promote relative equality and mitigate the worst effects of poverty. The notionally obligatory (zakat) and voluntary (sadaqah) charitable mechanisms can be used to achieve greater equality. In theory, zakat evasion is a punishable crime, while charitable behavior is rewarded and its absence reprimanded. In practice, however, such concepts have little effect on social inequality in many Muslim-majority countries<sup>20</sup>.

Given the extent to which relative inequality is related to low health outcomes in the population, this suggests a practical approach that might have a bearing in many Muslim-majority countries.

Two other factors have an effect on some of the current healthcare issues in Muslim countries.

There is an acknowledged, growing problem of metabolic illnesses, obesity and related issues such as diabetes and hypertension. According to recent research published in medical journal *The Lancet*, “women in the Middle East and north Africa have the highest risk of metabolic diseases of all women globally, whereas men rank second of all men in this respect<sup>21</sup>.”

The authors conclude that metabolic risk factors are responsible for more than 300 deaths per 100,000 population in this region, compared with 250 globally.

Typically this is occurring in countries that are experiencing a relative shift from low to middle incomes, if not for the whole population then for an emerging middle class. Diets that are sustainable in low-income circumstances — often high in fats or carbohydrates as an effective means to absorb sufficient calories — can be unhealthy when increased income allows higher consumption.

In this respect there is a significant difference between poor diet imposed by outright poverty — that leads to many health problems, including obesity, due to an emphasis on certain food groups — and the diet of a low-income society that does not face particular food shortages. In particular, young children are vulnerable as population norms around diet and exercise change<sup>22</sup>.

Linked to these income shifts are social norms relating to hospitality, which are often expressed through the consumption of food and a shift from a largely vegetarian diet to



***“Given their geographical location, Muslim-majority countries are particularly exposed to problems created by the climate emergency.”***

one that includes greater amounts of meat. Meanwhile, generational wealth changes are also often matched by a shift from more active to essentially sedentary work.

This links back to earlier points, in that it is not a consequence of Islam in particular but of wider social and environmental factors. Nonetheless, there is a need to find population-health solutions that fit within a broadly Islamic framework or these problems will reverse any population-health gains that stem from improving incomes.

Muslim-majority countries face a final set of health issues purely as a result of their geographical spread. They are particularly exposed to emerging problems created by the climate emergency, which can be split into three main issues.

There will be growing water shortages across most of the region<sup>23</sup> and heat waves of an intensity beyond the human capacity to tolerate<sup>24</sup>. Even if the resultant social and political tensions can be managed, the six member states of the Gulf Cooperation Council, which have traditionally used their wealth to help with crises elsewhere in the region, will be less well placed to do so as the global economy moves away from its dependence on petrochemicals<sup>25</sup>.

On current trends, about half the population of the Middle East and North Africa will regularly face summer temperatures in the mid-50s Celsius (about 130 degrees Fahrenheit). This is beyond the level at which the human body can easily cope and the situation might well be worse in overcrowded, poorly designed urban centers where the bulk of populations live.

This threatens the health of the young and the elderly in particular, along with any who has existing respiratory or weight problems. The result might be that large areas of the region become uninhabitable, with knock-on effects on agricultural production and trade links<sup>26</sup>.

Another outcome will be water shortages. The Middle East and North Africa region already has 6 percent of the world’s population reliant on just 1 percent of available global water reserves, and any decline in these reserves will make existing problems much worse<sup>27</sup>.

Agriculture across the region remains reliant on rainfall. Meanwhile irrigation supplied by rivers is threatened by new dams built by



Syrian children posing for Camera at the Kilis refugee Camp in Kilis, Turkey. Shutterstock

upriver states seeking to secure resources, resulting in reduced flows to the countries downriver. The threat to regional food production is clear, and such pressures on the agricultural sector will tend to displace populations into already stressed urban environments.

Addressing rising temperatures and water scarcity is a matter of governance. The region can adapt, partly by joining with other states to mitigate the worst effects and partly by shifting from a petrochemicals energy system to one based around solar power. This also offers a greater capacity to address water shortages through desalination projects<sup>28</sup>.

## OTHER MUSLIM COMMUNITIES

Outside of Muslim-majority countries, local Muslim populations are a mix of long-established communities and those formed by relatively recent migration. The development of the latter often follow the patterns established by historical colonial empires. The UK, therefore, has a relatively high number of Muslims from Southeast Asia and the Indian subcontinent, while France has many from northern, western and sub-Saharan Africa.

Other substantial Muslim communities reflect migration for employment opportunities, such as the large Turkish population in Germany and the surrounding

countries. In addition there are smaller communities created by recent refugee crises.

Similar to the situation in Muslim-majority countries, this leads to a complex social pattern of health problems. Minority communities often face discrimination, either intentional or by neglect, tend to be concentrated in poorer areas and their inhabitants take physically demanding and often dangerous jobs.

Relative problems of social integration, caused as much by the attitudes of others as the communities themselves, can lead to closed communities that tend to sit outside regular state structures and are suspicious of the authorities for a variety of reasons. There is also evidence that universal health-promoting interventions are taken up more effectively by white populations than by ethnic minorities, which further increases health inequalities.

In addition, there is the problem of conflating ethnicity with religion<sup>29</sup>, which can make it harder to understand health issues in the Muslim population if the wider emphasis is on ethnicity.

For example, the bulk of Muslims living in England and Wales are Asians (68 percent), primarily Pakistani (38 percent) and Bangladeshi (15 percent). Other ethnic groups with significant Muslim subpopulations include black African/Caribbean (10 percent),

white (8 percent) and Arab (7 percent)<sup>30</sup>.

However, not everyone from those groups is Muslim; quite often those from India, many of whom are not Muslim, are conflated into a wider South Asian ethnic group for the purposes of official statistics.

For example, official data on the prevalence of obesity is available by ethnicity but not by religious affiliation. This issue becomes even more complex when we also consider that many of the metrics for the diagnosis of obesity, such as body mass index, are based on the physical characteristics of Caucasian and not South Asian populations. This can lead to both overestimation and underestimation of the prevalence of the problem among South Asian children and adults.

South Asian adults in the UK might accumulate more weight around the abdomen and have greater fat deposits in general than Caucasians. All of the studies concerned with ethnic differences in obesity between South Asian adults and Caucasian adults in the UK that measured waist circumference or waist/hip ratio as metrics of obesity found that the figures were significantly higher for South Asian adults than their Caucasian counterparts. Again, the evidence suggests that while there is a religious element to this it is more related to ethnicity. One study found that after adjusting for deprivation and other sociodemographic characteristics, South Asian children were three times more likely than white children to have a lifestyle that is obesogenic, or in other words, tends to cause obesity<sup>31</sup>. Research has also shown substantially higher intakes of sugar and fat, and greater levels of sedentary behavior among Pakistani infants in the UK compared with white, British infants<sup>32</sup>.

In combination, this data tends to suggest that specific problems stem from social exclusion rather than religious practices. However, to fully address this issue might require more than simply labeling it as one of the many consequences of race discrimination and social exclusion.

In many instances the health measures that reflect the dynamics of the majority, usually white Caucasian, population might be inappropriate when applied to other ethnic groups. Equally, public-health messaging that is designed for the bulk of the population might be less effective in reaching certain ethnic groups, exacerbating



*“While Islam has important effects on the health of a population<sup>35</sup>, wider social, political and economic factors also have an influence.”*

existing health inequalities<sup>33</sup>.

However, this does point to the potential importance of the structures of Muslim communities, such as the role of mosques and imams, that might have greater influence on lifestyle choices than broader public-health messages or the approaches adopted in conventional schools.

Such settings are often trusted spaces that can, for example, offer wider advice on healthy lifestyles, host events, convey information, highlight the links between good health and Islamic teachings, and reach groups that are poorly integrated<sup>34</sup>.

The problem with relying only on such institutions is that for reasons of gender or ethnicity, some parts of the wider Muslim community might be poorly connected with such settings.

## SUMMARY

This paper has tried to distinguish between factors affecting healthcare that can be clearly attributed to interpretations of Islam, and those that affect Muslims in countries where their communities are minorities.

While Islam has important effects on the health of a population<sup>35</sup>, wider social, political and economic factors also have an influence. Of the specifically Muslim issues, the avoidance of alcohol and a limited adoption of smoking and drug use are positive factors, even if not unique to that community and not fully observed<sup>36</sup>. Even a partial suppression of use of these substances has beneficial effects, both for individuals and the wider health of the population.

In terms of negative Muslim issues, one that is shared with some other faith groups is the potential for fatalism when faced with illness. This can reduce the willingness to seek help or engage with long-term care.

Another is the marginalized status of women in some Muslim communities, which leads to maternal- and child-health problems that feed into high mortality rates among those two groups. However, differing schools of jurisprudence, interpretations of the faith and local social norms all intersect. So in many parts of the Muslim world issues of maternal and child health can be viewed much more as problems of poverty than of attitudes.

Muslim-majority countries are located mostly in an arc stretching across North Africa and the Middle East to Bangladesh. For the

most part these are relatively poor countries, apart from the low-population hydrocarbon states of the GCC<sup>37</sup>.

Within the group of less-wealthy nations there have been health successes despite low income levels. In particular, Bangladesh is often cited as one such success story. Equally there is no systemic difference in regions such as sub-Saharan Africa between Muslim-majority countries and their immediate neighbors<sup>38</sup>.

What is left is good or bad policy choices, linked to better or worse standards of governance. Islam offers economic tools for poverty alleviation<sup>39</sup>, but at the same time every major revelation about leaders who extract wealth from their countries for their own personal gain includes many from Muslim states.

The key issues remain. Poverty is the driving force behind many health problems, and it also limits the ability of a population to mitigate and adapt to the rapidly emerging health problems associated with climate change.

For Muslim communities in other states where they are in a minority, issues such as exclusion from healthcare, poverty, their concentration in districts of poor-quality housing, and the likelihood of being engaged in low-paid, dangerous work activities all add to the health problems.

Again, there is a risk of two incorrect responses: Firstly, to externalize the problem from the community and expect solutions to be provided, and secondly to place responsibility for the outcomes solely on the community.

## RECOMMENDATIONS

In the main, efforts to address health problems in Muslim countries and communities comes down to the quality of governance and policy approaches. This is, regrettably, often lacking, a situation that is not helped by the continuing rule of closed ranks of political elites in many states.

The following recommendations apply to Muslim-majority countries:

- **Female empowerment in the health space:** Address issues of female agency in the health system. Even allowing for stretched resources in some places, this will improve health outcomes for women and young

children.

- **Local needs:** Islam has clear expectations of the role of charity in efforts to avoid poverty, with an emphasis on local needs. Unfortunately, too often this local focus is ignored in favor of major global, and more newsworthy, causes. In countries that have adopted a more literal form of Islamic jurisprudence, stressing the obligatory nature of zakat and the voluntary nature of sadaqah can provide important leverage on individual actions and the sharing of social wealth to meet immediate local needs.

- **Climate change:** By accident of geography, many Muslim-majority countries will be hit very hard by the effects of climate change unless its pace can be slowed and reversed. In the worst-case scenarios, water resources will become much too limited, agriculture will collapse and major cities will pose serious health risks. While there is clearly a need for global action to address this issue, there is also a strong case for regional organizations and international Muslim groups to take a lead. If ignored, the climate emergency will rapidly become a major health emergency.

The following recommendations apply to non-Muslim-majority countries:

- **Women:** As noted above, ensure that women have full agency in their own healthcare choices and can access the medical services they need;
- **The community:** Consider the role of the local mosque. In response to the pandemic, many mosques opened their doors to all as vaccination centers, for example. There is much to be said for encouraging their continued use as community health centers offering services designed to address gaps in the wider provision of healthcare, or to enable those who are marginalized to access key services.

In addition, there is a conceptual role for Islamic teaching. Good health matters, and issues of diet and taking care of oneself are important attributes of the Islamic faith. This message can be developed and reinforced.

It is not a matter of shaming those who suffer from ill health, it is about helping to create an environment in which healthy choices become the easy option and find mass approval.

## FOOTNOTES

1. Donkin, A., Goldblatt, P., Allen, J., Nathanson, V. & Marmot, M. (BMJ Global Health, 2018). Global action on the social determinants of health.
2. Islam, M. M. (Frontiers in public health, 2019). Social determinants of health and related inequalities: confusion and implications.
3. Bakhtiari, E., Olafsdottir, S. & Beckfield, J. (Journal of Health and Social Behavior, 2018). Institutions, Incorporation, and Inequality: The Case of Minority Health Inequalities in Europe.
4. Burström, B. & Tao, W. (European Journal of Public Health, 2020). Social determinants of health and inequalities in COVID-19.
5. Razzak, J. A., Khan, U. R., Azam, I., Nasrullah, M., Pasha, O., Malik, M. & Ghaffar, A. (Eastern Mediterranean Health Journal, 2011). Health disparities between Muslim and non-Muslim countries.
6. Padela, A. I. & Zaidi, D. (Avicenna journal of medicine, 2018). The Islamic tradition and health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.
7. Bashir, A. H. M. (Journal of King Abdulaziz University: Islamic Economics, 2018). Reducing Poverty and Income Inequalities: Current Approaches and Islamic Perspective; Padela, A. I. & Zaidi, D. (Avicenna journal of medicine, 2018). The Islamic tradition and health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.
8. Akseer, N., Kamali, M., Bakhache, N., Mirza, M., Mehta, S., Al-Gashm, S. & Bhutta, Z. A. (The Lancet, 2018). Status and drivers of maternal, newborn, child and adolescent health in the Islamic world: a comparative analysis.
9. Padela, A. I. & Zaidi, D. (Avicenna journal of medicine, 2018). The Islamic tradition and health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.
10. Ibid
11. Donkin, A., Goldblatt, P., Allen, J., Nathanson, V. & Marmot, M. (BMJ Global Health, 2018). Global action on the social determinants of health.
12. Ibid. p.2
13. Razzak, J. A., Khan, U. R., Azam, I., Nasrullah, M., Pasha, O., Malik, M. & Ghaffar, A. (Eastern Mediterranean Health Journal, 2011). Health disparities between Muslim and non-Muslim countries.
14. Costa, J. C., Weber, A. M., Darmstadt, G. L., Abdalla, S. & Victora, C. G. (Vaccine, 2020). Religious affiliation and immunization coverage in 15 countries in Sub-Saharan Africa.
15. Esmaeili, A., Mansouri, S. & Moshavash, M. (Public Health, 2011). Income inequality and population health in Islamic countries.
16. Akseer, N., Kamali, M., Bakhache, N., Mirza, M., Mehta, S., Al-Gashm, S. & Bhutta, Z. A. (The Lancet, 2018). Status and drivers of maternal, newborn, child and adolescent health in the Islamic world: a comparative analysis.
17. Meisami, H., Abdolahi, M., Shahidinasab, M., Gaeemiasl, M. & Hasanzadeh, A. (African Journal of Business Management, 2011). Human development, poverty and income inequality from an Islam point of view and its implications for Islamic countries.
18. Razzak, J. A., Khan, U. R., Azam, I., Nasrullah, M., Pasha, O., Malik, M. & Ghaffar, A. (Eastern Mediterranean Health Journal, 2011). Health disparities between Muslim and non-Muslim countries
19. Ibid. p.659
20. Bashir, A. H. M. (Journal of King Abdulaziz University: Islamic Economics, 2018). Reducing Poverty and Income Inequalities: Current Approaches and Islamic Perspective.
21. Azizi, F., Hadaegh, F., Hosseinpanah, F., Mirmiran, P., Amouzegar, A., Abdi, H., Asghari, G., Parizadeh, D., Montazeri, S. A., Lotfaliany, M., Takyar, F. & Khalili, D. (The Lancet: Diabetes and Endocrinology, 2019). Metabolic health in the Middle East and north Africa.

22. Albuquerque, D., Nobrega, C., Manco, L. & Padez, C. (British Medical Bulletin, 2017). The contribution of genetics and environment to obesity.
23. El-Geressi, Y. (Earth Day, 2020). Climate change, water woes, and conflict concerns in the Middle East: A toxic mix. <https://www.earthday.org/climate-change-water-woes-and-conflict-concerns-in-the-middle-east-a-toxic-mix/>
24. CMCC Foundation. (Phys.Org, 2021). Middle East and North Africa: Heatwaves of up to 56 degrees Celsius without climate action. <https://phys.org/news/2021-04-middle-east-north-africa-heatwaves.html>
25. Saha, S. (Atlantic Council, 2019). How climate change could exacerbate conflict in the Middle East. <https://www.atlanticcouncil.org/blogs/menasource/how-climate-change-could-exacerbate-conflict-in-the-middle-east/>
26. CMCC Foundation. (Phys.Org, 2021). Middle East and North Africa: Heatwaves of up to 56 degrees Celsius without climate action. <https://phys.org/news/2021-04-middle-east-north-africa-heatwaves.html>
27. El-Geressi, Y. (Earth Day, 2020). Climate change, water woes, and conflict concerns in the Middle East: A toxic mix. <https://www.earthday.org/climate-change-water-woes-and-conflict-concerns-in-the-middle-east-a-toxic-mix/>
28. Ibid
29. Albuquerque, D., Nóbrega, C., Manco, L. & Padez, C. (British Medical Bulletin, 2017). The contribution of genetics and environment to obesity.
30. Rai, K. K., Dogra, S. A., Barber, S., Adab, P. & Summerbell, C. (Obesity Reviews, 2019). A scoping review and systematic mapping of health promotion interventions associated with obesity in Islamic religious settings in the UK.
31. Falconer, C., Park, M., Croker, H., Kessel, A. S., Saxena, S., Viner, R. M. & Kinra, S. (BMJ Open, 2014). Can the relationship between ethnicity and obesity-related behaviors among school-aged children be explained by deprivation? A cross-sectional study.
32. Sahota, P., Gatenby, L. A., Greenwood, D. C., Bryant, M., Robinson, S. & Wright, J. (Public Health Nutrition, 2016). Ethnic differences in dietary intake at age 12 and 18 months: the Born in Bradford 1000 Study.
33. Bhopal, R. S. & Donaldson, L. J. (Health Education Journal, 1988). Health education for ethnic minorities — current provision and future directions.
34. Mustafa, Y., Baker, D., Puligari, P., Melody, T., Yeung, J. & Gao-Smith, F. (Systematic Reviews, 2017). The role of imams and mosques in health promotion in Western societies.
35. Padela, A. I. & Zaidi, D. (Avicenna journal of medicine, 2018). The Islamic tradition and health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.
36. Cornish, C. (Financial Times, 2021). Saudi Arabia drugs haul exposes Syria and Lebanon's booming illicit trade.
37. Sultan, N. (Springer, 2012). Working for a Sustainable GCC Future: Reflections on Policies and Practices. In: Ramady, M. A. (ed.) The GCC Economies: Stepping Up To Future Challenges.
38. Costa, J. C., Weber, A. M., Darmstadt, G. L., Abdalla, S. & Victora, C. G. (Vaccine, 2020). Religious affiliation and immunization coverage in 15 countries in Sub-Saharan Africa. <https://doi.org/10.1016/j.vaccine.2019.11.024>; Razzak, J. A., Khan, U. R., Azam, I., Nasrullah, M., Pasha, O., Malik, M. & Ghaffar, A. (Eastern Mediterranean Health Journal, 2011). Health disparities between Muslim and non-Muslim countries.
39. Meisami, H., Abdolahi, M., Shahidinasab, M., Gaeemiasl, M. & Hasanzadeh, A. (African Journal of Business Management, 2011). Human development, poverty and income inequality from an Islam point of view and its implications for Islamic countries; Padela, A. I. & Zaidi, D. (Avicenna journal of medicine, 2018). The Islamic tradition and health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.

## REFERENCES

- Akseer, N., Kamali, M., Bakhache, N., Mirza, M., Mehta, S., Al-Gashm, S. & Bhutta, Z. A.** (The Lancet, 2018). Status and drivers of maternal, newborn, child and adolescent health in the Islamic world: a comparative analysis.
- Albuquerque, D., Nobrega, C., Manco, L. & Padez, C.** (British Medical Bulletin, 2017). The contribution of genetics and environment to obesity.
- Azizi, F., Hadaegh, F., Hosseinpanah, F., Mirmiran, P., Amouzegar, A., Abdi, H., Asghari, G., Parizadeh, D., Montazeri, S. A., Lotfaliany, M., Takyar, F. & Khalili, D.** (The Lancet: Diabetes and Endocrinology, 2019). Metabolic health in the Middle East and north Africa.
- Bakhtiari, E., Olafsdottir, S. & Beckfield, J.** (Journal of Health and Social Behavior, 2018). Institutions, Incorporation, and Inequality: The Case of Minority Health Inequalities in Europe.
- Bashir, A. H. M. (Journal of King Abdulaziz University: Islamic Economics, 2018).** Reducing Poverty and Income Inequalities: Current Approaches and Islamic Perspective.
- Bhopal, R. S. & Donaldson, L. J.** (Health Education Journal, 1988). Health education for ethnic minorities — current provision and future directions.
- Burström, B. & Tao, W.** (European Journal of Public Health, 2020). Social determinants of health and inequalities in COVID-19.
- CMCC Foundation. (Phys.Org, 2021).** Middle East and North Africa: Heatwaves of up to 56 degrees Celsius without climate action. <https://phys.org/news/2021-04-middle-east-north-africa-heatwaves.html>
- Cornish, C.** (Financial Times, 2021). Saudi Arabia drugs haul exposes Syria and Lebanon's booming illicit trade.
- Costa, J. C., Weber, A. M., Darmstadt, G. L., Abdalla, S. & Victora, C. G.** (Vaccine, 2020). Religious affiliation and immunization coverage in 15 countries in Sub-Saharan Africa.
- Donkin, A., Goldblatt, P., Allen, J., Nathanson, V. & Marmot, M.** (BMJ Global Health, 2018). Global action on the social determinants of health.
- El-Geressi, Y.** (Earth Day, 2020). Climate change, water woes, and conflict concerns in the Middle East: A toxic mix. <https://www.earthday.org/climate-change-water-woes-and-conflict-concerns->

in-the-middle-east-a-toxic-mix/

**Esmaeili, A., Mansouri, S. & Moshavash, M.** (Public Health, 2011). Income inequality and population health in Islamic countries.

**Falconer, C., Park, M., Croker, H., Kessel, A. S., Saxena, S., Viner, R. M. & Kinra, S.** (BMJ Open, 2014). Can the relationship between ethnicity and obesity-related behaviors among school-aged children be explained by deprivation? A cross-sectional study.

**Islam, M. M.** (Frontiers in public health, 2019). Social determinants of health and related inequalities: confusion and implications.

**Meisami, H., Abdolahi, M., Shahidinasab, M., Gaeemiasl, M. & Hasanzadeh, A.** (African Journal of Business Management, 2011). Human development, poverty and income inequality from an Islam point of view and its implications for Islamic countries.

**Mustafa, Y., Baker, D., Puligari, P., Melody, T., Yeung, J. & Gao-Smith, F.** (Systematic Reviews, 2017). The role of imams and mosques in health promotion in Western societies.

**Padela, A. I. & Zaidi, D.** (Avicenna journal of medicine, 2018). The Islamic tradition and

health inequities: A preliminary conceptual model based on a systematic literature review of Muslim health-care disparities.

**Rai, K. K., Dogra, S. A., Barber, S., Adab, P. & Summerbell, C.** (Obesity Reviews, 2019). A scoping review and systematic mapping of health promotion interventions associated with obesity in Islamic religious settings in the UK.

**Razzak, J. A., Khan, U. R., Azam, I., Nasrullah, M., Pasha, O., Malik, M. & Ghaffar, A.** (Eastern Mediterranean Health Journal, 2011). Health disparities between Muslim and non-Muslim countries.

**Saha, S.** (Atlantic Council, 2019). How climate change could exacerbate conflict in the Middle East. <https://www.atlanticcouncil.org/blogs/menasource/how-climate-change-could-exacerbate-conflict-in-the-middle-east/>

**Sahota, P., Gatenby, L. A., Greenwood, D. C., Bryant, M., Robinson, S. & Wright, J.** (Public Health Nutrition, 2016). Ethnic differences in dietary intake at age 12 and 18 months: the Born in Bradford 1000 Study.

**Sultan, N.** (Springer, 2012). Working for a Sustainable GCC Future: Reflections on Policies and Practices. In: Ramady, M. A. (ed.) The GCC Economies: Stepping Up To Future Challenges.