



Original Research

Women's Happiness in Islam and Christianity: Is it different?

**Vesna Bjegovic-Mikanovic¹, Helmut Wenzel²,
Ulrich Laaser³**

¹ Faculty of Medicine, Belgrade, Serbia

² Independent consultant, Konstanz, Germany

³ Faculty of Health Sciences, Bielefeld, Germany

Recommended citation: Bjegovic-Mikanovic V, Wenzel H, Laaser U. Women's Happiness in Islam and Christianity: Is it different? JGPOH 2023, posted: 18/12/2023. DOI: 10.61034-JGPOH-2023-4

Corresponding author: Prof. Dr. med. Ulrich Laaser DTM&H, MPH
Faculty of Health Sciences, 33615 Bielefeld, Germany, Universitätsstraße
Email: ulrich.laaser@uni-bielefeld.de



Abstract

Background: Happiness is a feeling of life desired by all. Can it be related to the main global faith, Islam and Christianity? We try to answer this question for women given their traditional religious embeddedness.

Methods: We use national datasets of recent Multiple Indicator Cluster Surveys (MICS) if they contain data on indicators of happiness and satisfaction with life which allow the calculation of a Subjective Well-being Index (SWB) with a range of 19 points from -11.5 to +7.5. We identified four predominantly Islamic countries (Bangladesh, Chad, Iraq, and Pakistan) and four Christian countries (Congo DR, Georgia, Serbia, and Zimbabwe) with datasets not older than from 2018 and with sample sizes between $N = 1677$ for Chad and $N = 63876$ for Bangladesh. To make the evaluation more manageable and the selected countries comparable in size, random samples of $N \approx 1,000$ were drawn.

Results: The descriptive analysis revealed a SWB slightly higher by 0.42 for the Christian group at a level of 1.26 as compared to the Islamic group of countries at 0.84. A comparison of the single countries reveals a SWB level below zero for all three African countries irrespective of their Islamic or Christian orientation. The comparison of the influence of the independent variables reveals a different pattern for the two groupings: In both groups regionality has the highest influence but followed in the Islamic group by 'given birth' and 'Married or in Union' whereas in the Christian group the next important independent variables are 'Education' and 'Gender related discrimination'.

Discussion: Most of the group differences are due to the more developed predominantly Christian countries Georgia and Serbia, especially with regard to the GDP and the Human Freedom Index. The Islamic countries range considerably better with regard to the Charity ranking and have a much lower share of women employed in the labor force.

Conclusions: Based on our data, female happiness in both religious groups is not determined by the dominant religious orientation. Possible restrictions imposed, e.g., by the economic welfare or educational level are obviously compensated in the majority of the female population.

Translation of the abstract to Arabic: الملخص

الخلفية: السعادة هي الشعور بالحياة التي يتمناه الجميع. هل يمكن أن تكون مرتبطة بالعقيدة العالمية الرئيسية، الإسلام والمسيحية؟ نحاول الإجابة على هذا السؤال للنساء بالنظر إلى ترسيخهن الديني التقليدي.

إذا كانت (MICS) الأساليب: استخدمنا مجموعات البيانات الوطنية من الدراسات الاستقصائية العنقودية متعددة المؤشرات الأخيرة مع مجموعة من 19 (SWB) تحتوي على بيانات عن مؤشرات السعادة والرضا عن الحياة التي تسمح بحساب مؤشر الرفاهية الذاتية نقطة من -11.5 إلى +7.5. حددنا أربعة بلدان ذات أغلبية إسلامية (بنغلاديش وتشاد والعراق وباكستان) وأربعة بلدان مسيحية (الكونغو = N الديمقراطية وجورجيا وصربيا وزيمبابوي) مع مجموعات بيانات لا يزيد عمرها عن عام 2018 وبأحجام عينات تتراوح بين لبنغلاديش. ولجعل التقييم أكثر قابلية للإدارة والمقارنة بين البلدان المختارة من حيث الحجم، تم أخذ $N = 63876$ لتشاد و $N = 1677$ عينات عشوائية من $N \approx 1000$.



بمقدار 0.42 بالنسبة للجماعة المسيحية عند (SWB) النتائج: وكشف التحليل الوصفي عن ارتفاع طفيف بمؤشر الرفاهية الذاتية أقل من الصفر لجميع (SWB) مستوى 1.26 مقارنة بمجموعة الدول الإسلامية عند 0.84. وتكشف مقارنة البلدان المنفردة عن مستوى البلدان الأفريقية الثلاث بغض النظر عن توجهاتها الإسلامية أو المسيحية. تكشف مقارنة تأثير المتغيرات المستقلة عن نمط مختلف للمجموعتين: وفي كلتا المجموعتين، تتمتع المنطقة بالنفوذ الأكبر، ولكنها تتبعها في الجماعة الإسلامية "بالولادة" و "المتزوجة أو في الاتحاد"، في حين أن المتغيرات المستقلة المهمة التالية في المجموعة المسيحية هي "التعليم" و "التميز المرتبط بنوع الجنس".

المناقشة: ترجع معظم الاختلافات في المجموعة إلى البلدان الأكثر تطوراً التي يغلب عليها المسيحيون جورجيا و صربيا ، خاصة فيما يتعلق بالنتائج المحلي الإجمالي ومؤشر الحرية البشرية. وتحتل البلدان الإسلامية مرتبة أفضل كثيراً فيما يتصل بتصنيف الأعمال الخيرية، ولديها حصة أقل كثيراً من النساء العاملات في القوى العاملة.

الاستنتاجات: بناءً على بياناتنا ، فإن سعادة الإناث في كلتا المجموعتين الدينيتين لا تتحدد بالتوجه الديني السائد.. ومن الواضح أن القيود التي يمكن فرضها، مثل الرفاه الاقتصادي أو المستوى التعليمي، يتم تعويضها في أغلبية السكان الإناث

Keywords: Gender, Happiness, Islam, Christianity, Subjective Well-being.

Conflict of interests: None declared

Financial disclosure: None declared

Ethics statement: Not applicable

Data availability: All relevant data are within the paper and its supporting Information files

Authors contributions: All authors contributed equally



Aristotle (Nicomachean Ethic): Happiness is the human good that we all aim for its sake alone.

Background

In a former publication (1) on female happiness in three countries of the Western Balkan, we found age, education, and wealth as the main determinants in Montenegro, North Macedonia, and Serbia. Except for one-third of the Macedonian population adhering to Islam, the major religion in all three countries is the Christian Orthodox faith (2). However, the Subjective Well-being (SWB) index (3), a combination of overall happiness and satisfaction with life - in general language denoted as Happiness or Well-being - indicated a ranking of North Macedonia lower than Serbia and especially lower than Montenegro (1). Furthermore, in North Macedonia the highest spread was observed between the least and the most well-being women groups (based on a Classification and Regression Tree (4)), see Box 1.

Box 1: Comparison of the Subjective Well-being Index and the spread between the highest and the lowest group of women in each country (%).

Countries	SWB %	Spread %
Montenegro	88.9	12.1
Serbia	83.7	11.6
North Macedonia	82.1	22.6

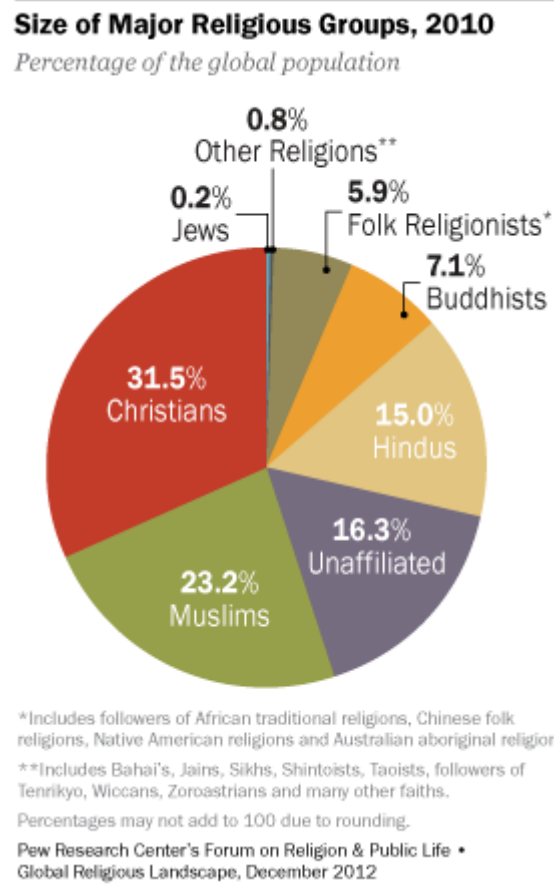
These results led to the question of whether the mixed religious composition of the Macedonian population could have contributed to the significantly lower level of female well-being respectively happiness - next to other variables like

cultural traditions, historical contexts, and equal access to education, healthcare, employment opportunities, levels of wealth as well as social support systems, and personal freedoms (Table 7 in (1)).

Women in Monotheisms: The three monotheisms, in historical order Judaism, Christianity, and Islam, together comprise more than half of the world population (figure 1), all developed in the Eastern Mediterranean region. Jerusalem is common and holy to all three, named Yerushalayim, Jerusalem, or Al-Quds, and all three have a common root in Genesis of the Old Testament, sacred to all, where it is said that 'God created both woman and man in his image and likeness. God made the first couple equal partners in leadership over the earth. Both were jointly commissioned to be fruitful and multiply, to fill the earth, subdue the earth, and rule over it' (Old Testament 1:27-28 (5)).



Figure 1: Global percentages of Islamic and Christian believers (6).





The Qur'an reads almost identical in 4:1-2 (7): 'O mankind! Be wary of your Lord who created you from a single soul and created its mate from it, from the two of them, scattered numerous men and women.' Equality in Islam is also confirmed by Prophet Muhammad, who said, 'All people are equal as the teeth of a comb. There is no claim of merit of an Arab and non-Arab, or a white over a black person, or a male over a female'.

Accordingly, women (at least in terms of their relationship with God and their respective responsibilities) are equal to men and they have the same obligations as men when it comes to a belief in God, worship, and the practice of certain religious rituals such as prayer. Both, the Qur'an and Sunnah (the collection of traditional social and legal customs) confer universal equity among all humanity. Like the preceding Judaism, Christianity and Islam developed in a societal environment of male domination or, to use a friendlier word, a history of male leadership. Accordingly, all three religious monotheisms are created by a God adored as a male.

1. Benazir Bhutto - Pakistan (1988-1990, 1993-1996)
2. Khaleda Zia - Bangladesh (1991-1996, 2001-2006)
3. Tansu Çiller - Turkey (1993-1996)
4. Megawati Sukarnoputri - Indonesia (2001-2004)
5. Roza Otunbayeva - Kyrgyzstan (2010-2011)
6. Atifete Jahjaga - Kosovo (2011-2014)

Box 2: In a list of 41 top political positions held by females between 1961 and 2021 (see Annex I), only six are in predominantly Islamic countries (authors).

They developed different combinations of religious teachings, cultural traditions, historical contexts, and individual interpretations in many aspects of life. For example, in Judaism, a husband could divorce a wife but not vice versa (8). Ahmad ibn Hanbal (9) presents an exciting interpretation of the Islamic tradition, which might also apply to the Christian heritage. He argues that equality does not mean uniformity concerning duties and rights; men and women are not identical but created as equals.

This understanding might be termed as ontologically equal and socially different. Similarly argues Ghulam Husayn Adeel (10).

Accordingly, in the time of the New Testament superiority and authority of males regarding society, government, and marriage were not questioned. The Jewish culture, as later Christianity and Islam would not have accepted a female prophet. Therefore, it is unsurprising that the twelve apostles of Jesus were also males. Accordingly, Apostle Paul writes in the 1st letter to Timotheus (2:11-14 (11)): 'Women are to learn in silence with complete submission. I do not allow a woman to teach or to hold authority over a man. She should keep silent. For Adam was formed first, and Eve afterward.' Consequently, in many Christian denominations, especially in the Catholic church, higher ranks of the clergy are reserved for men. On the other



hand, in his letter to the Galatians (3:28 (12)), Paul writes in the ontological understanding: 'There is no longer Jew or Greek, there is no longer slave or free, there is no longer male and female; for all of you are one in Christ Jesus'.

In spite of the holy readings in none of the three religions, women are admitted to pastoral functions (except some protestant groups). The absolute male genus's dominance is also visible in a list of top political positions in Islamic countries (Box 2) but likewise in predominantly Christian countries as well as in Judaism.

Happiness: There is abundant literature on the status of female happiness, often with reference to the World Happiness Reports (13). Furthermore, agreement exists on happiness playing a positive role in women's lives. For example, Tice et al. (14) conclude that a dose of positive affect seems to have remarkable power to restore the self's capacity and willingness to exert control and volition. This may well prove to be one of the most important, adaptive, and far-reaching benefits of positive affect. Lyubomirsky et al. (15) point to the mutual relationship between happiness and success: happiness as a contributing factor and as a result of being happy. Fowler and Christakis (16), state similarly, based on Framingham data, that people's happiness depends on the happiness of others with whom they are connected. This provides further justification for seeing happiness, like health, as a collective phenomenon. Our group, as said earlier, examined female happiness in terms of subjective well-being in the three neighboring countries in Southeastern Europe – Macedonia, Montenegro, and Serbia and found significant differences in favor of Montenegro (1), also confirmed in a separate study (17).

Happiness and religiosity: There are only a few recent reviews of happiness and religion, respectively religiosity. A study in Indonesia (18), a predominantly Islamic country, indicates '...no discrimination over ethnic and religion in Indonesia, (*however*) Islam and more religious people are happier than others. There is no difference in happiness over gender and ethnicity'. The systematic review by Singh et al. (19) on the Determinants of Happiness across Cultures and Countries identified in a selection of 155 studies on happiness, 12 studies on the effects of religion on happiness: 'A total of 10 studies showed an increase in happiness related to the determinants of religion, faith, forgiveness, religious attendance, tolerance, and spirituality. Two studies showed a decrease in happiness caused by spiritual struggles (for details see Annex II). The happiness determinants derived from the reviewed studies support the transient nature of happiness and its influence by internal and external determinants and circumstances'.

Gundlach et al. (20) found a hump-shaped relationship of happiness depending on religiosity (the term is used independently of a specific religious faith) and feeling at home in a community. They imply that all else being constant; people are happier in countries where the level of religiosity is either high or low but are less happy in countries with intermediate levels of religiosity. One possible explanation for this observation is that people may be less happy when the population is heterogeneous regarding cultural attitudes and social norms. Well-being



is difficult to achieve without being part of a community where people share similar attitudes and beliefs and identify with the same moral values.

In this study, we attempt to examine the social, not the ontological, dimension of the happiness of women in predominantly Islamic and Christian societies, respectively countries, measured by their status of subjective Well-being. Do the two religious orientations, together with other factors exert a differentiating influence on women's happiness?

Methods

In order to examine the research question, we use the Multiple Indicator Cluster Surveys (MICS) datasets (21) as they contain data on women's happiness. In the MICS surveys four variables measuring happiness and satisfaction with life are available, see Table 1 and the range of the resulting index of Subjective Well-being between +7.5 and -11.5.

Table 1: Four indicators of happiness and satisfaction with life.

LS1: Estimation of overall happiness (1st of 5 levels = best), levels 1 and 2: very and somewhat happy

LS2: Satisfaction with life according to ladder step (10th of 10 levels = best), levels 7-10

LS3: Life satisfaction in comparison with last year (level 1 best of 3 levels)

LS4: Life satisfaction expectation one year from now (level 1 best of 3 levels)

SWB: Index of Subjective Well-being

As in our earlier publication (1) we extended the concept of defining the dependent variable here following Inglehart et al. (3), who suggest that combining the variables of happiness and life satisfaction provides a broader-based and more reliable indicator of subjective well-being (SWB) levels of societies than do either of its two components (for the involved variable names in the following formula see Table 1). We use the proposed formula for this procedure, where the dependent variable $SWB = LS2 - (2.5 * LS1)$. The maximum value here is $SWB = 10 - (2.5 * 1) = 7.5$, and the minimum is $SWB = 1 - (2.5 * 5) = -11.5$ (the distance being 19 points), not counting missing and zero values.

Furthermore, we tried to identify a plausible selection of predominantly Islamic or Christian countries with sufficiently complete, comparable, and recent (2018/19) MICS data sets (Table



2). Some relatively conservative Islamic countries e.g., Saudi Arabia do not provide data on happiness. Other countries with recent MICS considered were Benin, Bosnia-Herzegovina, Paraguay, and Tunisia, but missed the essential variable LS1.

Georgia: In the case of variable LS2, the original raw data also contain values of zero. However, the scale ranges from 1 to 10. The data are therefore interpreted as missing data for further analysis. In total there are 39 cases. These missing data of variable LS1 are coded in the data set with 9. In the further course, i.e., when calculating the index, this leads to invalid calculations. Therefore, cells with 9 were replaced by blank cells; these cells were now correctly identified by the software as missing values.

Bangladesh: The Bangladesh data contain 208 incorrect entries for LS2, i.e., data with zero values, to be considered as missing data. Therefore, we converted them to blank cells. Furthermore, missing data of LS2 are coded with 9. The data have also to be converted to blank cells.

To make the evaluation more manageable and the selected countries comparable in size, random samples (N≈1,000) were drawn from a range of sample sizes between Chad (N = 1677) and Bangladesh (N = 63876).

Table 2: Selected MICS Surveys (see Annex III for a complete overview)

Dominant religious orientation (22, 23)	Countries	Islamic (% believers)	Christian (% believers)	MICS (year)	Size of data set
Islamic	Bangladesh	93		2019	63876
	Chad	58		2019	1677
	Iraq	96		2018	30106
	Pakistan	92		2018	29927
Christian	Congo DR		91	2018	21482
	Georgia		88	2018	6733
	Serbia		91	2019	3730
	Zimbabwe		87	2019	9708

Following the arguments for selection of relevant variables in our earlier publication (1), the following limited number of variables in the MICS datasets could be identified for the intended interpretation of the religious status (independent variables):

Table 3: Selected variables sufficiently complete and potentially relevant.

Sequential number	Abbreviation	Name of variable
1	WB4	Age;



2	WB5	Ever attended school (No/Yes);
3	CM1	Ever given birth (No/Yes);
4	CP3	Ever used a method to avoid pregnancy;
5	VT22	In the past 12 months, felt discriminated against gender;
6	MA6	Separated, divorced, widowed;
7	HH6	Rural/urban;
8	HH7	Subnational regions;
9	MSTATUS	Married or in union: Currently, formerly, never;
10	CEB	Children ever born (median);
11	WB15 new	age, if answer on WB15 was 'always'; otherwise, the number of years indicated is used.
12	welevel	Education: primary or none/secondary or higher;
13	windex5	Economic status: 1 poorest/second/middle/4 richest;

Results

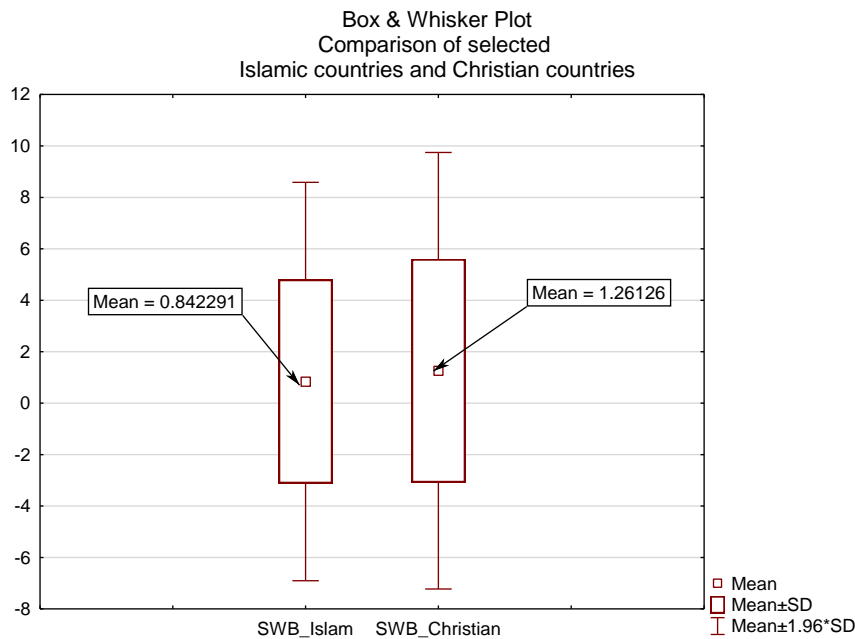
The following results are based on a comparison of the two groups of countries investigated – one made up of the four selected predominantly Islamic countries and one of four predominantly Christian countries (see Table 2 above).

The overview in Figure 2 and the related descriptive statistics indicate that the SWB of the Christian group is higher by 0.419. A t-test¹ shows this small difference, nevertheless, to be significant with $p < 0.01$. With $d = |-0.101|$ the difference is of minor importance (small effect) (24). Therefore, no relevant interpretable differences can be identified on this empirical basis.

¹ t-test for normally distributed variables



Figure 2: Comparison of the Islamic and the Christian group of countries.



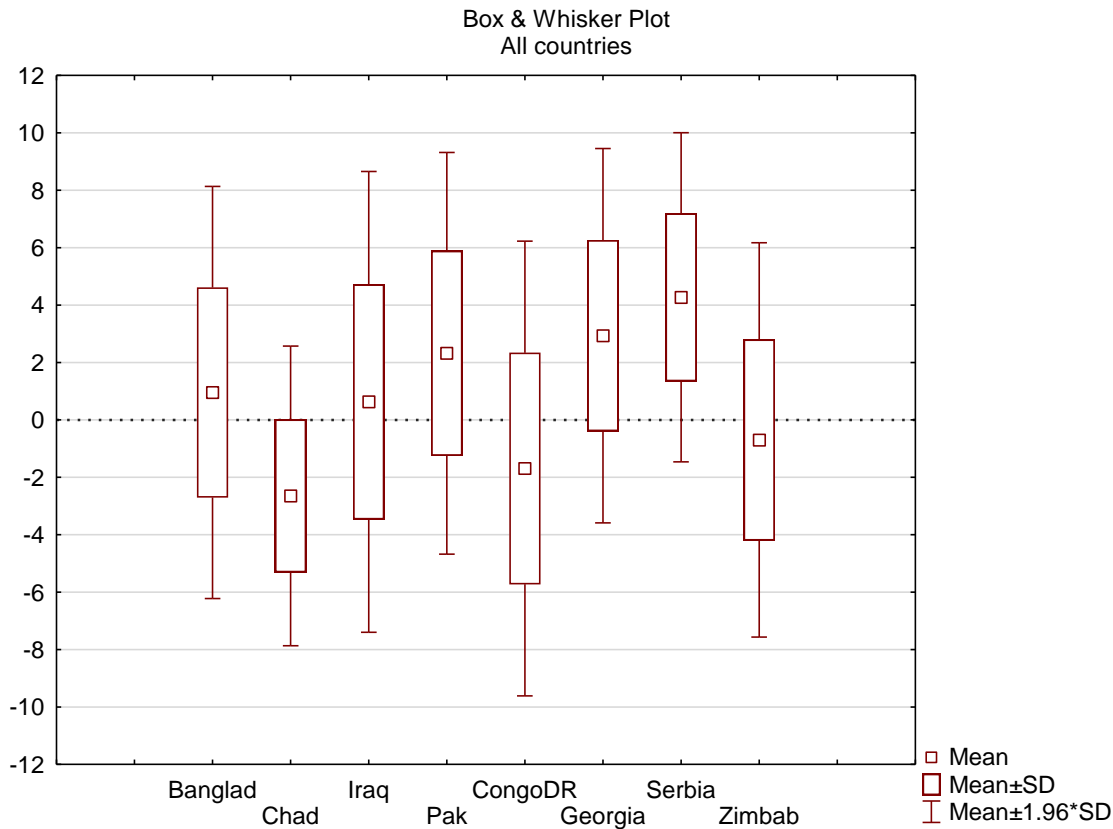
Descriptive Statistics of both religious groups:

Variable	Descriptive Statistics (Group SWB.sta)				
	Valid N	Mean	Minimum	Maximum	Std.Dev.
SWB_Islam	3833	0.842	-11.500	7.500	3.951
SWB_Christian	3998	1.261	-11.500	7.500	4.330

In each religious group the difference of the SWB between countries of the same dominant religious orientation is considerable: 4.97 points between the highest and lowest SWB per country in the Islamic group and correspondingly 5.96 points in the Christian group. All three African countries, Islamic and Christian orientation range below Zero, the remaining five countries are in the positive area, Serbia on top with a SWB of 4.27.



Figure 3: Distribution of the SWB for the eight individual countries.



Variable	Descriptive Statistics (Überblick SWB Index mit groups.sta)				
	Valid N	Mean	Minimum	Maximum	Std.Dev.
SWB111_Banglad	63876	0.95492	-11.5000	7.500000	3.662723
SWB_Chad	1677	-2.64699	-11.5000	5.000000	2.663061
SWB_Iraq	30106	0.62712	-11.5000	7.500000	4.095809
SWB_Pak	29927	2.32203	-11.5000	7.500000	3.569360
SWBCongoDR	21482	-1.69312	-11.5000	7.500000	4.040183
SWB111_Georgia	6734	2.93429	-11.5000	7.500000	3.327705
SWB 2019 Serbia	3730	4.27225	-11.5000	7.500000	2.924764
SWB Zimbab	9708	-0.69783	-11.5000	7.500000	3.503715

The MICS surveys provide a limited number of variables that potentially impact the differences between Islamic and Christian countries, presented in Table 3 above. The software STATISTICA 2023 (25) offers the option to rank the variables, respectively the potential determinants, according to their predictive power with respect to the outcome of interest. Table 4 shows the expected relevance of the variables to be used in the analysis of each religious group.



Table 4: A comparison of the variables with the possibly highest impact on the SWB in the Islamic and the Christian country group.

<i>Islamic group of countries</i>				<i>Christian group of countries</i>			
<i>Name of variable</i>	<i>Abbreviation</i>	<i>R-squared</i>	<i>F-statistic</i>	<i>Name of variable</i>	<i>Abbreviation</i>	<i>R-squared</i>	<i>F-statistic</i>
Subnational regions	HH7	0.136	200.277	Subnational regions	HH7	0.355	731.872
Ever given birth (No/Yes)	CM1	0.061	198.504	Education: primary or none/secondary or higher	welevel	0.214	543.661
Married or in union: Currently, former, ever	MSTAT US	0.048	27.844	In the past 12 months, felt discriminated against gender	VT22B	0.159	756.955
Education: primary or none/secondary or higher	welevel	0.043	173.003	Rural/urban	HH6	0.119	269.284
Children ever born (median)	CEB	0.019	12.055	Children ever born (median)	CEB	0.081	351.715
Ever attended school (No/Yes)	WB5	0.019	72.327	Separated, divorced, widowed	MA6	0.041	7.520
Rural/urban	HH6	0.011	42.347	Ever attended school (No/Yes)	WB5	0.040	166.989
Age	WB4	0.009	5.075	Economic status: 1 poorest/second/middle/4 richest	windex5	0.028	113.684
Ever used a method to avoid pregnancy	CP3	0.007	13.608	Married or in union: Currently, former, ever	MSTAT US	0.027	112.098
In the past 12 months, felt discriminated against gender	VT22B	0.006	8.058	Ever used a method to avoid pregnancy	CP3	0.020	38.908
No. of years, living in same place	WB15 new	0.004	2.576	No. of years, living in same place	WB15 new	0.018	55.202
Separated, divorced, widowed	MA6	0.002	0.136	Age	WB4	0.012	7.034



Discussion

The study has limitations and must be considered as a pilot into the difficult and controversial field. First, the countries are selected according to the availability of data in the MICS data-set and may not fully represent the global distribution of Islamic and Christian faith with all their variations (see Annex III). Secondly, we have data on the religious orientation only at a national not at individual level in the database (with the exception of Chad). Therefore, intra-country analyzes are limited in possibility and meaning.

We selected the four countries for each group, the Islamic and the Christian one, according to the availability of MICS Survey data and the country's status of development, best expressed by the Human Development Index (Table 5), ranging in the Islamic group from 0.39 to 0.69 and in the Christian group a bit higher from 0.48 to 0.80. Female life expectancy in the Islamic group ranges a bit lower from 54.3 to 74.3 years compared to 61.5 to 76.7 for the Christian group. Most of the group differences are due to the more developed predominantly Christian countries Georgia and Serbia, especially with regard to the Gross Domestic Product (GDP) and the Human Freedom Index. On the other hand, the Islamic countries range considerably better with regard to Charity ranking and have a much lower share of women employed in the labor force. Another observation relates to the African countries in both groups: Chad, Congo DR, and Zimbabwe rank lowest with regard to their SWB of women, irrespective of the dominant religious orientation: The three African countries have the lowest GDP and the highest rates for women employed in the labor force (Table 5).



Country Table 5: National indices of the Islamic and Christian countries.	Ref.	Bangladesh	Chad	Iraq	Pakistan	Congo DR	Georgia	Serbia	Zimbabwe
1) Population density/skm 2021	(26)	1.301	14	100	300	42	65	81	41
2) Female life expectancy 2020/21 (years)	(27)	74.3	54.3	72.4	68.6	61.5	76.7	75.6	62.0
Male life expectancy		70.6	50.8	68.2	63.8	57.0	66.8	70.0	56.2
3) GDP 2021/22 (PPP\$)	(28)	7.395	1.668	10.862	6.437	1.337	20.113	23.911	2.531
4) Share of women (%) employed in the labour force, 2021/22	(29)	36.4	49.3	10.8	24.5	60.3	55.0	51.0	60.0
5) Corruption Index:	(30)								
Ranking, 2022 (1=best)		147	167	157	140	166	41	101	157
Score, 2022 (100=best)		25	19	23	27	20	56	36	23
6) Human Freedom: Index	(31)								
Ranking, 2020 (1=best)		139	141	155	140	151	40	59	141
Human Freedom Index (1-10 best)		5.67	5.59	4.90	5.64	5.29	7.87	7.34	5.59
7) Charity, Ranking 2019 (1=best)	(32)	81	89	52	69	113	112	123	70
8) Global Gender Parity Index 2022 (1=best)	(33)	0.443	--	0.363	0.337	0.399	--	0.720	0.519
9) Human Development Index 2021 (1=best)	(34)	0.661	0.394	0.686	0.544	0.479	0.802	0.802	0.593



The main research question of this study was, whether the small differences in female happiness as shown in Figures 2 and 3, and in Table 4, can be related to the main religious orientation (as operationalized by group membership), or is rather determined by other factors, e.g., historical ones. Our analyses do not provide any indication that there are relevant differences in happiness related to the dominant religious orientation although especially the African countries in both groups (Chad and Congo DR respectively Zimbabwe) are economically less developed and expose lower happiness parameters.

In conclusion, based on our data, female happiness in both religious groups is not determined to a relevant degree by the dominant religious orientation. Possible restrictions imposed, e.g., by the economic welfare or educational level are obviously compensated in the majority of the female population and are not determined by the dominant religious orientation.

This result is confirmed in the prevailing literature as, e.g., Sokorowski et al. (35) confirm, that levels of satisfaction do not differ notably among Muslims. Rizvi et al. (36) in their systematic review of the literature come to the same conclusion as they write: 'Happiness is a feeling that is desired by every human being. To achieve happiness, humans try various routes like, to gain financial superiority, fame, entertainment, assets and so on. But on the contrary, religiosity is claimed to be a technique to attain purpose in life, mental health, physical well-being and internal peace, which ultimately leads to happiness in life'. However, they state also: 'Although Muslims seems to be the happiest (*in their study*), it requires further verification'.

A look at Figure 3 in our study shows differences between the individual countries in a range of 5.58 related to a maximum range of 19 points. Ngamaba et al. (37) found that individual religiosity and country level of development play a significant role in shaping people's subjective well-being (SWB) using World Value Survey data (38). Likewise, Tay et al. (39) see clear links between religiosity and happiness. Butt et al. (40) found that 'hierarchical linear regression analyses indicated that extraversion and agreeableness significantly predicted life satisfaction among young Muslim and Christian participants of a study in Pakistan. Religiosity did not contribute to life satisfaction among either group'.

However, although the levels of female happiness are similar in both religious groups, the factors determining female happiness after intra-country regionality are different as shown in Table 4. Whereas in the Islamic group next important are family values as 'ever given birth' (CMI) and 'married/in union' (MSTATUS), in the Christian group the educational level ('welevel') and 'gender related discrimination' (VT22B) are next important.



Another observation relates to the African countries in both groups: Chad, Congo DR, and Zimbabwe rank lowest with regard to their SWB of women, irrespective of the dominant religious orientation. Correspondingly, all three African countries have the lowest GDP and the highest rates for women employed in the labor force (Table 5).

Many of the determinants of SWB can be considered in the context of national or regional culture, defined by UNESCO (41) as ‘...the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions, and beliefs.’ Singh et al. (19) state: ‘The predominant happiness determinants similarly were mental, emotional, and physical well-being, a purposeful holistic work–life-balance, nurturing social relationships, caring for self and others, and being in harmony with one’s culture, traditions, community, religion, and environment.’

None of the listed components of a regional culture or of well-being are gender specific, neither are major differences in educational achievement worldwide (42). Education may differ not between gender but between cultures, e.g. the North American model has been characterised as ‘psychological and managerial motivation oriented toward educational success,’ whereas, e.g., the ‘European pedagogy ‘...has stronger structures of a rather contradictory human existential reflection.’ (43). Differences in well-being seem to vary relatively little being stable over time within a country or region (vertical temporality) (44).

However, there are specific gender-related risks. For example, a recent study found that ‘air pollution and heat exposure related to climate change may be significantly associated with pregnancy outcomes such as preterm birth, low birth weight, and stillbirth (45). Furthermore, women are exposed more than males in many regions of the world because they have in their majority to deal with food and water and in rural households with animals and harvesting. Despite women’s increased exposure and responsibility, their role in decision-making and societal development is still minor globally. Less than a quarter of prominent political positions may be held by women, even in more advanced countries like those in Scandinavia. Traditionally women and their children, if in need, were subject to charity and, in a different role, they delivered charity. Today, women should not be subject to charity but get their rights based on equality, an explosive notion in many Islamic societies but in traditional Christian habitats too.

In contrast, we should consider all as equal parts of a whole. Women in many cultures, not only those formed by the three monotheisms, are socially positioned below males, just above animals and the environment. Thus, women may be predestined to mediate between exploitive male dominance and the One Health (46) of our Earth – the interdependency of humans, animals, plants,



waters and atmosphere (47) - while improving their status to equality. One Health is often misunderstood as human health's dependency on One Health. In contrast, it is a circle where human health is hit back by the effects of what humanity, primarily males, did to animals, plants, and the environment.

Are women prepared to take over? Their state of happiness might be an indicator. Happiness and satisfaction with life can be forceful drivers of persistent action to improve the life of communities, Was Mary Wollstonecraft (48) – a pioneer of emancipation in the 18th century - a happy woman? Very likely, as she had the chance to pilot an issue of great relevance and succeeded. Happy and well-being women can be prophets and leaders! Modern science for the first time allows to quantify happiness and satisfaction with life. The question is: are women happy enough to act on their own?

Conclusions

If women are to contribute to restoring and maintaining One Health, even to find their pathway to do so, the pace has been slow since the late 18th century, too slow, given the urgency of the matter. Why don't we have much time left? Humanity woke up late during the first decade of this century! Prognoses indicate that climate change meanwhile is beyond the point of no return. It impacts the health of entire populations through increased exposure to heat, poor air quality, extreme weather events, vector-borne disease transmission, reduced water quality, and decreased food security, affecting men and women in various ways.

In conclusion it may well be that in a given context women are equally happy or even happier than men as shown, e.g., for England. (49). Therefore, women may be equally or even better qualified to change the course of the planet.

Annexes I - III

Annex I: Top female politicians.

In a list of 41 top female politicians between 1961 and 2021 only 6 are from predominantly Islamic countries (compilation from the Internet).

1. Sirimavo Bandaranaike - Sri Lanka (1960-1965, 1970-1977, 1994-2000)
2. Indira Gandhi - India (1966-1977, 1980-1984)
3. Golda Meir - Israel (1969-1974)
4. Isabel Martínez de Perón - Argentina (1974-1976)



5. Margaret Thatcher - United Kingdom (1979-1990)
6. Maria de Lourdes Pintasilgo - Portugal (1979-1980)
7. Gro Harlem Brundtland - Norway (1981, 1986-1989, 1990-1996)
8. Milka Planinc - Yugoslavia (1982-1986)
9. Vigdís Finnbogadóttir - Iceland (1980-1996)
10. Corazon Aquino - Philippines (1986-1992)
11. **Benazir Bhutto - Pakistan (1988-1990, 1993-1996)**
12. Kazimira Prunskienė - Lithuania (1990-1991)
13. **Khaleda Zia - Bangladesh (1991-1996, 2001-2006)**
14. Edith Cresson - France (1991-1992)
15. Hanna Suchocka - Poland (1992-1993)
16. **Tansu Çiller - Turkey (1993-1996)**
17. Kim Campbell - Canada (1993)
18. Sylvie Kinigi - Burundi (1993)
19. Chandrika Kumaratunga - Sri Lanka (1994-2005)
20. Mary Robinson - Ireland (1990-1997)
21. Ruth Dreifuss - Switzerland (1999)
22. Vaira Vīķe-Freiberga - Latvia (1999-2007)
23. Helen Clark - New Zealand (1999-2008)
24. Mireya Moscoso - Panama (1999-2004)
25. Tarja Halonen - Finland (2000-2012)
26. **Megawati Sukarnoputri - Indonesia (2001-2004)**
27. Micheline Calmy-Rey - Switzerland (2003, 2007)
28. Luísa Diogo - Mozambique (2004-2010)
29. Ellen Johnson Sirleaf - Liberia (2006-2018)
30. Yulia Tymoshenko - Ukraine (2005, 2007-2010)
31. Portia Simpson-Miller - Jamaica (2006-2007, 2012-2016)
32. Jadranka Kosor - Croatia (2009-2011)
33. **Roza Otunbayeva - Kyrgyzstan (2010-2011)**
34. Kamla Persad-Bissessar - Trinidad and Tobago (2010-2015)
35. Julia Gillard - Australia (2010-2013)
36. Helle Thorning-Schmidt - Denmark (2011-2015)
37. Yingluck Shinawatra - Thailand (2011-2014)
38. **Atifete Jahjaga - Kosovo (2011-2014)**
39. Park Geun-hye - South Korea (2013-2017)
40. Erna Solberg - Norway (2013-2021)
41. Michelle Bachelet - Chile (2006-2010, 2014-2018)



Annex II: Determinants of happiness.

Citation on page 14, section 3.3.4, selected from (19): Singh, S.; Kshtriya, S.; Valk, R. Health, Hope, and Harmony: A Systematic Review of the Determinants of Happiness across Cultures and Countries. *Int. J. Environ. Res. Public Health* 2023, 20, 3306.

<https://DOI.org/10.3390/ijerph20043306>

‘Some studies examined the role of religious faith and forgiveness on happiness. The relationship between lifetime trauma and happiness was fully moderated for people who experienced a religious transformation. A significant positive contribution of forgiveness (self, others, situation) was found to lead towards greater happiness. Personal happiness was predicted by active religious involvement and regular attendance to religious services. Religious attendance and religiosity were significant positive predictors of happiness. Synagogue attendance, prayer and religious attendance were associated with greater happiness. Happiness positively correlated with the characteristics of tolerance, helpfulness, beliefs, spirituality, responsibility, purposefulness, worthiness, trust, and reliability. Religiousness positively affected with happiness. Practicing Islamic-based gratitude exercises (associating blessings with Allah) raised participants’ happiness levels.

Subjective happiness was positively correlated with non-organized religious activity and intrinsic religiosity. Other studies examined the role of spiritual struggles and forgiveness on happiness. More spiritual struggles were associated with less happiness. Specifically, all five types of the religious and spiritual struggles assessed (divine, demonic, interpersonal, moral, and ultimate meaning) correlated significantly negatively with happiness’.

Annex III: Availability of MICS Survey data (21)							
Surveyed countries	Years of survey implementation					Final selection	Reasons for non-selection
Argentina					2012	2020	LS data not available
Bangladesh		1993	1995	2006	2013	2019	LS data available SELECTED
Belize					2016		Old data deviating nomenclature LS data available
Benin					2014		Old data



Bosnia-H.				2006	2011-12		Old data
Chad			2000		2010	2019	LS data available SELECTED
Congo DR		1995	2001		2010	2018	LS data available SELECTED
Costa Rica					2011	2018	LS data available
Egypt			1996		2014		Old data
Georgia			1999	2005		2018	LS data available SELECTED
Irak						2018	LS data available SELECTED
Iran		1995	1997				Old data
Kyrgyzstan			1995	2005/6	2014	2018	LS data not available
Lebanon			2000				Old data
Mexico					2015		Old data deviating nomenclature LS data available
Oman		1995			2014		Old data
Pakistan					2014	2018	LS data available SELECTED
Paraguay					2015/16		Old data LS data incomplete
Philippines		1996	1999				Old data
Serbia					2014	2019	LS data available SELECTED
Tajikistan			2000	2005			Old data
Tunisia			2000	2006	2012	2018	LS data incomplete
Turkey		1995					Old data
Uzbekistan			2000	2006		2021/22	LS data not available
Zimbabwe				2009	2014	2019	LS data available SELECTED



References

1. Bjegovic-Mikanovic V, Wenzel H, Laaser U. Data Mining Approach: What determines the wellbeing of women in South Eastern Europe? *Front. Public Health – Environmental health and Exposome*. 01 June 2022 | <https://doi.org/10.3389/fpubh.2022.873845> and: https://www.frontiersin.org/articles/10.3389/fpubh.2022.873845/full?&utm_source=Email_to_authors&utm_medium=Email&utm_content=T1_11.5e1_author&utm_campaign=Email_publication&field=&journalName=Frontiers_in_Public_Health&id=873845#h10
2. Wikipedia: https://en.wikipedia.org/wiki/Christianity_by_country
3. Inglehart R, Foa R, Peterson C, Welzel C. Development, freedom and rising happiness: A global perspective (1981–2006). *Perspectives on Psychological Science*, 2008. 3(4), 264–285. Available from: https://www.researchgate.net/publication/235643983_Inglehart_R_R_Foa_C_Peterson_C_Welze
4. TIBCO Software Inc. (2017): Statistica version 13, TIBCO Software Inc. Available online at <https://www.tibco.com/>. Licence: JPZ8041377116FA-0
5. Old Testament: Genesis 1:27-28
6. Pew Research Centre. The Global Religious Landscape. Report December 18, 2012. At: <https://www.pewresearch.org/religion/2012/12/18/global-religious-landscape-exec/>
7. Qu'ran: 4:1-2: <https://vawnet.org/sites/default/files/materials/files/2016-09/VerseofAbuseorAbusedVerse.pdf>
8. Wikipedia at: https://en.wikipedia.org/wiki/women_in_Judaism
9. Ahmad ibn Hanbal. *Sharh Tulatiyyat*. Editor: Ahmad Farid al-Miziyadi and 'Adil ben Sa'd: 1208 Pages. Publisher: Dar Al-Kotob Al-Ilmiyah, Beirut, Lebanon. (2009).
10. Ghulam Husayn Adeel: *Status of Women in Islam: A Critical Analysis on a Matter of Equality*. <https://themuslimvibe.com/faith-islam/in-theory/status-of-women-in-islam-a-critical-analysis-on-a-matter-of-equality>
11. New Testament: Apostle Paul, 1st letter to Timotheus 2:11-14



12. New Testament: Apostle Paul, letter to the Galatians 3:28
13. World Happiness Reports: Archive. At: <https://worldhappiness.report/archive/>
14. Dianne M. Tice, Roy F. Baumeister, Dikla Shmueli, Mark Muraven. Restoring the self: Positive affect helps improve self-regulation following ego depletion. *Journal of Experimental Social Psychology* Volume 43, Issue 3, May 2007, Pages 379-384.
15. Lyubomirsky S, King L, Diener E. The Benefits of Frequent Positive Affect: Does Happiness Lead to Success? *Psychological Bulletin* 2005, Vol. 131, No. 6, 803– 855. Doi: 10.1037/0033-2909.131.6.803.
16. Fowler JH, Christakis NA. Dynamic spread of happiness in a large social network: longitudinal analysis over 20 years in the Framingham Heart Study. *BMJ* 2008;337:a2338 <https://doi.org/10.1136/bmj.a2338>.
17. Ljaljevic A, Wenzel H, Laaser U. Women in Montenegro exhibit a high degree of happiness and life satisfaction: Data from the Multiple Independent Cluster Survey 2018', *South Eastern European Journal of Public Health (SEEJPH)*, 2021: 15(1). doi: 10.11576/seejph-4116.
18. Theresia Puji Rahayu. The Determinants of Happiness in Indonesia. *Mediterranean Journal of Social Sciences* Vol 7 No 2: 393, March 2016. ISSN 2039-9340. Doi:10.5901/mjss.2016.v7n2p393
19. Singh, S.; Kshtriya, S.; Valk, R. Health, Hope, and Harmony: A Systematic Review of the Determinants of Happiness across Cultures and Countries. *Int. J. Environ. Res. Public Health* 2023, 20, 3306. <https://doi.org/10.3390/ijerph20043306>
20. Gundlach E, Opfinger M. Religiosity as a Determinant of Happiness. German Institute for Global and Area Studies, Working Paper No 163 April 2011 at: https://www.giga-hamburg.de/assets/pure/21244521/wp163_gundlach_opfinger.pdf
21. UNICEF. Multiple Indicator Cluster Surveys (MICS). Available at: <http://mics.unicef.org/surveys>.
22. <https://www.nationsonline.org/oneworld/muslim-countries.htm#core>



23. https://en.wikipedia.org/wiki/Christianity_by_country
24. Cohen, Jacob (1988): *Statistical Power Analysis for the Behavioral Sciences*. 2.th ed.: L. Erlbaum Associates. Available online at <https://books.google.de/books?id=gA04ngAACAAJ>.
25. TIBCO Software Inc. (2023): *Predictor Importance in STATISTICA GC&RT, Interactive Trees, and Boosted Trees*. Available online at <https://docs.tibco.com/data-science/GUID-4C6F72C1-F4F8-48A9-83C7-D4C72A66A3AC.html>, updated on 3/24/2020, checked on 10/6/2023.
26. Worldbank. 2021. Population density/skm. Available at: <https://data.worldbank.org/indicator/EN.POP.DNST?locations=XK>
27. World Bank: Life expectancy. 2020/21 Available at: <https://genderdata.worldbank.org/indicators/sp-dyn-le-00-in/>
28. Worldbank. GDP in PPP \$ 2022. Available at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD>
29. International Labour Organisation (ILO). *Workforce data: Share of women (%) employed in the labour force, 2021/22*. Available at: <https://ilostat.ilo.org/data/country-profiles/>
30. Transparency International 2022. Available at: <https://www.transparency.org/en/cpi/2020/index/nzl>
31. Cato Institute: *Human Freedom Index. 2020*. Available at: <https://www.cato.org/human-freedom-index-new>
32. CAF World Giving Index 2019. Full Report, Appendix 1, p. 32 and 33. Available at: <https://www.cafonline.org/about-us/publications/2019-publications/caf-world-giving-index-10th-edition>
33. World Economic forum (2023). *Gender-gap-report-2023* at: <http://reports.weforum.org/global-gender-gap-report-2023>
34. *Human Development Index 2022*. Available at: <https://hdr.undp.org/content/paths-equal>
35. Sorokowski P, Kowal M, Sorokowska A. *Religious Affiliation and Marital Satisfaction*:



- Commonalities Among Christians, Muslims, and Atheists. *Front. Psychol.*; 2019.
36. Rizvi, MAK, Hossain, MZ. Relationship Between Religious Belief and Happiness: A Systematic Literature Review. *Journal of Religion and Health* 2017; 56, 1561-1582. Doi: 10.1007/s10943-016-0332-6
37. Ngamaba KH, Soni D. Are Happiness and Life Satisfaction Different Across Religious Groups? Exploring Determinants of Happiness and Life Satisfaction. *J Relig Health* 57, 2118–2139 (2018). <https://doi.org/10.1007/s10943-017-0481-2>.
38. World Values Survey at: <https://www.worldvaluessurvey.org/wvs.jsp>.
39. Tay, L., Li, M., Myers, D., & Diener, E. (2014). Religiosity and subjective Well-being: An international perspective. Chapter 9. *Religion and Spirituality Across Cultures*, 9, 163–175.
40. Butt DS, Majeed A, Khawar R, Asad S, Hussain S. Personality, Religiosity and Satisfaction with Life in Young Muslim and Christian Women in Pakistan. *J. Relig Health*. 2023 Oct;62(5):3382-3398. doi: 10.1007/s10943-023-01779-7.
41. UNESCO Universal Declaration on Cultural Diversity. Paris: United Nations Educational, Scientific and Cultural Organization; 2001
42. Statista Research Department 2023: <https://www.statista.com/statistics/1212278/education-gender-gap-worldwide-by-level/>
43. Saevi T. Why Mollenhauer matters: A response to Klaus Mollenhauer's book *Forgotten Connections on Culture and Upbringing* Translated into English, edited and with an introduction by Norm Friesen. *Phenomenology & Practice*, Vol.6 (2012), No. 2: 180-191.
44. Inglehart R, Klingemann HD. (2000). Genes, Culture, democracy, and happiness. In: E. Diener and M. Suh (eds.): *Culture and subjective Well-being*. Cambridge: MIT Press.
45. Bekkar B, Pacheco S, Basu R, DeNicola N. Association of Air Pollution and Heat Exposure with Preterm Birth, Low Birth Weight, and Stillbirth in the US: A Systematic Review. *JAMA* 2020;3(6):e208243. Doi:10.1001/2020.8243
46. Cataldo C, Bellenghi M, Masella R, Busani L. One Health challenges and actions:



Integration of gender considerations to reduce risks at the human-animal-environmental interface. *One Health* Vol.16, June 2023;

doi: 10.1016/j.onehlt.2023.100530

<https://www.sciencedirect.com/science/article/pii/S2352771423000502?via%3Dihub>

47. Food and Agriculture Organization of the United Nations (FAO), United Nations Environment Programme (UNEP), World Health Organization (WHO), and World Organisation for Animal Health (WOAH), the Quadripartite: Call to action for One Health for a safer world.

[https://www.woah.org/en/quadripartite-call-to-action-for-one-health-for-a-safer-](https://www.woah.org/en/quadripartite-call-to-action-for-one-health-for-a-safer-world/?fbclid=IwAR0XYjr_JagX2vtSjD0iyOgBIEcIO7jNRiSHb-S43ccA0CHC-eM-DZiTtKM)

[world/?fbclid=IwAR0XYjr_JagX2vtSjD0iyOgBIEcIO7jNRiSHb-S43ccA0CHC-eM-DZiTtKM](https://www.woah.org/en/quadripartite-call-to-action-for-one-health-for-a-safer-world/?fbclid=IwAR0XYjr_JagX2vtSjD0iyOgBIEcIO7jNRiSHb-S43ccA0CHC-eM-DZiTtKM)

48. Mary Wollstonecraft. *A Vindication of the Rights of Woman: with Strictures on Political and Moral Subjects* (1792) at:

https://en.wikipedia.org/wiki/A_Vindication_of_the_Rights_of_Woman

49. Abdallah S, Shah S. *Well-being patterns uncovered: An analysis of UK data*. London: New Economics Foundation, 2012.

© 2023, Bjegovic-Mikanovic et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/3.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.