

Systematic Human Rights Violations, Traumatic Events, Daily Stressors and Mental Health of Rohingya Refugees in Bangladesh

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Keywords: Rohingya, mental health, human rights violations, trauma, daily stressors, refugees, Bangladesh, Southeast Asia

Posted Date: March 24th, 2020

DOI: <https://doi.org/10.21203/rs.3.rs-18589/v1>

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Version of Record: A version of this preprint was published on August 20th, 2020. See the published version at <https://doi.org/10.1186/s13031-020-00306-9>.

Abstract

Background: Almost 900,000 Rohingya refugees currently reside in refugee camps in Southeastern Bangladesh. Prior to fleeing Myanmar, Rohingya experienced years of systematic human rights violations, in addition to recent and historical traumatic events such as the burning of their villages and murder of family members, friends and neighbors. Currently, many Rohingya struggle to meet basic needs in refugee camps in Bangladesh. The purpose of this study is to examine the associations between historical systematic human rights violations, additional traumatic events, daily stressors, mental health distress and related functioning.

Methods: Cross-sectional data was collected from a representative sample of 495 Rohingya refugee adults residing in camps in Bangladesh in August of 2018.

Results: Systematic human rights violations, traumatic events, daily stressors, and mental health distress were common among Rohingya refugees. Historic systematic human rights violations, additional trauma events, and daily stressors were predictive of symptoms of posttraumatic stress, depression and anxiety among Rohingya refugees.

Conclusions: Findings underscore the impact of systematic human rights violations, targeted violence, and daily stressors associated with life in the refugee camps, on the mental health of Rohingya in Bangladesh. Future research should include examination of human rights violations, in addition to other variables, in predicting mental health outcomes.

Background

The Rohingya are native to Myanmar's Rakhine State. Throughout the last decade, life for the Rohingya in Myanmar has been characterized by systematic deprivation and human rights violations, with official state policies in place to restrict Rohingya in their ability to marry, travel, have children, access medical care, attend schools, and more [1, 2]. For example, in 2005 a policy was introduced limiting Rohingya families to two children [3]. In 2017, in the latest wave of violence targeting Rohingya civilians, more than 200 Rohingya villages were destroyed, resulting in more than 700,000 Rohingya fleeing into neighboring Bangladesh [4–6]. There, they joined thousands of other Rohingya refugees living in camps in southeastern Bangladesh. The newly arrived refugees are concentrated in the Balukhali/Kutupalong mega camp, which is now the largest refugee camp in the world [7].

There is a dearth of research examining the mental health implications for Rohingya of exposure to systematic human rights violations over the past several years. In addition, there is very little literature on the mental health impacts of exposure to other potentially traumatic events, and/or daily stressors encountered in the refugee camps for the Rohingya. A recent review of mental health in Rohingya populations identified only a handful of studies focusing on mental health of Rohingya [8]. Notably, a study involving registered Rohingya in camps in Bangladesh in 2013 found high levels of daily stressors associated with life in the camps as well as exposure to numerous traumatic stressors. Daily chronic stressors associated with life in exile contributed to poor mental health outcomes, specifically symptoms of PTSD and depression. [9]. More recently, an assessment conducted by the United Nations High Commissioner for Refugees (UNHCR) similarly identified high rates of acute stress reactions, grief reactions, and post-traumatic stress symptoms in newly arrived Rohingya refugees [8]. In line with this, a qualitative study conducted by International Organization for Migration (IOM) in 2018 indicated that a large portion of the population regularly felt "sad and tense" [10].

Historically, symptoms associated with PTSD have been perceived as resulting primarily from an individual's exposure to specific types of traumatic stressors or life events. However, more recently, a body of research has begun to emerge linking ongoing daily stressors, such as those associated with life in refugee camps, to PTSD symptoms and other forms of distress [9, 11, 12]. This study contributes to this growing body of literature examining the impact of traumatic and daily stressors on mental health outcomes. In addition, this study extends this literature, by exploring the potential impact of historical systematic human rights violations on mental health outcomes. This represents a novel contribution to the literature on refugee mental health, as systematic human rights violations have not been thoroughly examined in studies focused on the mental health of refugees and other displaced populations. This may be in part because chronic systematic human rights violations (e.g., policies restricting the ability to marry, have children, or travel) are not typically included in existing inventories designed to measure exposure to traumatic stress.

Methods

Participants, Sampling, Procedures

Interviews were conducted in person with a randomly selected sample of Rohingya refugee adults (N = 495), representative of the adult Rohingya refugee population in the camps in Bangladesh. Interviews were conducted in July and August of 2018. Because there was no comprehensive database of the Rohingya refugee population available, this study used multi-stage cluster sampling to select a representative sample. Thirty-three blocks were randomly selected from a database of all refugee camp blocks, using probability proportionate to size (PPS) to select the blocks for inclusion.

Project coordinators travelled to each selected block to meet with the local block leader (majhi), explain the purpose of the study, and request access to the block-level household lists for the random selection of households within the block. Fifteen households from each block were randomly selected. Of these, eight were randomly assigned as households to survey women, and seven were assigned as households to interview men, matching the gender ratio in the camps. If multiple adults of the selected gender were present in the home, a participant was randomly selected from those eligible using a random number generator application on field researcher smartphones. If no participants of the selected gender were available in the household, field researchers would continue to the adjacent dwelling until they found a willing respondent of the selected gender.

Surveys took place in refugee homes and took approximately an hour to complete. Visual aid scales were used to assist in the comprehension of response options. Following completion of surveys in each block, one participant was randomly selected to participate in a short follow-up survey to ask about their experience participating in the research. This was done to confirm that the data collection procedure was operating according to plan, as well as to ensure that participants felt respected, understood the survey, and did not have any complaints.

Survey Development And Piloting

Data was collected on mobile devices using the Qualtrics offline survey app, with questions administered in-person at the household level by Rohingya members of the research team. Data was collected on demographics, systematic human rights violations, exposure to traumatic events, daily stressors, mental health symptoms and functional impairment. Standardized measures were adapted for this study, in addition to some investigator created items developed in collaboration with refugee community members. The full survey was translated and back translated from English to Rohingya, including several rounds of revisions prior to and following piloting.

Measures

Systematic human rights violations scale. A 23-item scale measuring systematic human rights violations against Rohingya communities in Rakhine State was developed by researchers.^a This measure was based on information from focus groups and key informants, including Rohingya community leaders, and was cross-referenced with existing reports regarding human rights violations occurring in Rakhine State [13]. Respondents were instructed to answer questions based on the experience of Rohingya people in Rakhine State in the last six years. The scale is intended to measure individual perceptions of the experiences of Rohingya communities in Rakhine State as a whole. Although Rohingya have experienced persecution in Myanmar for generations, the timeframe of six years was selected to capture increasingly rigid restrictions beginning in 2012. This was also based on an assumption that memories for relatively recent events would be more accurate than reports of restrictions occurring many years earlier. Individual items referred to specific restrictions in Rakhine, yoked to examples (e.g., “were Rohingya people in Rakhine State blocked from travelling freely, for example, not being able to travel from one township to another without authorization or permission?”). Response options ranged from 1 (not at all) to 4 (extremely). Individual items included restrictions on: citizenship, documentation, voting, using the name ‘Rohingya’, religious practices, travel, education, working, holding government positions, accessing medical services, accessing legal services, meeting in groups, marriage, childbirth, building/repairing homes, expressing feelings/thoughts, pressure to accept unwanted documentation, and ‘not receiving the same protection and rights as others’. Cronbach’s α indicated acceptable internal consistency (.74). As a result, human rights violations, with the exception of “receiving the same rights as others” and “protected by security forces” were combined to create a sum score of systematic human rights violations.^b

Trauma events inventory. A 38-item Trauma Events Inventory, previously used with Rohingya refugees and based on the Harvard Trauma Questionnaire (HTQ) was adapted for use in this study [9, 14]. The adaptation process included the addition of a few items based on literature review and focus group discussions. The new items reflected specific events that some Rohingya experienced during the most recent wave of violence, for example witnessing the destruction/burning of villages. Respondents were asked to indicate if they had “experienced any of the following events” during their lifetime. They were asked to indicate “yes” or “no” for each item, and to share whether the event took place in Myanmar, Bangladesh, or both. In contrast to the human rights violations scale, participants were asked to endorse items that they experienced directly. A total sum score of trauma events was calculated based on responses.^c

Daily stressors. This scale includes 25 items measuring daily stressors in Bangladesh in the last month and (ever) in Myanmar. Most items were taken from the Humanitarian Emergency Settings Perceived Needs Scale (HESPER) [15]. Two items about harassment by security forces and the local population were also added based on piloting and focus group discussion. Participants were asked if they had a serious problem with. . . (food, water, shelter, etc.). Response options included “yes” or “no.” The 12 stressors included food, water, shelter, sanitation facilities, income, physical health, safety, education, fair access to aid, travel, harassment by police, and harassment by locals. A total environmental stressors score was calculated using the sum of the number of stressors endorsed.

PTSD scale. This scale includes 16 items pulled from the PTSD symptom subscale of the Harvard Trauma Questionnaire (HTQ) [14]. Participants were asked how much these symptoms had bothered them in the previous week, with response options ranging from 1 (not at all) to 4

(extremely). Cronbach's α indicated good internal consistency (.94). A total symptom severity score was calculated by averaging all items in the scale for each participant.

Depression and anxiety scales. This scale includes 29 items, 25 of these are from the anxiety and depression scales of the 25 item Hopkins Symptoms Checklist (HSCL-25), including ten anxiety symptom items and 15 depression symptom items [14]. An additional four items were developed by investigators based on focus group feedback: "bodily pain from distress/tension," "feeling humiliated/subhuman," "feeling disrespected," and "feeling helpless." The bodily pain item was included in the anxiety scale, but the remainder of the investigator-created items were examined individually. One item regarding suicidal ideation, "thoughts of ending life," was removed from analysis due to apparent interviewer effects.^d Response options for all items ranged from 1 (not at all) to 4 (extremely). Cronbach's α indicated good internal consistency for both depression (.92) and emotional distress (.96) subscales. An emotional distress symptom score was calculated by averaging depression and anxiety items.

Functioning. This investigator-developed scale includes a total of five items. Four items focus on difficulties in daily functioning in the previous two weeks, and one item focuses on respondent perception of the reason for the difficulties ("physical health," "mental health," "current living situation," or "other" with an option to explain; more than one response option could be selected). Four items were created following focus group feedback about typical daily tasks. Two of these items are typically gender specific, so separate examples were created for men and women. Response options for all items ranged from 1 (not at all) to 4 (extremely).

Results.^e Data analysis was conducted using IBM SPSS software. Mean imputation was used to address missing data, in order to retain power and avoid potential bias that can occur with list-wise deletion of data [16]. Mean imputation was used on relatively few items, on average less than one item per survey (0.65). In cases where large amounts of data were missing (an entire scale, or several items on a scale), no mean imputation was used, instead the entire scale in question was excluded from analysis. Analysis of the data was conducted both with and without mean imputation. Mean imputation did not change the direction of any of the primary findings.^f A few extreme outliers (more than 3.0 standard deviations from the mean) were Winsorized to the nearest score within 3.0 SD above/below the mean [17]. These adjustments did not change the pattern of any of the primary findings, so results are reported with outliers modified.

For open-ended qualitative survey responses two coders worked with the data. Two rounds of reviews of responses were conducted, resulting in a set of standardized categories. Qualitative responses were then sorted into these categories by the two coders and analyzed. Responses that were unclear or unintelligible were categorized as unspecified "other." Following the completion of the coding, thematic categories were analyzed for frequency.

Specific regression models were investigated based on theoretical frameworks linked to previous research with Rohingya, in addition to focus group discussions and key informant interviews and taking into account initial correlations between variables of interest. Models examined predictors of mental health outcomes, functioning, and desire to return to Myanmar. In determining the most parsimonious set of final 'predictor' variables in each model, typically only those with a beta greater than .1 were included. The exception to this was for some variables that have a strong theoretical basis for inclusion (e.g., trauma history and PTSD symptoms).

Following these initial analyses, focus group discussions were held with Rohingya field researchers to cross-check and assist in interpretation of findings.

Demographics

Of the total households selected for inclusion, 168 (34%) were either not home or did not have an eligible respondent to complete the survey (often due to being a minor headed household, or because eligible respondents were not at home). In addition, 13 eligible respondents declined to participate in the survey. The final sample of participants included 264 women (53.3%) and 231 men (46.7%), which closely matches the camp population gender breakdown of 55.9% women and 44.1% men.

Table 1 HERE

Table 1
Demographics

Number of camp blocks sampled	33
Total sample size	495
Household Inclusion	
Households selected for inclusion that were not able to participate	168
Households that declined to participate	13
Gender	%
Female	53.3%
Male	46.7%
Age	Years
Minimum	18 years
Maximum	75 years
Mean	36 years
Median	34 years
Time since arrival in Bangladesh	Months
Mean	18 months
Period of arrival	%
Pre-October 2016	4.2%
Between October 2016 and August 2017	4.4%
Post August 2017	91.3%
Country of birth	N
Myanmar	493
Bangladesh	2
Township of origin	%
Maungdaw	66.3%
Buthidaung	28.4%
Rathedaung	4.7%
Kyauktaw	0.4%
Sittwe	0.2%
Education level completed	%
Less than primary	64.6%
Primary (1–4)	12.3%
Secondary (5–8)	4.6%
Tertiary (9–10)	1.0%
University	0.2%
Other/Religious education	79%
Religiosity (“How important are your religious beliefs to the way you live your life?”)	%
Extremely	99.2%
Quite a bit	0.4%

Number of camp blocks sampled	33
A little	0.0%
Not at all	0.4%

strong>*Focus group participants.* The eight field researchers, who also served as focus group respondents, ranged in age from 29 to 40 years. All field researchers could speak, read, and write in multiple languages, and all had multiple years of experience working for I/NGOs in Rakhine State. Focus group data reflects experiences related to them by Rohingya participants while they were conducting the interviews.

Systematic Human Rights Violations

Table 2 HERE

Table 2
Systematic human rights violations by severity (1 = Not at all, 2 = A little, 3 = Quite a bit, 4 = Extremely)

	"Were Rohingya people in Rakhine State blocked/prevented from.. .	Average Score
1	Obtaining citizenship (for example were Rohingya people blocked from have the same citizenship status as other ethnic groups in Rakhine State)	3.99
2	Working in government positions	3.99
3	Obtaining official documentation (such as National Registration Card (NRC), etc.)	3.99
4	Using the name Rohingya (for example at work, school, or in front of officials, etc.)	3.98
5	Expressing thoughts and feelings (for example publicly expressing desire for changes in Rakhine State, freely speaking to the press about the situation in Rakhine, etc.)	3.98
6	Meeting in groups in public	3.97
7	Travelling (for example not being able to travel from one township to another without authorization or permission)	3.96
8	Religious practices (for example going to masjid, madrassa, burial rituals, call to prayer, etc.)	3.96
9	Voting	3.96
10	Legal Services (for example access to legal defense, court systems, etc.)	3.95
11	... Pressured to accept unwanted documentation (for example National Verification Card (NVC), or other unwanted documentation)	3.95
12	Building or repairing houses	3.90
13	Pursuing education (for example blocked from attending government schools, universities, or blocked from pursuing chosen field of study)	3.90
14	Marriage (for example by being denied authorization to marry by authorities, or charged large amounts of money for permission to marry by authorities)	3.81
15	Medical Services (for example being refused care at a medical facility, or being prevented from travelling to a medical facility for care?)	3.80
16	Working (for example prevented from accessing fields, fishing boats, etc., or prevented from going to work)	3.78
17	Having Children (for example because of restrictions on family size, difficulties legally registering new births, etc.)?	3.65
18	... Protected by security forces (for example, protected against violence from Rakhine people)	1.14
19	... Given same rights as other ethnic groups (for example did Rohingya people have the same rights and privileges as Rakhine people, Burmese people, and other ethnic groups)	1.13
Response options: 1 = "Not at all", 2 = "A little", 3 = "Quite a bit", and 4 = "Extremely."		

Focus groups participants (Rohingya field researchers) provided clarity on the extent and nature of these restrictions. For example, being 'blocked from marriage' (3.81) was primarily due to registration restrictions, extortion, and fear of arrest. One respondent stated that, *"Even if a person is over [the age of] 18, the immigration and village administration extort money for written permission for marriage." "If you continue getting married [without permission] you could get arrested."* Another stated, *"Many people didn't get married because they couldn't afford it, many people would flee to Bangladesh just to get married."*

Focus group participants noted that being 'blocked from having children' (3.65), was primarily due to the fear of children being "blacklisted." *"Children get blacklisted if they are born outside of a registered marriage." "Blacklisted children can't do anything, they can't attend school, they are not included on the official family list (official documentation that is needed for several different aspects of life in Rakhine), they can't open a business or travel."*

Trauma Events

Table 3 HERE

Table 3
Trauma events

	Bangladesh	Myanmar
Average number of trauma events experienced by Rohingya refugees in Bangladesh and Myanmar	1.0	19.4
Trauma event endorsement rate		
Exposure (i.e., hearing and/or seeing) to frequent gunfire	1.6%	98.6%
Witnessed destruction/burning of villages	2.0%	97.8%
Repeatedly exposed to violent images against Rohingya on websites (i.e., Facebook, RVision, TV, WhatsApp, etc.)	88.7%	95.3%
Forced to do things against religion (e.g., eat pork, remove cap/niqab/veil, burn/cut beard, etc.)	0.0%	94.9%
Threats against your ethnic group	0.6%	93.3%
Home destroyed	0.6%	93.1%
Witnessed dead bodies	2.8%	91.8%
Witnessed physical violence against others	1.4%	90.4%
Confiscation/looting of personal property	1.2%	88.2%
Murder of extended family or friend	0.2%	86.2%
*Follow-up to above item: Family member was killed by security forces	N/A	100.0%
Threats against you or your family	1.6%	83.7%
Forced to flee under dangerous conditions	0.4%	83.7%
Extortion (i.e., paying money due to force or threats)	2.8%	83.1%
Forced to hide because of dangerous conditions	1.0%	75.5%
Death of family or friends while fleeing or hiding (e.g., not from violent injury like shooting or stabbing, but because of illness, lack of food, drowning etc.)	2.0%	70.6%
Witnessed sexual violence/abuse of others	0.8%	67.3%
Unjust detainment	1.4%	63.3%
Present while security forces forcibly searched for people or things in your home (or the place where you were living)	1.2%	56.9%
Torture (i.e., while in captivity you received deliberate and systematic infliction of physical or mental suffering)	1.4%	55.5%
Forced labor (i.e., forced to do work that you could not decline, for example, patrolling, working for security forces, etc.)	0.2%	48.6%
Beaten by non-family member	1.6%	46.1%
Turned back while trying to flee	0.2%	46.1%
Sexual abuse, sexual humiliation, or sexual exploitation (e.g., coerced sexual acts, inappropriate touching, forced to remove clothing, etc.)	1.0%	33.3%
Murder of immediate family member (i.e., father, mother, sister, brother, husband/wife, or children)	0.0%	29.5%
*Follow-up to above item: Family member was killed by security forces	N/A	99.3%
Physical injury from being intentionally stabbed or cut with object (e.g., knife, axe, sword, machete, etc.)	1.8%	29.4%
Disappearance of family member	0.2%	19%
Beaten by spouse or family member	3.0%	14.5%
Other serious physical injury from violence (e.g., shrapnel, burn, landmine injury, etc.)	0.2%	9.2%
Forced Abortion (only female)	0.0%	5.4% (of female respondents)
Physical Injury from being shot (bullet wound)	0.2%	5.1%

	Bangladesh	Myanmar
Rape by security forces (i.e., forced to have unwanted sexual relations with security forces) ⁹	0.0%	1.6%
Rape by others (i.e., forced to have unwanted sexual relations with a stranger, acquaintance, or family member)	0.0%	1.2%

Regarding torture (endorsed by 55.5% of respondents), focus group respondents commented that torture has been a common practice by security forces in Northern Rakhine, “[If] any Rohingya were arrested, they tortured [them] to get anything they wanted them to say, as well as to get money.” “The norm of being taken into custody for the Rohingya includes being beaten with a rod.”

Forced abortion was endorsed by 5.4% of female respondents. Focus group respondents stated that women felt forced to get an abortion due to fear of violating the two-child policy enforced on Rohingya living in Rakhine, “One woman knew that her family lists would be checked, and she was pregnant with her third child. She was afraid of being arrested and tortured, so she got an abortion.” Focus group respondents reported that this was related to the fear of having children that would be blacklisted and therefore barred from registration, education, livelihood opportunities, etc.

Violence of a religious nature in Rakhine was also endorsed, “Forced to do things against religion” (94.9%). Focus group respondents commented on some of the specific ways this occurred; “While a Rohingya cross[es] the check post on the way, Rohingya mullahs are forced to take off their caps from heads and women to take off their veils or niqab.” Another respondent commented that “Myanmar security forces always enter into the mosques and urinate inside, tear the Quran and other religious books.” “Rohingya people on pilgrimage are often abused physically and their beards are burnt after they are arrested.”

Daily Stressors

Table 4 HERE

Bangladesh Daily Stress: “During the past month have you had a serious problem. . .”	%	Myanmar Daily Stress: “In Myanmar did you generally have a serious problem. . .”	%
“Because you do not have enough income , money, or resources to live”	95%	“Because you do not have enough income , money, or resources to live”	30%
“ Food , for example, because you do not have enough food, or good enough food, or because you are not able to cook food”	79%	“ Food , for example, because you do not have enough food, or good enough food, or because you are not able to cook food”	24%
“Because your family are not in school , or are not getting a good enough education”	72%	“Because your family are not in school , or are not getting a good enough education”	84%
“ Move between places , for example, problems with travel due to checkpoints, extortion, being turned back while trying to travel to a place, etc.”	66%	“ Move between places , for example, problems with travel due to checkpoints, extortion, being turned back while trying to travel to a place, etc.”	96%
“ Suitable place to live in , for example because of inadequate shelters or amount of space”	62%	“ Suitable place to live in , for example because of inadequate shelters or amount of space”	7%
“Safe access to clean toilet and sanitation facilities ”	62%	“Safe access to clean toilet and sanitation facilities ”	11%
“ Physical health , for example, because you have a physical illness, injury, or disability”	62%	“ Physical health , for example, because you have a physical illness, injury, or disability”	42%
“ Water that is safe for drinking or cooking”	60%	“ Water that is safe for drinking or cooking”	17%
“ Fair access to the aid that is available from agencies working in the area”	47%	“ Fair access to the aid that is available from agencies working in the area”	44%
“ Not safe or protected where you live now, for example, because of conflict, violence or crime in your community”	14%	“ Not safe or protected where you lived, for example, because of conflict, violence or crime in your community”	66%
“ Harassment by the local population , for example being threatened, insulted, or extorted, etc.”	13%	“ Harassment by the local population , for example being threatened, insulted, or extorted, by Rakhine, Hindu, or Dinet, etc.”	97%
“ Harassment by police or security forces, for example being threatened, insulted, or extorted, etc.”	4%	“ Harassment by police or security forces, for example being threatened, insulted, or extorted, etc.”	98%

Posttraumatic Stress Symptoms

Table 5 HERE

#	Symptom	Average Score
1	"Recurrent thoughts or memories of the most hurtful or terrifying events"	3.56
2	"Feeling as though the event is happening again"	3.42
3	"Feeling as if you don't have a future"	2.91
4	"Recurrent nightmares"	2.83
5	"Feeling detached or withdrawn from people"	2.83
6	"Less interest in daily activities"	2.82
7	"Sudden emotional or physical reaction when reminded of the most hurtful or traumatic events, for example: sudden anxiety/stress or suddenly feeling heart racing, rapid breathing, etc."	2.82
8	"Inability to remember parts of the most hurtful or traumatic events"	2.78
9	"Avoiding activities that remind you of the traumatic or hurtful event"	2.74
10	"Feeling on guard"	2.68
11	"Avoiding thoughts or feelings associated with the traumatic or hurtful events"	2.68
12	"Trouble sleeping"	2.60
13	"Difficulty concentrating"	2.60
14	"Feeling jumpy, easily startled"	2.53
15	"Feeling irritable or having outbursts of anger"	2.53
16	"Unable to feel emotions"	2.50

Although the PTSD subscale of the HTQ has not been validated for use with the Rohingya population, a composite cut-off score of > 2.5 on the PTSD subscale of the HTQ has typically been used to indicate scores that are diagnostic of PTSD [18]. Instructions for analysis of the HTQ recommend using this cut-off score even in populations where the scale has not been validated; however, they also warn that some individuals with scores < 2.5 could likely meet PTSD criteria [18]. Using the cut-off score of > 2.5, 61.2% of participants endorsed posttraumatic stress symptoms typically diagnostic of PTSD, with the average score for all participants being 2.80. However, these results should be considered with caution; because this instrument has not been normed and validated for use with this population other factors may explain such results (e.g. translation limitations, a tendency to over endorse items linked to resource expectations or other anticipated outcomes, interviewers encouraging endorsement of higher scores for similar reasons). However, such alternative explanations are unlikely considering steps the research team took in advance to address such concerns. In addition, issues such as stigma associated with mental health symptoms, common in Rohingya communities, suggests a bias towards under not over-endorsing of symptoms [8].

Depression And Anxiety Symptoms

Table 6 HERE

#	Depression Symptoms	Average Score	Anxiety Symptoms	Average Score
1	"Worry too much about things"	3.49	"Feeling tense or keyed up"	3.13
2	"Feeling sad"	3.40	"Faintness, dizziness, or weakness"	2.73
3	"Loss of interest in things you previously enjoyed doing"	3.04	"Bodily pain from distress/tension" (Investigator developed)	2.66
4	"Feeling hopeless about the future"	2.72	"Headaches"	2.57
5	"Feeling low in energy or slowed down"	2.68	"Nervousness or shakiness inside"	2.55
6	"Poor appetite"	2.66	"Feeling fearful"	2.52
7	"Feeling lonely"	2.65	"Heart pounding or racing"	2.48
8	"Feeling everything is an effort"	2.62	"Trembling"	2.47
9	"Feeling of worthlessness"	2.60	"Spell of terror or panic"	2.42
10	"Difficulty falling asleep or staying asleep"	2.55	"Feeling restless or can't sit still"	2.35
11	"Crying easily"	2.52	"Suddenly scared for no reason"	2.25
12	"Feeling no interest in things"	2.34		
13	"Feelings of being trapped or caught"	2.40		
14	"Blaming yourself for things"	2.10		
Response options: 1 = "Not at all", 2 = "A little", 3 = "Quite a bit", and 4 = "Extremely."				

Anxiety and depression symptom items were combined to provide a composite distress score. The higher the total score, the more likely it is that the respondent is experiencing significant emotional problems. Although the HSCL-25 has not been validated for the Rohingya population, a composite cut-off score of 1.75 for the combined anxiety and depression sub-scales has typically been used to indicate scores that are "checklist positive for some type of unspecified emotional distress" related to anxiety and depression [18].ⁱ Instructions for analysis of the HSCL-25 recommend using this cut-off score, even in populations where the scale has not been validated [18]. Using this cut-off score, 84.0% of respondents endorsed anxiety and depression symptoms typically indicative of emotional distress, with average score for all participants being 2.64. However, as mentioned above, these results should be used with caution, as this instrument has not been normed and validated for use with this population. The combined anxiety and depression subscales were used, rather than the depression subscale alone. This was done to more comprehensively capture the mental health symptoms experienced by Rohingya refugees, as represented by the high average endorsement rates of both anxiety and depression symptoms.

Table 7
Investigator developed items (1 = Not at all, 2 = A little, 3 = Quite a bit, 4 = Extremely)

#	Item	Average Score
1	2.69	
2	"Bodily pain from distress/tension" ^j	2.66
3	2.54	
4	2.47	
Response options: 1 = "Not at all", 2 = "A little", 3 = "Quite a bit", and 4 = "Extremely."		

Table 8
Percentage of respondents reaching diagnostic cutoff scores

Scale	Mental health composite score results	%
PTSD	Respondents who scored higher than the typically diagnostic cutoff score of 2.5	61.2%
Emotional Distress (Anxiety and Depression)	Respondents who scored higher than the typically diagnostic cutoff score of 1.75	84.0%

Functioning

Table 9
Functioning difficulties (1 = Not at all, 2 = A little, 3 = Quite a bit, 4 = Extremely)^k

#	Item	Average Score
1	Daily Tasks: "How difficult is it for you to perform daily tasks? For Women: For example, tasks like cooking, caring for children, carrying water, etc. For Men: For example, tasks like working to earn money, collecting items from the market, collecting firewood, etc."	2.87
2	Hygiene: "How difficult is it for you to care for your hygiene? For example, by bathing, washing hands, brushing teeth, washing clothes, etc."	2.67
3	Social: "How difficult is it for you to engage in social activities? For example, activities like meeting with friends or family to spend time together."	2.39
4	Religious: "How difficult is it for you to engage in religious activities? For Women: For example, activities like praying Namaz, reciting the Quran, etc. For Men: For example, activities like praying Namaz, going to masjid, reciting the Quran, etc."	1.60
Response options: 1 = "Not at all", 2 = "A little", 3 = "Quite a bit", and 4 = "Extremely."		

Table 10
Functioning difficulties attribution

#	"What do you attribute these difficulties to?"	%
1	Current living situation	71.6%
2	Mental health	62.3%
3	Physical health	48.2%
4	Specify (Lack of income, capital, opportunity)	5.9%
5	Specify (Displacement, being stateless, lack of rights)	1.8%
6	Specify (Monsoon season)	1.5%
7	Other	8.4%

Prediction Models

A series of initial multiple linear regression models were conducted in order to identify the strongest predictors to be used in a final regression model. Generally, predictors were chosen that exceeded a β cutoff of .1; however, some variables with less than a β of .1 were included based on their broadly documented relationship with outcome variables, as well as their clinical and cultural significance in relation to outcome variables.

The five final models, presented here, predict –

- PTSD symptoms,
- emotional distress (anxiety and depression),
- functioning, and
- desire to return to Myanmar.^l

As a reminder, the variable 'Myanmar systematic human rights violations' is a sum score that combines most of the items on the systematic human rights violations scale.^m 'Trauma history' is a sum score that combines the lifetime trauma events endorsed by a respondent in both Myanmar and Bangladesh, although nearly all events endorsed occurred in Myanmar. 'Bangladesh daily stressors' is a sum score that combines all the daily stressors endorsed in Bangladesh in the last month, while 'Myanmar daily stressors' is a sum score of the same stressors, except faced when the participants previously lived in Myanmar. 'Depression symptoms' is the composite score of HSCL depression items,

PTSD Symptoms. The final model predicting PTSD symptoms included age, sex/gender, Bangladesh daily stressors, Myanmar daily stressors, trauma history, Myanmar systematic human rights violations, feeling humiliated/subhuman, and feeling helpless.ⁿ The full regression model was significant in predicting PTSD scores $F(8, 469) = 82.05; p < .001$, and $R^2 = .58$. Older age ($\beta = .097, p < .01$), being a woman ($\beta = -.094, p < .05$), a higher number of lifetime trauma events ($\beta = .185, p < .001$), higher levels of systematic human rights violations in Myanmar ($\beta = .095, p < .01$), a higher number of daily stressors in Myanmar ($\beta = .000, p < .05$), higher levels of feeling humiliated/subhuman ($\beta = .313, p < .001$), and higher levels of feeling helpless ($\beta = .366, p < .001$), significantly predicted higher PTSD scores.

Table 11
 Model 1. predicting PTSD symptoms $R^2 = .583$, $F(8, 469) = 82.05$ $p < .001$

Variables	B	Std. Error	β	t	Sig.	95% CI
1. Bangladesh daily stressors	.000087	.012	.000	.007	.994	-.023, .024
2. Myanmar daily stressors	.036	.014	.000	2.461	.014*	.007, .064
3. Sex	-.151	.061	-.094	-2.488	.013*	-.270, -.032
4. Systematic human rights violations	.041	.015	.095	2.756	.006**	.012, .070
5. Age	.006	.002	.097	3.147	.002**	.002, .010
6. Trauma history	.038	.007	.185	5.417	.000**	.024, .051
7. Feeling humiliated/subhuman	.195	.028	.313	6.885	.000**	.139, .251
8. Feeling helpless	.246	.028	.366	8.807	.000**	.191, .301
* $p < .05$, ** $p < .01$						

Emotional Distress (Anxiety and Depression). The final model predicting emotional distress (anxiety and depression) symptoms included age, sex/gender, Bangladesh daily stressors, Myanmar daily stressors, trauma history, and Myanmar systematic human rights violations. The full model was significant in predicting distress scores $F(6, 471) = 48.47$; $p < .001$, and $R^2 = .38$. Older age ($\beta = .109$, $p < .01$), a higher levels of daily stressors in Bangladesh ($\beta = .105$, $p < .01$), higher levels of daily stressors previously in Myanmar ($\beta = .337$, $p < .001$), a higher number of lifetime trauma events ($\beta = .341$, $p < .001$), and higher levels of systematic human rights violations in Myanmar ($\beta = .160$, $p < .001$) significantly predicted higher emotional distress scores.

Table 12
 Model 2. Predicting emotional distress $R^2 = .382$, $F(6, 471) = 48.47$ $p < .001$

Variables	B	Std. Error	β	t	Sig.	95% CI
1. Sex	.060	.069	.037	.868	.386	-.076, .195
2. Bangladesh daily stressors	.039	.014	.105	2.725	.007**	.011, .068
3. Age	.007	.002	.109	2.911	.004**	.002, .011
4. Systematic human rights violations	.069	.018	.160	3.890	.000**	.034, .104
5. Myanmar daily stressors	.145	.016	.337	9.029	.000**	.113, .176
6. Trauma history	.070	.008	.341	8.461	.000**	.053, .086
* $p < .05$, ** $p < .01$						

Functioning Difficulties. The final model predicting functioning difficulties included the following predictor variables, age, sex/gender, Bangladesh daily stressors, trauma history, PTSD symptoms, and depression symptoms. The full regression model was significant in predicting functioning difficulties $F(6, 483) = 66.26$; $p < .001$, and $R^2 = .45$. Higher number of Bangladesh daily stressors ($\beta = .336$, $p < .001$), higher levels of depression symptoms ($\beta = .362$, $p < .001$), and higher levels of PTSD symptoms ($\beta = .140$, $p < .05$) significantly predicted higher levels of functioning difficulty.

Table 13
Model 4. Predicting functioning difficulties $R^2 = .451$, $F(6, 483) = 66.26$ $p < .001$

Variables	B	Std. Error	β	t	Sig.	95% CI
1. Age	-.004	.008	-.017	-.471	.638	-.020, .012
2. Trauma history	.025	.030	.033	.834	.405	-.034, .085
3. Sex	-.403	.218	-.065	-1.850	.065	-.831, .025
4. PTSD symptoms	.539	.270	.140	1.996	.047*	.008, 1.069
5. Depression symptoms	1.476	.299	.362	4.939	.000**	.889, 2.063
6. Bangladesh daily stressors	.482	.052	.336	9.258	.000**	.379, .584
* $p < .05$, ** $p < .01$						

Desire to return to Myanmar. The final model predicting participants' desire to return to Myanmar included the following predictor variables, age, sex/gender, Bangladesh daily stressors, Bangladesh trauma events, depression symptoms, feeling humiliated/subhuman, level of hatred for Rakhine people, and desire to live with Rakhine people. The full regression model was significant in predicting a desire to return to Myanmar. $F(8, 483) = 16.48$; $p < .001$, and $R^2 = .21$. Being male ($\beta = .160$, $p < .01$), more severe depression symptoms ($\beta = .152$, $p < .05$), lower levels of hatred for Rakhine people ($\beta = -.165$, $p < .01$), and higher levels of desire to live with Rakhine people ($\beta = .198$, $p < .001$) significantly predicted higher levels of desire to return to Rakhine State.

Table 14
Model 5. Predicting desire to return $R^2 = .214$, $F(8, 483) = 16.48$ $p < .001$

Variables	B	Std. Error	β	t	Sig.	95% CI
1. Feeling humiliated/subhuman	.003	.040	.005	.076	.939	-.076, .082
2. Bangladesh trauma events	-.027	.069	-.016	-.398	.691	-.163, .108
3. Age	-.002	.003	-.029	-.695	.488	-.007, .003
4. Bangladesh daily stressors	.016	.016	.043	1.010	.313	-.015, .048
5. Depression symptoms	.162	.068	.152	2.399	.017*	.029, .295
6. Hatred for Rakhine people	-.110	.036	-.165	-3.027	.003**	-.181, -.038
7. Sex	.235	.075	.146	3.128	.002**	.087, .383
8. Desire to live together with Rakhine people	.137	.037	.198	3.705	.000**	.064, .210
* $p < .05$, ** $p < .01$						

Discussion

Systematic human rights violations. Respondents reported high levels of systematic human rights violations in Rakhine State in the past few years (most respondents responded with "quite a bit" to "extremely" for each of the human rights violation-related items, focused on the period from 2012 on). It is worth noting that nearly all of the participants in this study arrived to the camps after the wave of violence in 2017. This suggests that systematic human rights violations are common, especially in recent years, and include restrictions of travel, livelihoods, housing, education, expression of cultural identity, family planning, social, religious, and political life. Although access inside Northern Rakhine State has been severely restricted for journalists and aid organizations, especially since the 2017 violence, the reports that do exist emphasize similar types of and scope of human rights violations [1, 19].

Trauma events. High levels of physical violence in Myanmar were reported by the Rohingya camp population in this study, including torture, being beaten, stabbed, shot, and/or sexually assaulted. Medecins Sans Frontieres (MSF) estimates that at least 6,700 Rohingya were killed in the violence during August/September of 2017 [20]. Nearly all respondents indicated horrific experiences in Myanmar, including 98.6% exposed to frequent gunfire, 97.8% witnessed the destruction/burning of villages, 91.8% saw dead bodies, and 90.4% witnessed physical violence against others. Additionally, Rohingya have been consistently exposed to violent images online, 95.3% indicated that they were "repeatedly exposed to violent images against Rohingya on websites."

Comparing the levels of trauma exposure in Bangladesh and Myanmar is illuminating. On average, respondents endorsed 19 potentially traumatic events in Myanmar, such as exposure to gunfire and burning of villages, and on average, only 1 potentially traumatic event in Bangladesh (the most common being exposure to violent images against Rohingya on websites). Although most respondents have spent far more years in Myanmar than Bangladesh, it is unlikely that the difference in time alone accounts for the discrepancy in exposure to potentially traumatic events. In addition, when compared to a cross-sectional study conducted in 2013 with 148 long-standing registered Rohingya refugees in Bangladesh, this study with 495 recent arrivals (average time in Bangladesh = 18 months) indicated that recent arrivals have experienced higher rates of physical violence, sexual assault, and more [9].

Daily stressors. High levels of current daily stressors such as lack of adequate income, insufficient food, and limited access to education were reported by Rohingya refugees. These findings closely mirror previous findings with registered Rohingya refugees in Bangladesh [9]. In contrast to Bangladesh, where several of the primary concerns are over basic needs, the highest endorsed daily stressors in Myanmar were serious problems due to harassment by police, harassment by the local population, problems with travel, and limited access to education. Although, the Rohingya appear to feel safe from harassment in Bangladesh problems with water, shelter and food appear to be more common in the refugee camps in Bangladesh. During focus group discussions respondents unanimously agreed that their life in Bangladesh feels stressful in terms of basic needs like food, shelter, and water, although they are typically safer from direct violence compared to their lives in Myanmar.

Mental health distress. Symptoms of mental health distress were high in this study. The World Health Organization (WHO)/UNHCR toolkit guidance estimates that prior to an emergency 10% of an adult population will be affected by some type of moderate or mild mental health disorder, this rate is expected to increase by 5–10% to a total of 15–20% in adult populations affected by emergencies, 12 months after an emergency (including mild and moderate depression and anxiety, and mild and moderate PTSD) [15]. However, cutoff scores documenting rates for PTSD (61.2%), and Emotional Distress (anxiety and depression (84.0%)) in this study were much higher than these expected percentages.^o Cutoff scores for PTSD also far surpassed those of a previous study in 2013 with registered Rohingya refugees living in the camps in Bangladesh for many years, using similar measures. Results from that study found that 36% of long-standing registered Rohingya refugees met the cutoff score for PTSD, while depression scores from the same study were similar to those measured in this study at 89% [9].

Intrusive trauma symptoms, typically associated with PTSD were notably the most highly endorsed trauma symptoms. On the scale 1 = not at all, 2 = a little bit, 3 = quite a bit, 4 = extremely, “recurrent thoughts or memories of the most hurtful or terrifying events” (3.56), “feeling as though the event is happening again” (3.42), and “recurrent nightmares” (2.83) were notably the most highly endorsed trauma symptoms. While “worrying too much about things” (3.49), “feeling sad” (3.40), and “feeling tense or keyed up” (3.13) were also highly endorsed on anxiety and depression scales.

Investigator created items that were designed based on Rohingya feedback are also an important means of understanding mental health distress. Psychosomatic pain was often brought up spontaneously by focus group respondents when discussing the impact of violence and displacement on the Rohingya, and 79.2% of respondents indicated experiencing some level of “bodily pain from distress/tension,” congruent with a previous study of Rohingya refugees, but much higher than a more recent humanitarian assessment using a non-random sample that reported 20% of Rohingya refugee respondents endorsed “somatic complaints” [9, 10].

The last investigator created item, feeling “humiliated or subhuman” was endorsed by 69.7% of respondents. A key informant stated the following related to dehumanization experienced by the Rohingya: *“They call us like animals. When we are at school, they call the Muslim students “khoung” which means animal, not human being, also any activities regarding authorities that you want to do they will use the term khoung which means animals. . . when I was in class 6 or 7, I was 10 or 15 minutes late to school and the teacher said “de khoung” (animal) why are you so late today. It is a tool of discrimination, it makes me feel very bad. . .”*

Prediction models. The long-term implications of systematic human rights violations, traumatic experiences, and daily stressors, are emphasized when examining the significant role such factors play in predicting mental health outcomes, functioning, and Rohingya attitudes toward returning to Rakhine State.

In regression models, as expected, trauma history significantly predicted PTSD and emotional distress (depression and anxiety symptoms). However, in addition to trauma history and daily stressors encountered in Myanmar, systematic human rights violations (primarily occurring in Myanmar) also predicted mental health outcomes (both PTSD and depression/anxiety). While the impact on mental health of trauma exposure, and to a lesser extent daily stressors, has been studied, there is a lack of information on how systematic human rights violations may impact mental health outcomes [9, 11, 12]. This study emphasizes the importance of considering exposure to systematic human rights violations (e.g., being blocked/restricted from - meeting in groups, participating in religious practices, marriage, childbirth, the ability to travel around the country, to access education and medical facilities) in predicting mental health outcomes.

While it was expected that trauma history, age (being older), and sex (being female) would significantly predict PTSD symptoms, which was the case, it was surprising that daily stressors encountered in Bangladesh did not significantly predict PTSD scores, particularly when the relationship between daily stressors associated with life in refugee camps in Bangladesh and PTSD symptoms has been documented in a previous study with

the Rohingya [9]. This may be due to the relatively recent arrival of the majority of Rohingya refugees in this study compared to the previous study, which mostly included refugees who had lived in the refugee camps for several years. The shorter amount of time since arrival in the refugee camps, could mean that there has been less time to recover from events and conditions in Myanmar that contribute to mental health distress, and that these Myanmar events and conditions currently play a larger role in mental health outcomes. It may be that daily stressors encountered in the camps in Bangladesh will play a larger role in mental health symptoms the longer the Rohingya remain in the camps, as stress from these daily problems will likely accumulate over time. In contrast to daily stressors in Bangladesh, daily stressors experienced in Myanmar did predict PTSD symptoms, despite the fact that most of the newly arrived Rohingya refugees who participated in the study have lived in the Bangladesh camps for more than a year now. This could be interpreted as suggesting that immediately following a crisis, chronic and acute stressors happening prior to and around the time of the event may contribute more to PTSD symptoms than daily stressors in the months following the event. That having been said, emotional distress (depression and anxiety symptoms) were predicted by current stressors in Bangladesh as well as previous chronic daily stressors in Myanmar, so perhaps stressors in the months after an event play a larger role in influencing depression and anxiety symptoms than PTSD symptoms, especially in this particular population.

As expected, mental health symptoms (PTSD and depression) as well as daily stressors encountered in camps in Bangladesh significantly predicted difficulties in functioning (or 'functional impairment'). The link between mental health symptoms and reduced functioning has been well-documented in refugee and other populations [21, 22]. The majority of respondents in this study (62.3%) attributed difficulties in daily functioning to their mental health symptoms. This finding suggests a recognition from Rohingya refugees regarding the extent to which their mental health challenges are affecting their everyday lives in terms of their ability to function.

Lastly, in regression models predicting desire to return to Myanmar, more favorable views towards Rakhine people and higher levels of depression were associated with a greater likelihood of wanting to return to Myanmar. While it was expected that positive attitudes toward Rakhine people would predict a desire to return to Myanmar, it was surprising that Bangladesh daily stressors did not significantly predict a desire to return. However, increased rates of depression were associated with a greater likelihood of wanting to return to Myanmar. It could be that those who are more depressed feel more hopeless about their current situation and are more likely to look at returning to Myanmar as a potential option. In any discussion about the repatriation of Rohingya refugees to Myanmar, it is important to emphasize Rohingya perspectives regarding a safe return that includes the assurances that they will be granted their basic human rights. The vast majority of respondents indicated a desire for citizenship, reparations, protection guarantees (e.g., UN peacekeeping forces), and freedom (movement, access to education) in order to return to Myanmar.

Conclusion

Historic systematic human rights violations significantly predicted PTSD and emotional distress (depression and anxiety) symptoms. Based on these findings, this study presents a novel contribution to the literature on refugee mental health by introducing the role that systematic human rights violations play in influencing negative mental health outcomes. The findings emphasize the importance of further examining human rights environments as a contributing factor to mental health outcomes in the future. The results of this study are particularly salient for those working with Rohingya populations, but they are also relevant in other contexts where basic human rights are systematically restricted.

Abbreviations

HESPER: Humanitarian emergency settings perceived needs scale; HSCL-25: Hopkins symptoms checklist-25; HTQ: Harvard trauma questionnaire; INGO: International non-governmental organization; IOM: International Organization for Migration; IRB: Institutional review board; MHPSS: Mental health and psychosocial support; MSF: Medecins Sans Frontieres; NRC: National registration card; NVC: National verification card; PPS: probability proportionate to size; PTSD: Post-traumatic stress disorder; SD: Standard deviation; SPSS: Statistical package for the social sciences; UNHCR: United Nations High Commissioner for Refugees.

Declarations

Ethical approval and consent to participate.

The research team approached the Mental Health and Psychosocial Support (MHPSS) Working Group in Cox's Bazar, Bangladesh to request that an ethical review committee be convened, comprised of qualified mental health personnel, to review the study for potential ethical concerns. Four reviewers with MHPSS advisory or specialist roles in their organizations conducted independent ethical reviews. Following one round of minor revisions to the study protocol, all reviewers provided ethical approval (see attached supporting document regarding ethical review approach for more information).

Prior to beginning the survey, field researchers reviewed the informed consent statement with participants. Participants were informed of the purpose of the survey, how the data would be used, and that they would not receive payment for participating other than juice and some biscuits. They were informed that they could skip any question or discontinue the interview at any time. Confidentiality was explained as well as the limits

to confidentiality (harm to self or others). Lastly, field researchers informed participants about mental health support options including referral options. Verbal consent was obtained from every participant before continuing with the interview. Participants' names were not recorded at any point during the informed consent/survey process as an extra measure to ensure confidentiality. Reviewers approved of this informed consent process.

Consent for publication.

Not applicable

Availability of data and materials.

The datasets used and analyzed for this study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no commercial or other associations that might pose a conflict of interest.

Funding.

This project was funded and supported by Fortify Rights.

Authors' contributions.

AR cleaned and analyzed the data and drafted the manuscript. YA reviewed and edited the manuscript to ensure accuracy and clarity of terms and concepts related to Rohingya culture. MN assisted in interpreting the results. RA supported the editing of the manuscript. CWM served as an advisor throughout the project and provided support in data analysis and interpretation, as well as assisting in drafting and editing the manuscript. All authors read and approved the final manuscript.

Acknowledgements.

This manuscript is based on research conducted by Fortify Rights during 2018. The Fortify Rights research team, including Rahmat Ali, Mohamed Noor, Yasmin Akhter, Mohammed Omar, Mukoroma, Mohamed Ayaz, Jasmin, Hussain Sha, Arshat Ullah, and Toyuba Bi Bi along with Fortify Rights consultant Andrew Riley, conducted the research for this report. Courtney Welton-Mitchell served as an uncompensated research advisor throughout this project. Matthew Smith, Amy Smith, and John Quinley III of Fortify Rights assisted in guiding the project in many ways, including providing logistical support. Pauline Bubendorff provided useful feedback on this manuscript.

Thanks to the Rohingya respondents, refugee camp leaders, humanitarian aid workers, key informants, the Cox's Bazar Mental Health and Psychosocial Support Working group, and others who generously shared their time, energy, and experience.

End Notes

a. Data collected on systematic human rights violations is self-report data, which implies that findings regarding systematic human rights violations presented in this report are based on Rohingya perceptions of human rights violations that their communities have experienced. b. These items were the only reverse-coded items on this scale and were removed from the sum score due to concerns over respondent confusion and the internal consistency of the scale. However, removing these items did not change the pattern of any primary findings. These items are reported individually below, and the majority of participants answered in the direction that was expected. c. During the analysis, one item was dropped from the trauma events scale due to apparent interviewer effects on this item. d. One item regarding suicidal ideation, "thoughts of ending life," was removed from analysis due to apparent interviewer effects. During the data analysis, and with feedback from project coordinators and field researchers, it became apparent that most of those who endorsed suicidal ideation did so to the field researcher with the most psychosocial experience and strongest therapeutic presence. Because suicidal ideation has large cultural/religious implications for the Rohingya, there is a stigma to endorsing items regarding suicidal ideation. It seems that even with this study's heavy focus on informed consent, confidentiality, and utilizing field researchers with extensive mental health experience, there was still a hesitancy by respondents to endorse suicidal ideation to all the field researchers except the one with the most mental health experience. This can provide important insight for future providers/humanitarian agencies who may look into suicidal ideation in Rohingya communities, specifically in informing expectations around underreporting. e. The datasets used and analyzed for this study are available from the corresponding author on reasonable request. f. The items removed included "thoughts of ending life" from the HSCL-25 and "improper burial of family or friends" from the traumatic events inventory. These two items seem to have been answered differently based on the field researcher who was administering the questionnaire, and were removed from the analysis to reduce the effects of any interviewer bias that may have been present. g. During the development of the survey questionnaire a great deal of time was spent determining how to translate the concepts of rape and sexual assault into Rohingya language in a way that would not be offensive to respondents. For the purpose of this study, the Rohingya translation of rape is equivalent to "forced to have unwanted sexual relations with...", while sexual assault was translated as, "other types of sexual abuse, sexual humiliation, or sexual exploitation (e.g. coerced sexual acts, inappropriate touching, forced to remove clothing, etc.)" h. The average number of daily stressors endorsed by participants previously in Myanmar was 6.17 while currently in Bangladesh the average number of daily stressors endorsed is 6.34. i. Unspecified emotional distress will be referred to in this report as "emotional distress," and is a combination of anxiety and depression subscales from the

HSCL-25. j. The bodily pain item was used as part of the anxiety sub-scale and total emotional distress score; however, the remainder of the investigator-created items were examined individually. k. Items related to functioning difficulty were developed based on Rohingya refugee focus group feedback regarding respondents' perceptions of what typical activities they engaged in on a daily basis. l. The multicollinearity statistics were examined for all models, and all predictors had acceptable VIF scores < 5. m. This predictor variable excludes two reverse coded items, as noted in the Analysis section of the methodology. n. Feeling humiliated/subhuman and feeling helpless were items that were developed from discussions with Rohingya key informants and focus groups. These expressions of distress seemed to be distinctly different than items included in the mental health scales utilized in this study. Feeling humiliated/subhuman captures the feelings associated with being referred to as an animal or forced to survive in living situations not suited for human beings. Feeling helpless captures the feeling associated with the lack of empowerment or agency to be able to change or improve one's situation. Although, during the course of the questionnaire refugees were asked if they felt this way in the last two weeks, it seemed that these feelings built-up over the course of a long period of time. Focus group participants reported feeling both humiliated/subhuman and helpless both historically in Myanmar and currently in their lives in Bangladesh. Results from the correlation matrix show that these items were both significantly correlated with PTSD scores, and were included as independent variables in the final regression model predicting PTSD symptoms. o. As noted above, these results should be used with caution, as previously mentioned this instrument has not been normed and validated for use with this population.

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