Unmet need for health services among refugees and asylum seekers in Thailand, relative to the Thai population: an analytic cross sectional study, 2019

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Abstract

- **Background**

Although the Thai government has introduced policies to promote health of migrants, it is still the case that urban refugees and asylum seekers (URAS) seem to be neglected. This study aimed to explore the degree of healthcare access through the perspective of unmet need in URASs, relative to the Thai population.

- **Methods**

A cross-sectional survey, using a self-reporting questionnaire adapted from the Thai Health and Welfare Survey (HWS), was performed in late 2019, with 181 URASs attending the survey. The samples were randomly selected from the roster of the Bangkok Refugee Center. The data of the URAS survey were combined with data of the Thai population (n=2,941) from the HWS. Unmet need for health services was defined as the status of when a respondent needed healthcare in the past twelve months but failed to receive it. Bivariate analysis was conducted to explore the demographic and unmet need difference between URASs and Thais. Multivariable logistic regression and mixed-effects (ME) model were performed to determine factors associated with unmet need.

- **Results**

Overall, URASs were of lower age, less educated and living in more economically deprived households, compared with Thais. About 98% of URASs were uninsured by any of the existing health insurance schemes. The prevalence of unmet need among URASs was significantly higher than Thais in both outpatient (OP) and inpatient (IP) services (54.1% versus 2.1% and 28.0% versus 2.1%, respectively). Being uninsured demonstrated the greatest degree of association with unmet need, especially for OP care. The association between insurance status and unmet need was
more pronounced in ME model, relative to multivariable logistic regression. URASs migrating from Arab nations suffered from unmet need to a greater extent, compared with those originating from non-Arab nations.

- **Conclusion**

The prevalence of unmet need in URASs was drastically high, relative to the prevalence in Thais. Factors suggesting a positive relationship with unmet need included advanced age, lower education achievement, and, most evidently, being uninsured. Policy makers should consider a policy option to enrol URASs in the nationwide public insurance scheme to create health security for the entire Thai society.

**Keywords**

Urban refugee; asylum seeker; unmet need; healthcare; Thailand
Background

At present, cross-border mobility is a soaring global trend for many reasons including people searching for better economic prospects, pursuing job and education opportunities and escaping from war and political conflicts. In 2017, international cross-border populations amounted to 258 million (3.4% of global population) [1]. Of these 258 million, 68 million were forcibly displaced people. Of the 68 million, 25 million were refugees and three million were asylum seekers [2]. The situation of refugees has gained increasing attention in the global health field in recent years, particularly since the 2011 Syrian crisis which resulted in more than six million refugees fleeing from Syria to Europe [3]. Asia is another region that has encountered a refugee crisis. An obvious case is the exodus of more than 700,000 Rohingya refugees from Rakhine State in Myanmar to Bangladesh, during 2015-2017 [4].

The United Nations (UN) and the World Health Organization (WHO), as well as many other international development partners, have called for more concrete actions to protect refugees' rights to health and well-being. Some tangible outputs of these actions include the launch of the World Health Assembly (WHA) Resolution 70.15, entitled ‘Promoting the health of refugees and migrants’ [5], the New York Declaration for Refugees and Migrants [6, 7] and, recently, the Global Compact on Refugees in 2018 [8].

Thailand is one of the most popular destinations for international migrants and refugees in Southeast Asia. The majority of migrants are workers from Cambodia, Lao PDR, Myanmar and Vietnam (CLMV collectively). Some of them have entered the country unlawfully and are known as undocumented migrants. It is estimated that today, there are more than three million migrant workers living in Thailand [9].
The Thai government has implemented policies to protect the well-being of undocumented migrants for several years. One remarkable policy is the One Stop Service (OSS) registration measure for undocumented CLM migrants and their dependants [10]. Migrants who register with the OSS have their profile recorded in the civil registry and acquire a work permit, alongside undertaking nationality verification (NV). The Ministry of Public Health (MOPH) also instigated a nationwide public insurance policy, called the ‘Health Insurance Card Scheme’ (HICS), for these registered migrants and their dependants. The HICS benefit is comprehensive, covering inpatient (IP) care, outpatient (OP) care, high-cost care, disease prevention and health promotion [11].

According to the National Security Act, all Thai nationals are covered by either one of the three main public insurance arrangements: (i) Civil Servant Medical Benefit Scheme (CSMBS) for civil servants; (ii) Social Security Scheme (SSS) for employees in the formal sector; and (iii) the Universal Coverage Scheme (UCS) for those who are yet covered by the CSMBS and the SSS. With the function of the HICS (for registered CLM migrants) and the insurance schemes for Thais (USMBS, SSS and UCS), Thailand (in principle) has achieved Universal Health Coverage (UHC) for almost everybody on its soil [12, 13].

While undocumented migrants seem to be in the spotlight of health policies in Thailand, refugees and asylum seekers are often neglected [14]. All of the aforementioned policies do not include refugees and asylum seekers. The situation is more complicated among refugees and asylum seekers in urban areas compared with those in temporary sheltered areas or camps (camp refugees). This is because implementing health measures in a well-defined geographical space is relatively straightforward, and local healthcare providers are well aware of the existence of refugees in the camps. Besides, the United Nations High Commissioner for Refugees (UNHCR) and a number of international non-governmental organizations (NGOs), such as Médecins Sans Frontières
and the International Rescue Committee, in coordination with public facilities along the border, have provided humanitarian assistance in the refugee camps for years [15, 16].

Unlike camp refugees, urban refugees and asylum seekers (URAS) received little attention from the public health sphere in Thailand. Almost all URASs are residing in Bangkok, under the patronage of the United Nations High Commissioner for Refugees (UNHCR). So far, there are about 5,000 URASs and 97,000 camp refugees [17, 18]. URASs are not covered by the HICS, nor by the public insurance schemes originally designed for Thais. Nonetheless, some private facilities or insurance companies have initiated a health insurance package for URASs, which are conditional upon affordability. Some media or local NGOs suggest that most URASs in Thailand face many hindrances in accessing health services, for instance, poverty, language difficulty, and precarious citizenship status [19, 20]. Moreover, some government officials are even unaware of the existence of URASs [19]. Also, a systematic evaluation on the degree of healthcare access for URASs in Thailand is lacking.

Therefore, the objective of this study is to explore the degree of healthcare access among URASs, in comparison with the Thai population. In this regard, we use ‘unmet need’ for health services as an indicator to gauge the ability to access health care. The concept of unmet need originates from the reproductive health field, but during the past two decades, its application has become widespread to other fields, including population health and critical care [21-23].

Methods

- Study design, populations and samples

Both primary and secondary data collection was applied. We performed a cross-sectional survey on URASs from October to December 2019, and examined prior survey data on the Thai population through the 2019 Health Welfare Survey (HWS). HWS is a nationwide biennial survey jointly conducted by the National Statistical Office (NSO) and the International Health Policy Programme
(IHPP) of the MOPH. We first contacted the Bangkok Refugee Centre (BRC), a charitable agency in collaboration with UNHCR, whose work is to support the well-being of URASs. For this study, we focused on URASs of the top-ten most common nationalities in Thailand: namely, Pakistani, Vietnamese, Cambodian, Somali, Afghan, Palestinian, Chinese, Sri Lankan, Iraqi, and Syrian, comprising 3,021 URASs in total. We then sampled 206 URASs from the pool of 3,021 URASs in the BRC roster (more details in 'Sample size calculation, sampling methods and survey design'). Among these 206 samples, 181 completed the survey questionnaire. Once the primary survey on URASs was completed, we combined the data of these 181 URASs with Thai data from HWS, focusing on those living in Bangkok (n = 2,941). The final dataset comprised 3,122 observations in total, see Figure 1.

<<Figure 1>>

- **Sample size calculation, sampling methods, and survey design**

We used the prevalence of unmet need for healthcare as the main indicator for sample size estimation. The following formula, \( n = \left( \frac{Z_{1-\alpha/2}^2 \cdot 2PQ + Z_{1-\beta}^2 \cdot P_1 Q_1 + P_2 Q_2}{(P_1 - P_2)^2} \right) \) was used; where \( \alpha = 0.05; \beta = 0.2; Z_{1-\alpha/2} = 1.96; Z_{1-\beta} = 0.84; P_1 = 0.11, Q_1 = 1 - P_1; P_2 = 0.012, Q_2 = 1 - P_2; P = (P_1 + P_2)/2 \) and \( Q = 1 - P \). \( P_1 \) refers to the unmet need prevalence in URASs whereas \( P_2 \) refers to similar prevalence in the Thai population. The most recent data on unmet need prevalence in Thai citizens appeared to be 1.2%, according to Thammatacharee et al [24]. Thus \( P_2 \) was replaced by 0.012. As there has been no study about unmet need among URASs in Thailand, we searched for the indicator in studies outside Thailand. Later, we found a piece of work by Busetta et al, which examined the prevalence of unmet need of refugees in Italy while applying the same unmet need questions as the Thai HWS [25]. Busetta et al reported that the degree of unmet need in refugees was about 11%. Hence we
substituted 0.11 for $P_1$. It should be noted that both HWS and the Italian survey followed the original questions proposed by the European Union Statistics on Income and Living Conditions (EU-SILC). Taking into account a 20% non-response rate and incomplete information, at least 140 samples were needed in each sample group (URASs and Thais).

The existing records of Thai respondents in HWS had already outnumbered the needed samples; therefore no further sampling was required. For URASs, we used a stratified random sampling with probability proportional to size (PPS) according to age group, sex and nationality. Fortunately, in the fieldwork, the BRC officers informed us that they were capable of recruiting approximately 206 participants. We therefore expanded the sample size to the suggested number. However, during the survey process, 23 URASs refused to take part. Of the remaining 183, two did not complete the unmet need questions. As a result, only 181 URASs were enrolled in the study. Table 1 exhibits the number of required samples and actual samples attending the survey.

<<Table 1>>

All selected participants were asked to travel to BRC to complete the paper questionnaire. For those who had difficulty in travelling, a phone interview was performed instead. For a child below 15 years of age, parents or legal guardians would respond on his or her behalf. The questionnaire was translated to the respondents’ own language. For those who had reading difficulty, verbal interview was performed in place of written questionnaire. On average, each respondent took approximately thirty minutes to complete the questionnaire. A focal coordinator was prepared for each nationality group. These coordinators were volunteers working with BRC. Preparatory meetings between the research team and focal coordinators was arranged prior to the survey in order to fine-tune the understanding and to assess the survey feasibility.

- **Operational definitions**
We set operational definitions as follows. Firstly, ‘refugee’ is a person who has been forced to flee his or her country because of persecution, war or violence and his or her request for sanctuary is ratified by the UNHCR according to the 1951 Refugee Convention [26]. Secondly, asylum seeker means someone who has been forced to flee his or her country because of persecution, war or violence and his or her request for sanctuary has yet to be processed by the UNHCR according to the 1951 Refugee Convention [26]. Lastly, unmet need refers to a status where a person reported that he or she needed health examination or treatment for any type of health issues within the past twelve months, but he or she did not receive or did not seek it. This definition is adapted from the original unmet need survey by EU-SILC [27].

- **Questionnaire and determinants of interest**

The questionnaire for the URAS survey was adapted from the HWS questionnaire. Two rounds of consultative meetings between the research team, health system academics and BRC staff were arranged to ensure content validity and to make sure that the participants clearly understood the questions. The questionnaire contained two domains: (i) an individual’s demography and (ii) unmet need for health services.

Questions about an individual’s demography (1st domain) consisted of sex, age, insurance status (insured with either public or private insurance versus uninsured); education background (primary level, secondary level, and degree or above), and household monthly income. For convenience, we classified age into age groups (≤15 years, >15 but ≤60 years, and >60 years) and created a new binary variable, called ‘household economy’, using a cutoff at 45,707 Baht (US$ 1,428) - the average monthly income of a household in Bangkok according to the NSO [28].

Questions about unmet need for health services (2nd domain) asked a respondent to assess oneself if, during the last twelve months, he or she felt unwell and needed healthcare but did not receive it.
These questions were sub-divided into OP care and IP care. Then, the respondent, who experienced unmet need, was asked to recount the most important reason for not acquiring healthcare. Some examples of the reasons included ‘cannot afford treatment cost’, ‘long waiting queue’, ‘no time to seek treatment’, ‘too far to travel’, and ‘do not trust health staff’.

- **Statistical analysis**

All statistical analyses were performed by Stata v14.0 (StataCorp LP, College Station, Texas, US—serial number: 401406358220). We divided the analysis into two parts: (i) descriptive statistics and (ii) inferential analysis. In the first part, all categorical variables were expressed as frequency and percentage. Age and household income were presented by median and interquartile range (IQR).

In the second part, we commenced with bivariate analysis, using Chi-square or Fisher’s exact test (for categorical variables) and Mann-Whitney U test (for continuous variables), to identify: (a) the demographic difference between URASs and Thais; and (b) the relationship between unmet need and each demographic variable.

Further, we performed multivariable logistic regression by regressing odds of unmet need in natural logarithm scale on the selected independent variables all at once. The independent variables enrolled in this step were those exhibiting P-value of less than 0.2 in the former bivariate analysis. For a dummy variable with three or more scales (such as age group and education achievement), if there was at least a sub-scale variable showing P-value of less than 0.2 in the bivariate analysis, the variables at all scales would be included in the multivariable logistic regression.

We also conducted mixed-effects (ME) logistic regression, having done multivariable logistic regression at a prior stage. This time, the ME model took the nationalities of the participants into
account. We categorised nationalities into three main clusters: Thai, non-Arab Asian, and Arab Asian.

The results were presented in terms of crude and adjusted odds ratios (OR) with 95% confidence interval (CI). Inverse probability weighting was applied when assessing statistical significance in order to take the survey design into account.

- **Subgroup analysis**

Subgroup analysis was exercised by limiting the analysis on URASs. We then broke down the degree of unmet need by nationalities and types of URASs (urban refugee versus asylum seeker). The analysis was performed in the same fashion as the full-sample analysis.

**Results**

- **Demographic profiles**

In total, we enrolled 3,122 records in the analysis. Of these 3,122 observations, 181 (5.8%) were URASs. Amongst 181 URASs, 160 (88.4%) were refugees and 21 (11.6%) were asylum seekers. Pakistanis constituted the lion share of all URASs (39.8%), followed by Vietnamese (28.2%) and Cambodians (6.1%); see Table 1 for more details. The male to female ratio appeared to be similar in both Thais and URASs. About a third of Thai respondents had received primary education (34.6%), compared with 63.5% in URASs. The median age of Thais was 42 years and almost one fifth of them fell in the elderly category. In contrast, the median age of URASs was roughly 23 years with much a smaller proportion of elderly people. The household monthly income of Thais was, on average, five times as large as that of URASs. Almost all URASs (98.7%) had household monthly income less than the average income of most people in Bangkok. The insurance status of Thais was also in stark contrast with that of URASs. While over 99% of Thai respondents were covered by either public or private insurance, approximately 98% of URASs were completely uninsured. Only four URASs were
insured, and answered in the questionnaire form that they held voluntary insurance from a private hospital in Bangkok. All of these demographic variables, except sex, yielded a statistically significant difference. Note that the number of missing data in each variable were negligible (less than 1% of the observations), except household income which appeared to be missed in over half of the samples, Table 2.

<<Table 2>>

- **Unmet need profiles**

We estimated prevalence of unmet need by dividing the number of respondents who reported that they had faced unmet need in the past twelve months by the total number of respondents. The unmet need prevalence for Thais was about 2.1% in both OP and IP health services. The unmet need prevalence for URASs in IP care was approximately 28.0%, while the corresponding prevalence in OP care was 54.1%. The difference of unmet need between URASs and Thais demonstrated strong statistical significance (P-value <0.001 in both types of care), Figure 2.

<<Figure 2>>

- **Determinants of unmet need**

The results in bivariate analysis and multivariable logistic regression were relatively similar. In OP care, being uninsured demonstrated a strong and significant association with unmet need (adjusted OR = 4.0, 95% CI = 1.5-10.6). The odds of experiencing unmet need became smaller in those with high education backgrounds, but tended to be larger by increasing age. Sex and household economy did not exhibit a significant association with unmet need. In IP care, the findings appeared to follow the same direction as OP care. The only difference was that the relationship between insurance status and unmet need turned out to be non-significant despite maintaining a positive association (adjusted OR = 1.9, 95% CI = 0.7-5.1). The findings from the ME model also demonstrated a similar
pattern to results from the multivariable logistic regression for both OP and IP services. The most obvious difference was adjusted OR in the ME model expanded by about three to four times, relative to the ratio in multivariable logistic regression. Statistical significance between insurance status and unmet need was observed for both types of care in the ME model, Tables 3 and 4.

<<Table 3>>

<<Table 4>>

Among the 98 URASs who reported unmet need for OP care, 94 (95.9%) ascribed the inaccessability of health services to treatment costs being unaffordable. The remaining four URAS raised other reasons, such as language barriers and fear of being arrested by the police. Of the 61 Thais who reported unmet need for IP care, 38 (62.3%) pointed towards long waiting queues as the most important cause for inaccessability. The second most important reason was dissatisfaction with the facility’s performance (11.5%). The most important reason raised in IP care was very close to OP care: ‘lack of money’ in 93.9% of URASs and ‘long waiting queues’ in 62.3% of Thais.

- **Subgroup analysis**

Subgroup analysis found that there was no significant difference in the unmet need in urban refugees, relative to asylum seekers (P-value = 0.523 for OP care and 0.549 for IP care), Figure 3.

<<Figure 3>>

Afghans, Iraqis, and Palestinians were the populations with the greatest degree of unmet need (85.7-100.0% in OP care and 71.4-83.3% in IP care). In contrast, URASs from Cambodia and Vietnam showed the smallest unmet need estimate (31.4-33.3% in OP care and 9.1-13.7% in IP care), in relation to other nationals, Figure 4.

<<Figure 4>>
Discussion

- Result discussion

To our knowledge, this piece of work is among the first few studies in Asia that quantitatively investigate the degree of healthcare access through the perspective of unmet need among URASs. From a macro-perspective, the demographic data showed that most URASs were relatively younger, had lower educational backgrounds, and were living in economically deprived households. With this finding, it is not an exaggeration to state that URASs are one of the most vulnerable groups in Thailand. The evidence points to about one fifth to one quarter of URASs faced unmet need for health services while the prevalence of unmet need in the Thai population was very small.

Determinants that potentially contributed to unmet need included increasing age, low education achievement, and, most prominently, the lack of health insurance. This finding coincides with the same discovery in some other foreign studies. Wang et al suggested that higher education background was negatively associated with unmet need for supportive care among Chinese women [29]. Hailemariam and Haddis also flagged that low levels of education resulted in increasing degrees of unmet need for family planning in the Ethiopian population [30]. Bhattathiry and Ethirajan reported that unmet need for family planning decreased as age advanced [31]. This finding contradicts our discovery, which found that people with advanced age were more likely to have unmet need than those in lower age groups. Some of the explanations for this phenomenon is, first, the difference in the care of interest between our survey (focusing on IP and OP care in general) and Bhattathiry and Ethirajan’s survey (focusing only on family planning); and second, the in-house intervention of BRC.

Based on our discussion with BRC staff, we found that BRC had created its own supportive measures for URASs by allowing children up to five years of age to enjoy free healthcare at public
facilities. Parents of these children could be reimbursed for the full healthcare cost from BRC if their children visited a health facility. This might be a reason why our findings suggest a negative association between age and unmet need. Furthermore, BRC also offered partial financial support for URASs who were admitted to a public hospital. The authority pledged to subsidise the cost of IP care for URASs up to 20,000 Baht (US$ 625) per visit. This initiative might explain why being uninsured showed significant association with unmet need for OP care, but not for IP care, in multivariable logistic regression. It is worth noting that these in-house policies have not been systematically managed as an insurance scheme and still function as charitable activities, depending on financial resources of the organisation and ad hoc negotiation with the healthcare providers.

Another interesting point from our findings was that insurance status appeared to be the most influential determinant on unmet need. The multivariable logistic regression indicated that the risk of facing unmet need for OP health services in the uninsured was about four-times as large as the risk in the insured. The degree of association became much stronger (approximately 15 times for OP care and 10 times for IP care) when applying the ME model. As, so far, there is no public insurance policy for URASs, it is not surprising that the prevalence of unmet need in URASs was gigantic. This finding also corresponds with the fact that the majority of URASs pointed towards financial difficulties to afford the treatment cost as the most important concern. In other words, URASs are at huge risk of impoverishment at any time when they seek treatment, and it means that Thailand has not yet achieved UHC for everybody on its soil as intended [32]. Since the concept of UHC covers not only the provision of essential quality health services, but also the prevention of impoverishment from healthcare spending, the issue of URASs accessing health care has a strong policy implication. Thailand is committed to the Sustainable Development Goals (SDG), including SDG target 3.8, which focuses on UHC [33]; therefore policies to enroll URASs in a public health insurance scheme should be seriously considered. In addition, leaving URASs uninsured potentially
results in low access to essential healthcare, and this may undermine the health security of society as a whole. Experiences from other countries that offer health insurance for URASs, such as Iran and Malaysia, are of great value and warrant further exploration [34, 35].

As Thailand is not a party to the 1951 Refugee Convention [36], the Thai government is not obliged to guarantee any health measures for urban refugees, compared with asylum seekers whose application for refugee status is still in process. The subgroup analysis reflected this fact, showing no significant difference in the unmet need for healthcare in urban refugees, relative to asylum seekers.

Despite not being a primary objective of the study, the varying degree of unmet need among diverse national groups was thought-provoking. This was evidenced by the fact that the adjusted OR in the ME model, which had already considered the clustering effect of nationalities on unmet need, greatly expanded, compared with the ratio in the multivariable logistic regression, which assumed no correlation between observations. The descriptive subgroup analysis also showed that Cambodian and Vietnamese URASs suffered least from unmet need, compared with other nationals. A possible explanation is that URASs from Southeast Asia nations may have lifestyle and beliefs close to Thais; and that Thai society is already acquainted with migrants travelling from neighbouring countries (especially from CLMV nations). In contrast, URASs from Arab nations (for instance, Iraqis, Palestinians and Syrians) presented with a relatively large degree of unmet need. As the Arab people are the minority in Bangkok, they possibly need a huge adaption to incorporate the Arab way of life to the Asia culture. This picture alludes to the concept of acculturation proposed by a great deal of prior research [37-39]. That is, refugees who can assimilate or integrate themselves into a new culture tend to have better health outcomes, compared with the poorly adjusted ones [37-39].

- **Methodological discussion**
Methodology-wise, this study bears some strengths and weaknesses. Regarding strengths, the study employed a systemic approach for data sampling, and we recruited participants from a household level, even though there were no physical visits to the participants' households. Another strength of the study is the use of Thai respondents' data as a comparator. We would not have a clear view on the extent of unmet need for health services in URASs had the comparator (HWS data) been missing.

However, there remain some weaknesses. Firstly, as the nationalities of URASs are vastly diverse, we could not guarantee a perfect translation of the questionnaire. This problem would rarely occur in the HWS questionnaire as Thai is the only formal language for Thai citizens. Nonetheless, we tried to minimize the language barriers by arranging a training workshop for the survey volunteers to achieve mutual understanding between the volunteers and the research team. These volunteers mostly worked with BRC and some of them were also URASs.

Secondly, since the unmet need question inquired about a history of healthcare access in the past twelve months, a recall bias was inevitable. This problem might not severely undermine the validity of the analysis as the bias could be present in both the URAS survey and the HWS. However, the bias might be more pronounced in the URAS survey compared with the HWS because of the difference in survey practice. In the URAS survey, when people with travelling difficulties were recruited, we asked a surrogate respondent to answer the questionnaire on their behalf. In contrast, the HWS surveyors always visited the participants at their households, resulting in a lower reliance on surrogate respondents in comparison with the survey on URASs.

Thirdly, as mentioned earlier, we could not perform physical visits to participants' households. Accordingly, some key household information that necessitates direct observation, such as household infrastructure and owner's equity, was missing. Such information serves as the main ingredient for estimating household prosperity through the indicator called ‘asset index’ [40].
lack of this indicator, in combination with a fair amount of missing data on household economy, might explain why the economic wealth of URASs did not exhibit a statistically significant relationship with unmet need, although the direction of effect implied that the less affluent participants tended to face greater odds of unmet need, compared with the well-off group. The original HWS questionnaire contains questions about household properties, and the surveyors were able to use the answers from these questions to estimate asset index. However, we dropped such questions in the URAS survey as we decided not to visit URASs’ household to avoid a risk of disclosing their residential address.

Fourthly, though the URAS survey and HWS followed the same set of questions, the timeline for conducting both surveys and human resources used were different. Therefore a direct comparison between URASs and Thais should take into account this limitation.

Lastly, the people of interest in this study were those presenting on the BRC roster only, not all URASs in Bangkok. We totally missed URASs in non-household settings, such as shelters or detention centres. This definitely limits the generalisability power of our study. To expand the academic richness in this field, further studies on other types of refugees are strongly recommended.

**Conclusion**

Overall, URASs had lower educational attainment and faced more severe financial hardship than Thais. The prevalence of unmet need in URASs was drastically high, relative to the corresponding prevalence in Thais. Factors that suggested a positive relationship with unmet need included advanced age, lower educational achievement, and, most evidently, being unsinured. All relevant parties, such as policy makers, academics and high-level bureaucrats in the public health area, should consider measures to enroll URASs in nationwide public insurance. The benefit of this is not only alleviating unmet need for health services in URASs, but also strengthening health security for
Thai society as a whole. Additional studies on the health status and access to healthcare in other types of refugees are recommended.
List of abbreviations

BRC = Bangkok Refugee Centre
CLM = Cambodia, Lao PDR and Myanmar
CI = Confidence interval
CSMBS = Civil Servant Medical Benefit Scheme
EU-SILC = European Union Statistics on Income and Living Conditions
HICS = Health Insurance Card Scheme
IHPP = International Health Policy Programme
IP = Inpatient
ME = Mixed-Effects
MOPH = Ministry of Public Health
NGO = Non-government Organisation
NV = Nationality Verification
OP = Outpatient
OR = Odds Ratio
OSS = One Stop Service
PPS = Probability Proportional to Size
SSS = Social Security Scheme
UHC = Universal Health Coverage
UNHCR = United Nations High Commissioner for Refugees
UN = United Nations
URAS = Urban Refugee and Asylum Seeker
WHA = World Health Assembly
WHO = World Health Organization
Declarations

- **Ethics approval and consent to participate**

This study obtained ethics approval from the Institute for the Development of Human Research Protections (IHRP)—letter head: IHRP 592/2562. Written consent was obtained from the participants. For those uncomfortable with providing written consent, verbal consent was used instead. All respondents were assured that their participation was voluntary and they had the right to withdraw from the survey at any time. All individual information was strictly kept confidential and would not be reported to the wider public.

- **Consent to publish**

Not applicable

- **Availability of data and materials**

The raw data used by this study jointly belonged to BRC and IHPP. The analysed data are however available from the authors upon reasonable request.

- **Competing interests**

The authors declare no conflict of interest.

- **Funding**

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- **Author contributions**
Conceptualization, RS, NP and PT; Methodology, RS and PT; Validation, RS and WK; Formal analysis, RS, WK and MP; Investigation, RS, WK, and MP; Resources, RS, PS and SJ; Data collection, RS, PS, MP, NP, SJ, and WK; Data management, PS, MP, SJ and WK; Project administration, PS and SJ; Writing—Original draft, RS; Writing—review and editing, RS, PS, MP, NP, SJ, WK and PT. All authors have read and approved the final manuscript.

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**Figure 1**: Population frames, samples and data sources

**Figure 2**: Prevalence of unmet need in Thais *versus* urban refugees and asylum seekers

Note: URAS = urban refugee and asylum seeker

**Figure 3**: Prevalence of unmet need in urban refugees *versus* asylum seekers

**Figure 4**: Prevalence of unmet need by nationalities
| National  | Sex  | Age (years) | Total number from BRC list | Total samples required | Total participants attending the survey* |
|-----------|------|-------------|-----------------------------|------------------------|------------------------------------------|
| Afghan    | Male | 0-15        | 23                          | 2                      | 1                                        |
| Afghan    | Male | >15         | 26                          | 2                      | 3                                        |
| Afghan    | Female | 0-15 | 16                          | 2                      | 1                                        |
| Afghan    | Female | >15 | 45                          | 2                      | 2                                        |
| Cambodian | Male | 0-15        | 30                          | 2                      | 2                                        |
| Cambodian | Male | >15         | 72                          | 4                      | 4                                        |
| Cambodian | Female | 0-15 | 39                          | 3                      | 1                                        |
| Cambodian | Female | >15 | 57                          | 4                      | 4                                        |
| Chinese   | Male | 0-15        | 2                           | 1                      | 2                                        |
| Chinese   | Male | >15         | 22                          | 2                      | 1                                        |
| Chinese   | Female | 0-15 | 14                          | 2                      | 1                                        |
| Chinese   | Female | >15 | 13                          | 2                      | 0                                        |
| Iraqi     | Male | 0-15        | 12                          | 2                      | 0                                        |
| Iraqi     | Male | >15         | 32                          | 2                      | 2                                        |
| Iraqi     | Female | 0-15 | 25                          | 2                      | 1                                        |
| Iraqi     | Female | >15 | 28                          | 2                      | 3                                        |
| Sri Lankan | Male | 0-15       | 13                          | 2                      | 2                                        |
| Sri Lankan | Male | >15       | 30                          | 2                      | 0                                        |
| Sri Lankan | Female | 0-15 | 31                          | 2                      | 2                                        |
| Sri Lankan | Female | >15 | 21                          | 2                      | 2                                        |
| Pakistani | Male | 0-15        | 243                         | 15                     | 14                                       |
| Pakistani | Male | >15         | 392                         | 25                     | 22                                       |
| Pakistani | Female | 0-15 | 275                         | 18                     | 13                                       |
| Pakistani | Female | >15 | 318                         | 20                     | 23                                       |
| Palestinian | Male | 0-15       | 37                          | 2                      | 1                                        |
| Palestinian | Male | >15       | 56                          | 4                      | 0                                        |
| Palestinian | Female | 0-15 | 33                          | 2                      | 1                                        |
| Palestinian | Female | >15 | 52                          | 2                      | 3                                        |
| Somali    | Male | 0-15        | 40                          | 2                      | 2                                        |
| Somali    | Male | >15         | 72                          | 5                      | 1                                        |
| Somali    | Female | 0-15 | 29                          | 2                      | 2                                        |
| Somali    | Female | >15 | 20                          | 2                      | 5                                        |
| Vietnamese | Male | 0-15       | 183                         | 11                     | 9                                        |
| Vietnamese | Male | >15       | 250                         | 16                     | 13                                       |
| Vietnamese | Female | 0-15 | 197                         | 13                     | 11                                       |
| Vietnamese | Female | >15 | 231                         | 15                     | 12                                       |
| Syrian    | Male | 0-15        | 9                           | 2                      | 0                                        |
| Syrian    | Male | >15         | 12                          | 2                      | 3                                        |
| Syrian    | Female | 0-15 | 11                          | 2                      | 2                                        |
| Syrian    | Female | >15 | 10                          | 2                      | 1                                        |
Note: Nine participants (one Chinese female, one Chinese male, one Palestinian male, three Vietnamese males and three Vietnamese females) attended the survey but were not displayed on the table due to incomplete age and sex data. In total, there were 181 URASs (172 participants shown in the last column of the table and nine URASs with incomplete age and sex data). #BRC = Bangkok Refugee Center
Table 2: Demographic characteristics of the participants

| Variable                      | Thai (n=2941) | URASt (n=181) | P-value | Test          |
|-------------------------------|---------------|---------------|---------|---------------|
| Sex—n (%)                    |               |               | 0.975   | Chi-square    |
| • Female                      | 1,550 (52.7)  | 95 (52.5)     |         |               |
| • Male                        | 1,391 (47.3)  | 86 (47.5)     |         |               |
| Education—n (%)              |               |               | <0.001  | Chi-square    |
| • Up to primary               | 981 (34.6)    | 115 (63.5)    |         |               |
| • Up to secondary            | 1,091 (38.5)  | 46 (25.4)     |         |               |
| • Degree or above            | 765 (26.9)    | 20 (11.1)     |         |               |
| Median age—years (IQR)*      | 42.0 (31.0)   | 23.1 (27.3)   | <0.001  | Mann-Whitney U|
| Age group—n (%)              |               |               | <0.001  | Chi-square    |
| • ≤15 years                  | 349 (11.9)    | 68 (37.6)     |         |               |
| • >15 but ≤60 years          | 2,033 (69.1)  | 102 (56.3)    |         |               |
| • >60 years                  | 599 (19.0)    | 11 (6.1)      |         |               |
| Median household income—Baht (IQR) | 30,000 (30,000) | 6,000 (4,500) | <0.001  | Mann-Whitney U|
| Household economy            |               |               | <0.001  | Fisher’s exact|
| • Above average              | 271 (23.9)    | 2 (1.3)       |         |               |
| • Below average              | 861 (76.1)    | 151 (98.7)    |         |               |
| Insurance status             |               |               | <0.001  | Fisher’s exact|
| • Uninsured                  | 6 (0.2)       | 177 (97.8)    |         |               |
| • Below average              | 2,935 (99.8)  | 4 (2.2)       |         |               |

Note: $Missing data were not included in the table; ΞUrban refugee and asylum seekers; #Interquartile range
Table 3: Factors associated with unmet need for outpatient care

| Factors                                      | Bivariate analysis by Chi square test | Multivariable logistic regression | Mixed-effects model |
|----------------------------------------------|---------------------------------------|-----------------------------------|---------------------|
|                                              | Crude OR (95% CI)                     | Adjusted OR (95% CI)              | Adjusted OR (95% CI) | P-value |
|                                              | P-value                               | P-value                           | P-value             |
| Uninsured (v insured)                        | 4.0 (1.6-9.7)                         | 4.0 (1.5-10.6)                    | 14.7 (2.6-84.1)     | 0.003   |
|                                              | 0.003                                 | 0.005                             | 0.003               |
| Male (v female)                              | 1.5 (0.8-2.6)                         | 1.5 (0.9-2.7)                     | 1.1 (0.7-1.6)       | 0.770   |
|                                              | 0.163                                 | 0.136                             |                     |
| Age group (v ≤15 years)                      |                                      |                                   |                     |
| • >15 but ≤60 years                          | 2.6 (1.1-6.1)                         | 2.7 (1.0-7.1)                     | 1.9 (1.0-3.6)       | 0.041   |
|                                              | 0.031                                 | 0.049                             | 0.041               |
| • ≤15 years                                  | 1.8 (0.6-5.1)                         | 1.3 (0.5-3.8)                     | 1.4 (0.7-3.1)       | 0.538   |
|                                              | 0.268                                 | 0.615                             | 0.538               |
| Education level (v primary education)        |                                      |                                   |                     |
| • Secondary education                        | 0.7 (0.3-1.3)                         | 0.5 (0.2-0.9)                     | 0.6 (0.3-1.0)       | 0.032   |
|                                              | 0.211                                 | 0.047                             | 0.032               |
| • Degree of above                            | 0.4 (0.2-0.9)                         | 0.3 (0.1-0.7)                     | 1.0 (0.6-1.7)       | 0.881   |
|                                              | 0.024                                 | 0.005                             | 0.881               |
| Below-average economic level (v above average)| 1.6 (0.7-4.0)                         | -                                 | -                   | -       |
|                                              | 0.286                                 | -                                 | -                   | -       |
| Factors                              | Bivariate analysis by Chi square test | Multivariable logistic regression | Mixed-effects model |
|-------------------------------------|--------------------------------------|----------------------------------|---------------------|
|                                     | Crude OR (95% CI)                    | Adjusted OR (95% CI)             | Adjusted OR (95% CI) | P-value |
|                                     | P-value                              | P-value                          | P-value             |         |
| Uninsured (v insured)               | 1.9 (0.8-4.7)                        | 1.9 (0.7-5.1)                    | 10.4 (1.9-55.6)     | 0.006   |
| Male (v female)                     | 1.5 (0.8-2.6)                        | 1.5 (0.9-2.7)                    | 1.0 (0.7-1.5)       | 0.950   |
| Age group (v ≤15 years)             |                                     |                                  |                     |         |
| • >15 but ≤60 years                 | 2.6 (1.1-6.4)                        | 2.7 (1.0-7.4)                    | 1.4 (0.7-2.7)       | 0.321   |
| • ≤15 years                         | 1.8 (0.6-5.3)                        | 1.3 (0.5-3.9)                    | 0.9 (0.4-2.0)       | 0.803   |
| Education level (v primary education)|                                     |                                  |                     |         |
| • Secondary education               | 0.7 (0.3-1.3)                        | 0.5 (0.2-1.0)                    | 0.6 (0.3-1.0)       | 0.055   |
| • Degree of above                   | 0.4 (0.2-0.9)                        | 0.3 (0.1-0.7)                    | 0.9 (0.5-1.6)       | 0.766   |
| Below-average economic level (v above average) | 1.6 (0.7-3.9)                        | 0.297                            | -                   | -       |
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