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Master's Thesis
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Understanding How Displacement Affects HIV Prevalence Among Displaced Populations-

a Scoping Review

Ryan Yucha

2019

Master of Public Health

Epidemiology of Microbial Diseases

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Abstract

Over the course of the past two decades, the number of people who have been displaced has increased dramatically. With this brings a new set of health challenges for these populations as well as the countries to which these populations are displaced such as HIV/AIDS. There is evidence to show that forced displacement can cause an increase in the HIV prevalence among those displaced. However, there is evidence to suggest the contrary, as well.

The aim of this scoping review study is to determine what the existing literature can and cannot tell us about how forced displacement affects HIV prevalence among those displaced. With this better understanding of existing literature, further research can be planned more effectively to fill in existing gaps. A scoping review protocol was developed and two databases, PubMed and Medline, were scanned for articles that met the inclusion criteria. In total, 636 article titles and abstracts were scanned and of these, 85 articles were read in full and 25 were deemed to meet the inclusion criteria.

Analysis of the extracted data revealed a potential influence of the HIV prevalence of the country being fled to and the HIV prevalence of the displaced group. If the HIV prevalence of a country or region was high, the HIV prevalence of displaced groups fleeing to these regions were higher. The same trend was seen with HIV low regions and a lower HIV prevalence in displaced groups. The scoping review also showed a lack of proper studies having been done to answer this particular question. There was also a lack of studies of certain regions of the world regarding HIV prevalence among displaced populations such as the Middle East and Central and Southern America. In order to answer this question more effectively, a longitudinal study of a fixed population should be done to determine how forced displacement affects HIV prevalence among those displaced.

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Background:

Over the course of the past two decades, the number of forcibly displaced people has risen dramatically. Between the years 1997 and 2016, the estimated number of displaced people rose from 33.9 million to 65.6 million, an almost two-fold increase. This was the highest ever recorded estimate of displaced people. In just five years, between 2011 and 2016, this number rose by 65%. Both internally displaced people, those who remain in their home country, and refugees, those displaced across borders, are included in this number (United Nations High Commission for Refugees).

This drastic increase in the number of displaced people is a result of the increase in violence, persecution, human rights violations, and conflict seen worldwide. For example, the civil wars in Syria and South Sudan resulted in 824,4000 and 621,300 new refugees in 2016, respectively. In the same year, nearly 20,000 people fled violence in the Central African Republic and 38,500 people fled genocide in Myanmar. Many of these refugees sought protection in nearby countries, with most Syrian refugees fleeing to neighboring Lebanon or Turkey, and many fleeing Myanmar left for Bangladesh, for example (United Nations High Commission for Refugees).

Developing nations hosted the vast majority of refugees in 2017 with 85% of refugees being granted protection in regions that were classified as developing by the United Nations Statistics Division classification. This influx of displaced people in these regions places a strain on these nations' ability to provide adequate resources for these newcomers when many of these countries were already struggling to provide adequate resources for their own citizens. This can result in a shortfall of necessary resources for refugees (United Nations High Commission for Refugees 2017).

A major area where services can fall short for refugees is that of health care in both treatment and preventative services which is the case for internally displaced people as well. (Samantha L Thomas). There is evidence that suggests that displacement can result in a doubling of baseline crude mortality rate compared to before displacement (Spiegel P). This increase in crude mortality can be a result of an increase in the prevalence of infectious diseases in these populations which could be attributed to a lack of health promotion or education within these populations as well as the physical conditions many of these people find themselves in due to displacement (Samantha L Thomas).

In principle 19 of the United Nations “Guiding Principles on Internal Displacement,” a set of 30 principles designed to protect from displacement, during displacement, and the return or resettlement of displaced people, it states: “special attention should also be given to the prevention of contagious and infectious diseases, including AIDS, among internally displaced persons” (United Nations). The suggestion by the United Nations to pay special attention to AIDS among displaced people ties back to the conditions many displaced people find themselves in, many of which may result in situations that could make HIV transmission easier. For example, it is estimated that nearly 80% of refugees and internally displaced people are women and children (Samantha L Thomas). It has been shown that upwards of 60% of these women have been victims of sexual assault and rape (Jamila Kerimova). Statistics like these make it easy to believe that displacement may increase the risk of HIV transmission in displaced populations, leading to an increase in HIV prevalence among them.

Conflict and displacement result in the breakdown of social and familial networks on top of a disruption in social and health services. Conflict zones also tend to be rife with malnutrition, sexual violence, and substance abuse (Catherine A. Hankins). A study of the

conflict between Tanzania and Uganda in the 1970s has shown a positive correlation between this conflict and HIV prevalence between the two countries. This has been attributed, at least partially, to the occupation by military forces and the high levels of commercial sex work in these countries at the time (Lucas).

While it has generally been assumed that conflict and displacement has a positive correlation with HIV prevalence, other studies show this is not always the case. For example, in 2002 in Sierra Leone, after decades of conflict, the HIV prevalence was at only 0.9%. This was not significantly higher than previous years in the conflict and was actually lower than in neighboring Guinea which had a prevalence of 2.1 to 3.7%. A similar phenomenon was seen in Southern Sudan where conflict between rebel groups and pro-government militia for several years did not result in an appreciable increase in HIV prevalence. Similar to what was seen in Sierra Leone, the prevalence in Sudan remained lower than in neighboring countries (Spiegel PB).

So, the question remains what effect, if any, does displacement have on the prevalence of HIV among displaced people. The objective of this scoping review is to understand what information currently exists regarding the effect that displacement has on rates of HIV in displaced people. The goal of the review is to steer researchers in a direction that can fill gaps in data and, ultimately, be used to provide better health outcomes for displaced people.

Methods:

Protocol

This scoping review protocol was developed following the PRISMA Extension for Scoping Reviews checklist (Andrea C. Tricco). The draft protocol was revised using feedback

from a medical librarian and an expert in refugee public health. The final version of the protocol is available upon request.

Eligibility Criteria

Eligibility criteria were determined to include studies that could best answer our research objective. As long as a study included a case series, regardless of methodology used, it met our eligibility criteria. Value was seen in all forms of research methodology to determine HIV prevalence in displaced populations as long as a study reported such data. Eligible studies must have studied displaced populations, whether the displacement was internal or external. With such large populations of both internally and externally displaced people, and a lack of robust literature studying displaced populations due to the difficulty of studying transient groups, it was deemed unnecessary to limit the scope of the review to just one population, either internally or externally displaced. However, both populations were important to review, nonetheless.

Studies were included regardless of the cause of displacement. Whether displacement was due to a man-made disaster such as conflict or war, or whether it was due to a natural disaster such as an earthquake or hurricane, displacement often results in similar conditions. Therefore, a decision to choose between man-made caused displacement or naturally caused displacement was determined to be void. The exposure in eligible studies was displacement. Since the objective was to determine how displacement affects the outcome, displacement was used as the exposure criteria.

Similarly, HIV prevalence in the displaced populations was used as the outcome criteria. This aligns with the objective to determine how the exposure, displacement, affects HIV prevalence. The setting for eligible studies was anywhere where people were being displaced from and displaced to. Since any number of factors could contribute to the way displacement

affects HIV prevalence, the regions from which displaced people were coming and to where they were going seemed like an important criteria for eligibility.

Studies not written in English were excluded from the review. The researcher's native tongue is English and therefore studies had to have been written in English to be eligible. Studies published between the year 1990 and 2019 were included in the review. The disease now known as AIDS was reported by doctors and scientists in 1981. It wasn't until 1984 that scientists determined the virus coined HIV was the causative agent of AIDS. The year 1990 was chosen as the lower limit to allow for the public health literature to have caught up to this, at the time, relatively new disease.

Search Strategy

A comprehensive literature search was completed in two online databases: PubMed and Medline. The search terms used in the PubMed search were: “(refugee[tw] or displaced person[tw] or displaced people [tw] or evacuee [tw]) and (HIV[tw] or AIDS[tw]).” The search terms used in the Medline search were: “((refugee or displaced person or displaced people or evacuee) and (HIV or AIDS)).mp.” The titles and abstracts of all the articles these searches produced were scanned for potential relevance to the scoping review objective. A database of potentially relevant articles was compiled using the software EndNote.

Extraction of Results

The initial search in PubMed resulted in 382 items found. After title and abstract scanning, 81 papers were selected for potential relevance. The Medline search produced 254 found items and after scanning the titles and abstracts of these items, 68 papers with potential relevance were found. After removing duplicates, 85 papers were left to read. These 85 papers were read in full and those that did not meet the eligibility criteria were removed. 25 papers met

all eligibility criteria and data were extracted from them. The data extracted from the articles were: article title, author, the journal the article was published in, year of publication, study method, country where the study took place, country of origin of those displaced, HIV prevalence, study size, and the year(s) the study took place.

Results:

Table 1. Studies where those displaced originated from Africa

| Author | Journal | Publication Year | Method | Country of Origin | HIV Prevalence | Study Size | Year Studied |
|--------------------|---|------------------|-------------------------------------|---------------------------------|----------------|------------|--------------|
| Chernet, et. al | International Journal of Public Health | 2017 | Cross-Sectional | Eritrea | 0 | 107 | 2016 |
| Kloning, et. al | BMC Public Health | 2018 | Retrospective Cross-sectional Study | Somalia | 0 | 154 | 2014-2016 |
| Lowther, et. al | International Journal of Environmental Research and Public Health | 2012 | Retrospective Cross-sectional Study | "African" | 0.90% | 19,292 | 2000-2007 |
| Mendelsohn, et. al | Conflict and Health | 2017 | Cross-sectional | Somalia, Sudan, Ethiopia, DRC | 1.20% | 82,409 | 2011 |
| O'Laughlin, et. al | HIV Medicine | 2017 | Prospective cohort study | DRC, Somalia, Burundi, Rwanda | 4% | 6,850 | 2013 |
| Patel, et. al | Global Public Health | 2014 | Cross-sectional study | Uganda | 12.80% | 384 | 2010 |
| Pottie, et. al | Canadian Family Physician | 2007 | Retrospective Cohort Study | Sub-Saharan and Northern Africa | 0.063 | 112 | 2004-2005 |
| Rey, et. al | AIDS | 1995 | Prospective Cohort Study | Rwanda | 4.90% | 143 | 1994 |
| Rutta, et. al | Global Public Health | 2008 | Prospective Cohort Study | Burundi | 3.20% | 9,346 | 2002-2004 |
| Tafari, et. al | BMC Infectious Diseases | 2010 | Cross-sectional study | Africa | 1.50% | 529 | 2008 |
| Coppola, et. al | Eurosurveillance | 2014 | Prospective Cohort Study | Sub-Saharan and Northern Africa | 1.20% | 882 | 2012-2013 |
| Holt, et. al | Disasters | 2003 | Prospective Cohort Study | Sudan, Rwanda | 4.70% | 211 | 1992 |
| Ngo, et. al | Public Health Research and Practice | 2018 | Retrospective Cohort Study | Sub-Saharan a | 0% | 236 | 2013-2014 |
| Kortas, et. al | Public Health | 2017 | Retrospective Cross-sectional Study | Africa | 0.40% | 1,994 | 2015 |

Region of Origin: Africa

Table 1 is a list of the studies where some, or all, of the populations studied originated from the continent of Africa. The prevalence data ranges widely, from 0% to 12.8% prevalence

of HIV. This table contains the largest list of studies, or at least the most studied displaced groups.

Table 2. Studies where those displaced originated from the Middle East

| Author | Journal | Publication Year | Method | Country of Origin | HIV Prevalence | Study Size | Year Studied |
|-----------------|---------------------------|------------------|-------------------------------------|-----------------------------|----------------|------------|--------------|
| Kloning, et. al | BMC Public Health | 2018 | Retrospective Cross-sectional Study | Syria, Afghanistan, Somalia | 0 | 154 | 2014-2016 |
| Pottie, et. al | Canadian Family Physician | 2007 | Retrospective Cohort Study | Middle East | 0.063% | 112 | 2004-2005 |
| Tohme, et. al | AIDS and Behavior | 2016 | Cross-sectional study | Palestine, Syria, Iraq | 2.70% | 150 | 2014-2015 |

Region of Origin: Middle East

Table 2 is a list of the studies where some, or all, of the populations studied originated from the Middle East. This reported prevalence data is relatively low and has a short range, ranging only from 0% to 2.7% HIV prevalence. It is interesting to note that though many of the displaced people in the world originate from the Middle East, only three studies were found to report on HIV prevalence in groups originating from there.

Table 3. Studies where those displaced originated from Asia

| Author | Journal | Publication Year | Method | Country of Origin | HIV Prevalence | Study Size | Year Studied |
|------------------|---------------------------------------|------------------|-------------------------------------|--|----------------|------------|--------------|
| McGready, et. al | F1000 Research | 2015 | Population cohort study | Karen and Burmese | 0.27% | 1474 | 2012 |
| Paxton, et. al | PLoS ONE | 2012 | Retrospective Cross-sectional study | Karen | 0 | 1136 | 2006 |
| Tafari, et. al | BMC Infectious Diseases | 2010 | Cross-sectional study | Asia | 1.50% | 529 | 2008 |
| Coppola, et. al | Eurosurveillance | 2014 | Prospective Cohort Study | Bangladesh, India, Pakistan, and Sri Lanka | 1.20% | 882 | 2012 |
| Ngo, et. al | Public Health Research and Practice | 2018 | Retrospective Cohort Study | Thailand-Myanmar border | 0 | 236 | 2013 |
| Ngo, et. al | Public Health Research and Practice | 2018 | Retrospective Cohort Study | Thailand-Myanmar border | 0 | 236 | 2013 |
| Plewes, et. al | International Journal of STD and AIDS | 2008 | Cross-sectional survey | Karen | 0.20% | 500 | 1997 |
| Plewes, et. al | International Journal of STD and AIDS | 2008 | Cross-sectional survey | Karen | 0.40% | 500 | 2005 |

Region of Origin: Asia

Table 3 is a list of studies where some, or all, of the populations studied originated from Asia. The reported HIV prevalence has a low range, from 0% to 1.50%, with three of the eight studies reporting a prevalence of 0, and another three reporting a prevalence below 1%. This would suggest that perhaps displaced people originating from Asia have a low prevalence of HIV.

Table 4. Studies where those displaced originated from Europe

| Author | Journal | Publication Year | Method | Country of Origin | HIV Prevalence | Study Size | Year Studied |
|-----------------|---------------------------|------------------|----------------------------|-------------------|----------------|------------|--------------|
| Pottie, et. al | Canadian Family Physician | 2007 | Retrospective Cohort Study | Eastern Europe | 0.063% | 112 | 2004-2005 |
| Coppola, et. al | Coppola, et. al | 2014 | Prospective Cohort Study | Eastern Europe | 1.20% | 882 | 2012-2013 |

Region of Origin: Eastern Europe

Table 4 is a list of studies where some, or all, of the populations studied originated from Eastern Europe. There is a limited number of studies that focus on displaced people coming from this region, resulting in only two studies that met the eligibility criteria. The prevalence data is low, ranging from 0.63% to 1.20%.

Table 5. Studies where those displaced sought refuge in Australia

| Author | Journal | Publication Year | Method | Destination Country | HIV Prevalence | Study Size | Year Studied |
|-------------|-------------------------------------|------------------|----------------------------|---------------------|----------------|------------|--------------|
| Ngo, et. al | Public Health Research and Practice | 2018 | Retrospective Cohort Study | Sydney, Australia | 0 | 236 | 2013-2014 |

Region Displaced to: Australia

Table 5 is a list of studies where displaced populations sought refuge in Australia. There is only one study that met the eligibility criteria where people were displaced to Australia. The HIV prevalence among this population was 0%.

Table 6. Studies where those displaced sought refuge in Africa.

| Author | Journal | Publication Year | Method | Destination Country | HIV Prevalence | Study Size | Year Studied |
|--------------------|----------------------|------------------|--------------------------|---|----------------|------------|--------------|
| Mendelsohn, et. al | Conflict and Health | 2017 | Cross-sectional | Kakuma refugee camp in northwestern Kenya | 1.20% | 82,409 | 2011 |
| O'Laughlin, et. al | HIV Medicine | 2017 | Prospective cohort study | Nakivale Refugee Settlement- Uganda | 4% | 6850 | 2013 |
| Patel, et. al | Global Public Health | 2014 | Cross-sectional study | Transit camps- Ongako and Awach- Uganda | 12.80% | 384 | 2010 |
| Rutta, et. al | Global Public Health | 2008 | Prospective Cohort Study | Greater Lukole refugee camp- Tanzania | 3.20% | 9346 | 2002-2004 |
| Holt, et. al | Disasters | 2003 | Prospective Cohort Study | Dimma refugee settlement, Ethiopia | 4.70% | 211 | 1992 |

Region Displaced to: Africa

Table 6 is a list of studies where displaced populations sought refuge in Africa. There is a wide range in HIV prevalence data, ranging from 1.20% to 12.80%. There seems to be relatively high prevalence of HIV in these groups, with only one study reporting a prevalence below 3%. This table suggests that while there are many displaced people who originate from Africa, many also seek refuge in Africa. This is an example of the fact that many displaced people flee to nearby countries.

Table 7. Studies where those displaced sought refuge in North America

| Author | Journal | Publication Year | Method | Destination Country | HIV Prevalence | Study Size | Year Studied |
|---------------------|---|------------------|--------------------------------------|-----------------------|--------------------------|-------------------------|--------------|
| Carrico, et. al | Journal of Infection Control | 2017 | Retrospective Cohort Study | USA- Kentucky | 0.70% | 6,114 | 2013-2015 |
| Chai, et. al | Clinical Infectious Diseases | 2013 | Retrospective Cohort Study | USA- Washington, D.C. | 13% asylees, 7% refugees | 61 asylees, 29 refugees | 2003-2007 |
| Lowther, et. al | International Journal of Environmental Research and Public Health | 2012 | Retrospective Cross-sectional Study | USA- Minnesota | 0.90% | 19,292 | 2000-2007 |
| Pottic, et. al | Canadian Family Physician | 2007 | Retrospective Cohort Study | Ottawa, ON Canada | 0.063% | 112 | 2004-2005 |
| Wanigaratne, et. al | BMJ Open | 2018 | Retrospective Population-Based Study | Canada | 0.39% | 34233 | 2002-2014 |

Region Displaced to: North America

Table 7 is a list of studies where displaced populations sought refuge in North America. The HIV prevalence ranges from 0.063% to 13%. However, while there is one study that reports

a high prevalence of HIV, four out of the five studies report an HIV prevalence below 1%.

Three of the five studies report a sample size of over 5,000.

Table 8. Studies where those displaced sought refuge in Europe

| Author | Journal | Publication Year | Method | Destination Country | HIV Prevalence | Study Size | Year Studied |
|--------------------|--|------------------|-------------------------------------|--|----------------|------------|--------------|
| Alberer, et. al | Infection | 2018 | Retrospective Cohort Study | “Bayernkaserne” reception center in Munich, Germany | 2.9% | 15,137 | 2014-2016 |
| Chernet, et.al | International Journal of Public Health | 2017 | Cross-Sectional | Basel-Stadt and Basel-Landschaft centers for asylum seekers- | 0 | 107 | 2016 |
| Clark, et. al | Journal of Public Health | 2007 | Systematic Review | United Kingdom | 3.82% | 288 | 2007 |
| Germinario, et. al | Epidemiologia & Prevenzione | 2015 | Cross-Sectional | Italy | 1.50% | 529 | 2008 |
| Kloning, et. al | BMC Public Health | 2018 | Retrospective Cross-sectional Study | Bavaria, Germany | 0 | 154 | 2014-2016 |
| Kortas, et. al | Public Health | 2017 | Retrospective Cross-sectional Study | Germany | 0.40% | 1994 | 2015 |
| Tafari, et. al | BMC Infectious Diseases | 2010 | Cross-sectional study | Asylum Seeking Center, Bari Palese, Italy | 1.50% | 529 | 2008 |
| Coppola, et. al | Eurosurveillance | 2014 | Prospective Cohort Study | Naples and Caserta, Italy | 1.20% | 882 | 2012-2013 |

Region Displaced to: Europe

Table 8 is a list of studies where displaced populations sought refuge in Europe. The HIV prevalence ranges from 0% to 3.82%, with six out of the eight studies reporting an HIV prevalence below 2%. Two of the eight studies reported a prevalence of 0%. Half of the studies were of populations that were displaced to Germany, one of the top ten acceptors of refugees by person in 2016 and 2017. Of the studies that met the eligibility criteria, Europe was the biggest destination for refugees.

Table 9. Studies where those displaced sought refuge in Asia

| Author | Journal | Publication Year | Method | Destination Country | HIV Prevalence | Study Size | Year Studied |
|------------------|---------------------------------------|------------------|-------------------------|---|----------------|------------|--------------|
| Khanani, et. al | Journal of Infectious Diseases | 2010 | Convenience Sampling | Pakistan | 5.93% | 556 | N/A |
| McGready, et. al | F1000 Research | 2015 | Population cohort study | Tak Province-Thailand/Myanmar border | 0.27% | 1474 | 2012-2013 |
| Plewes, et. al | International Journal of STD and AIDS | 2008 | Cross-sectional survey | Mae Lee refugee camp, Thai-Burmese border | 0.20% | 500 | 1997 |
| Plewes, et. al | International Journal of STD and AIDS | 2008 | Cross-sectional survey | Mae Lee refugee camp, Thai-Burmese border | 0.40% | 500 | 2005 |

Region Displaced to: Asia

Table 9 is a list of studies where displaced populations sought refuge in Asia. The HIV prevalence ranges from 0.20% to 5.93%, a relatively large range. However, four of the five studies report an HIV prevalence of less than 1%. Interestingly, this table reports two studies done in the same refugee camp but one in 1997 and one in 2005, showing a change from 0.20% prevalence to 0.40% prevalence in the 8 years.

Discussion:

The purpose of this scoping review was to determine what the existing literature tells us about what effect, if any, forced displacement has on the HIV prevalence of displaced groups. With the rise in the number of displaced people worldwide, it is important for public health professionals to understand the health needs of this population. 85 peer-reviewed articles were identified as potentially containing information to answer this question, and 25 of these met the eligibility criteria and had data extracted from them.

Study Geography

When data extraction was finished, the studies were organized in two ways. One, divided into where the displaced people were coming from, and two, where these people fled to. This organization led to some interesting findings. For starters, it is thought that perhaps people who flee to high HIV endemic areas are at a greater risk of acquiring HIV since they will have a greater probability of being exposed to the virus (Joseph U Becker). This hypothesis could potentially be supported by the findings of this scoping review.

When the prevalence data of the studies where displaced people were displaced to countries in Africa, where HIV prevalence is high in many regions, the prevalence data appeared to be the highest. Three of the five (60%) studies reported an HIV prevalence of 4% or more.

We know, however, that many people are displaced to nearby countries, so perhaps people were simply moving from one African country or region to another. However, when looking at the prevalence data in studies where people were coming from an African country, the reported prevalence data appeared to be lower. Nine of the fourteen studies reported an HIV prevalence below 4% for those coming from an African country.

This trend appears to hold true for studies where people were displaced to North America and Australia, as well. For those displaced to North America, which has a low HIV prevalence at 0.3%, four of the five studies reported an HIV prevalence below 1% (Avert). Australia has an HIV prevalence of 0.1%, and while there was only one study where displaced people were displaced to Australia, the reported HIV prevalence was 0% (UNAIDS). Based on the data extracted in this scoping review, a correlation may be present between the HIV prevalence in displaced populations and the HIV prevalence of the region to which they move to. While there is potential correlation here, we cannot, however, confidently predict causation.

Types of Studies

A major purpose of a scoping review is to understand what the existing literature says about a certain topic. This includes understanding what kind of studies have been done about a topic. Of the studies that met this scoping review's eligibility criteria, one was a convenience sample, eight were cross-sectional studies, one was a population cohort study, five were a prospective cohort study, five were a retrospective cohort study, four were a retrospective cross-sectional study, and one was a systematic review.

Understanding the methods used to determine HIV prevalence in the selected studies is important for understanding how these studies help to answer the goal of this systematic review. In order to properly understand how forced displacement can affect HIV prevalence in displaced

populations, a longitudinal study tracking the HIV prevalence of a fixed population over several time points would be needed. However, due to the transient and vulnerable nature of the study population, this type of study is difficult to do.

It appears that for these reasons, nine of the twenty-five studies were a retrospective study, with another eight being a cross-sectional study known for its ability to take a snapshot of prevalence at one moment in time. It is important to note here that the five prospective cohort studies did not longitudinally track the HIV prevalence of a defined population from beginning of displacement to relocation. Without such a study, it is difficult to draw too many conclusions based on the existing data in the literature.

Places and Populations Not Studied

While there were a number of studies found that looked at populations in various regions of the world, ranging from North America to Asia, this range did not include everyone. There is a glaring omission of any studies in Central or South America. This is surprising as there are many displaced people in this region. At the end of 2017 there was an estimated 294,000 refugees originating from this region (UNHCR).

There was also a surprisingly low number of studies that looked at HIV prevalence in displaced populations coming from the Middle East. Only three of the twenty-five studies looked at populations originating in the Middle East. In 2017, the two countries that produced the most refugees were Syria and Afghanistan, yet there were few studies looking at HIV prevalence in these populations (United Nations High Commission for Refugees 2017).

It is important to ask why, then, were these populations left out from these studies? Perhaps it is due to the relatively low HIV prevalence in these regions of the world. HIV prevalence in Central and South America was only 0.5% in 2017 (Avert Latin). In the Middle

East, the HIV prevalence was only 0.1% in 2013 (Population Reference Bureau). So, perhaps researchers did not feel compelled to study HIV prevalence in displaced populations in these regions because they did not see it as a particularly substantial public health problem.

Limitations

There are several limitations to this scoping review, many of which have been mentioned previously in this discussion. The lack of longitudinal study done on a specified population from the beginning of displacement to resettlement makes it difficult to draw any conclusions regarding the effect displacement has on HIV prevalence based on the existing literature. The lack of studies in certain regions of the world also contributes to the difficulty of making sweeping conclusions when entire cultures and geographies are excluded.

An important limitation to consider, also, is the nature of prevalence data. Comparisons can be made within study populations but not between study populations. This is due to underlying characteristics that may affect the overall rate of disease occurrence that cannot be controlled for when comparing two study populations. Therefore, statistics cannot be done on prevalence data of different populations like averages or regression. This makes drawing conclusions about causation and correlation difficult.

Conclusion:

This scoping review was designed to understand what the existing literature can tell us about how forced displacement affects HIV prevalence among displaced people. The role of a scoping review is to highlight what is both known and unknown. Twenty-five studies were identified that met the eligibility criteria determined in the study protocol, and data from these studies was extracted accordingly.

From the compiled data, a potential trend appeared that those who are resettled in a region with a high prevalence of HIV may have a greater HIV prevalence, and vice versa. It was found that while certain trends may appear in the existing literature, the proper study design has not been done yet to confidently make associations between forced displacement and HIV prevalence. It is important to note that this was not a meta-analysis, designed to make conclusions based on existing data, but a scoping review designed to understand what is known and unknown about a topic.

Implications for Research

Based on the findings of this review, more controlled and explicit research studies should be done on this topic. A longitudinal research study with a fixed population and multiple time points would be ideal to determine how displacement affects HIV prevalence among those displaced. While it is difficult to study transient and vulnerable populations, this may be the only way to have a definitive answer to this research question.

Studies that are more diverse in the geography that they study should be included, as well. It seems that more studies in displaced populations originating from the Middle East and Central America should be done. Without such studies, results from other studies will be less generalizable. So, in general, more research needs to be done on this topic to have a more concrete understanding of how forced displacement affects HIV prevalence among displaced populations.

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