

A new perspective on the rise of tuberculosis cases: Communal living

Şerif Kurtuluş (✉ drkurtulus1@gmail.com)

Harran Üniversitesi Tıp Fakültesi <https://orcid.org/0000-0002-1082-3700>

Remziye Can

Eskisehir Osmangazi Üniversitesi

Zafer Hasan Ali Sak

Harran Üniversitesi Tıp Fakültesi

Research

Keywords: Communal living, Contact, Refugee, Tuberculosis, War

Posted Date: February 10th, 2020

DOI: <https://doi.org/10.21203/rs.2.23004/v1>

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Version of Record: A version of this preprint was published at Central European Journal of Public Health on December 18th, 2020. See the published version at <https://doi.org/10.21101/cejph.a6016>.

Abstract

Background: Forced migration caused by wars causes health parameters to regress including tuberculosis. Wars are obstacles that stand in our way to eradicate tuberculosis and they are the reason why it has been such a threat to human life. To determine the relationship between living area and family type and the number of contacts among refugees and Turkish citizens who have been diagnosed with tuberculosis.

Method: This research has been conducted with 194 patients with tuberculosis who admitted to The Faculty of Medicine, Harran University between the years of 2012-2019. The number of contacted people has been provided with the patients' folders. Reaching their homes, the patients' family types and living areas have been recorded among the volunteer attenders.

Result: 98 (%50,5) percent of the members of the study group are refugees, the number of the contacts, among screened refugees, is 549 while the size of the living area is 7740m². 96 (%49,5) percent of the members of the study group are citizens of the Turkish Republic(TR), the number of the contacts, among screened TR citizens, is 487, while the size of the living space is 11370 m². 57 percent (%58,2) of the refugee families were found in communal living style while 47 (%49,0) percent of TR citizens were found living in a nuclear family system. It has been found that the statistical significance between the living area and the family type is caused by the difference between the nuclear family system and the communal living style. The average living space of TR citizens is meaningfully higher than the average living area of the refugees.

Conclusion: It has been found that tuberculosis infects more people in war-related life conditions and this is caused by people -who are not blood-related- living together, communal living in other words. This is new information for the literature. The exposed number being higher in refugees than TR citizens proves that the refugees living out of camp are present in communal living spaces more often. The obstacles to reaching health services for refugees living out of camp should be examined.

Introduction

Tuberculosis is an important public health problem that is still up to date both in our country and the world(1). Another public health problem is the wars. Hunger, poverty, homelessness, and refuge that are caused by wars, enhance diseases like tuberculosis and make them occur more severely (1, 2, 3, 4). The term "refugee" was first described by the United Nations General Assembly, in 1951, in Geneva (5). One of the infection diseases that are brought along with refuge is tuberculosis. Being contamination is an important factor that causes an increase in tuberculosis cases. Living in the same area is adequate for contamination (1).

Family structure has been remodeled through history in order to communal meet needs. The communal living style in which both blood-related and non-blood-related people live together was determined by the first social structure that was seen in hunters and gatherers later to be shaped with production as well.

Men who is hunted and women who is attended the gathering activity has shaped the communal structure that was much like a tribe (6, 7, 8, 9). A nuclear family is the smallest family unit which includes two generations -one being mother and father and the other one being unmarried children- and is characterized by the blood relation. The nuclear family provides a basis for the extended family (10, 11,12). Extended family is a type of family in which a leader of the family, his wife, married sons and daughters-in-law or one of his married sons and other single children or one married son, daughter-in-law and grandchildren living together (12).

Tuberculosis that is formed by Mycobacterium tuberculosis complex bacillus spreads through the air from infected patients to healthy persons (1, 3, 4, 13, 14). Most infective patients are pulmonary with cavitation and laryngeal tuberculosis. Smear-negative tuberculosis patient is less at risk of transmitting the disease. (1, 15). In order to keep tuberculosis under control, infectious cases should be identified and treated in the shortest possible time by screening the contacted people and getting them started on prophylactic treatment (1).

Infection of tuberculosis is also known as latent tuberculosis infection (LTBI). It is diagnosed by the Mantoux tuberculin skin test (TST) or Interferon-Gamma Release Assay (IGRA) (1). Preventive medication treatment is also named as chemoprophylaxis (1, 16. 17).

Contact examination is done to persons living in the same house with the TB patient. In addition, out-of-home individuals with whom patients share the same environment should be examined. If a tuberculosis patient is detected in a communal living area (prison, barrack, dormitory, etc.), the other people sharing the same room are also accepted as contacts. According to the bacteriologic outcome of the patient, contact examination is extended (1). Preventive treatment is given for an adequate amount of time, if needed. The development of the tuberculosis disease this way is prevented (1, 11). Preventive treatment applications are done well in our country. With the individuals who were started on preventive treatment for tuberculosis, prevention of the disease was acquired by 60% country-wide (18).

Preventive treatment has also been shown to be efficient in immunosuppressed patients with the latest studies (19, 20). The first choice for chemoprophylaxis is isoniazid for a period of six months. Nine month-use of the medication is suggested for immunosuppressed patients (1). It has been shown that the protective treatment could be efficient for up to 19 years (21).

It has been intended in our study, to analyze the relationship of the contact numbers with the family living style and the living area, in Turkish Republic citizens and refugees who were diagnosed with tuberculosis.

Material And Method

This study was conducted with 194 patients who applied to Harran University and have been diagnosed with tuberculosis between 2012-2019. Number of contact were taken from the patient' files. Volunteers' family life types and the size of the living areas in m² were recorded by visiting their homes. Nuclear family was defined as a family type which is consisted of a mother, a father, and children. The extended

family was defined as a family unit which is consisted of blood-related individuals except for their nuclear family. Communal life was defined as the style where non-blood related people live together. The number of contacted people in the living area of tuberculosis patients was recorded. The number of contact people in the working area was ignored. At IBM 23.0 programme, the frequency and the distribution were determined. The difference between family life type and contacted people was compared with One-Way-Anova, the distributions according to living area and the contact were compared with Spearman Correlation Analysis, the difference between nationality and living area was compared with the t-test.

The study was approved by the Harran Universty Ethical Committee (September 09, 2019; session: 10; decision no: 26)

Research Limitations: Our study consists of TB patients and their indoor contacts. Contacts in the workplace environment were ignored. TB patients who have admitted to Harran University between 2012-2019 were included in this study. This situation could be accepted as a limitation. However, due to having only one reference health center in this area, most of the tuberculosis patients have been examined with the exception of individuals who didn't prefer to participate in the study.

Findings

Table 1

The findings of the study group have been presented in Table 1. It has been found that 50,5 % of the study group were refugees (98) where 37,1% live in a nuclear family (72). Although it is not mentioned in the table, the count of contacted with TB in refugees is 549, the size of the total living area is 7740 m², and the average living area of a single refugee is 14,09 m². It is determined that the count of contacted with TB TC citizens is 487, the size of their living area is 11370 m² and the average living area of the count of contacted with TB TC citizen is 23,34.

Table 2

In our study, the lifestyle according to the nationality was analyzed. It is determined that 57 of the refugees have a communal living (58,2%), where 47 of TC citizens have a nuclear family lifestyle (%49,0). (Table 2)

Table 3

In our study it has been determined that nuclear family type people live in 89,02±56,36 m² of area, extended families live in 98,06±47,50 m² of area and the people who have a communal life live in 110,33±33,84 m² of area. In the analyzes of living area according to the family type, it is detected that the statistical significance among the groups is caused by the differences between the nuclear family group and the communal living group. (Table 3; p<0,001).

According to our study, it has been determined 4 the count of the contact that live in a nuclear family type and 5 the count of the contact that live in an extended family type and 6 the count of contact that live in a communal family type. it has been determined family type and the total count of the contact among the different groups statistical significance. This statistical significance is caused by the differences between the nuclear family and the extended family. (Table 3; $p < 0,001$).

Table 4

The average living area are compared according to nationality types, in Table 4. Accordingly; TC citizens have significantly higher (Avg: $118,43 \pm 35,10$) average living area than refugees ($t = -6,281$ $p < 0,000$).

Table 5

The correlation between the study group's living area and count of the contact is seen in Table 5. It has been determined that the living area and the total count of the contact have a statistically significant positive correlation ($r_s = 0,292$; $p < 0,0001$).

Discussion

In our study, it is seen TB infects more people. this situation arise from non-blood people living together (communal living style) and refugees brought along with wars. While TC citizens live mostly in a nuclear family type, refugees live in a communal type. It is seen that the average living area (m^2) per a contact refugee is reduced almost in half comparing to that of Turkish citizens.

In this study; it is determined that 98 of the participants (%50,5) were refugees, and 72 (%37,1) lived in a nuclear family. It was determined that 57 (%58,2) of the refugees have a communal life, where 47 (%49,0) of the TC citizens have a nuclear family type of living. The count of the contact scanning that was done among refugees resulted in being 549. It determined total living area of $7740 m^2$, average living area per person being $14,09 m^2$. With the TC citizens; the scanned the count of the contact was 487, the total living area was $11370 m^2$ and the average living area per person was found to be $23,34 m^2$. The count of contacts that was started on a protective treatment was 247 with refugees while being 138 in count with TC citizens. In this study, a statistical significance has been found between different living styles -nuclear family type and communal living-. According to the total count of contact people, a statistical significance has been also detected among nuclear family, extended family, and the communal living style. Statistically significance, according to nationality type, the mean of living area per person among Turkish citizens was much higher than that of refugees, in our study. It has been found that there is a statistically significant positive correlation between the living area and the total the count of the contact.

On one hand, there are accomplishments achieved in the war with TB and strategies of ending it (1, 3, 4, 13, 22) on the other hand, threats to social life due to man-made wars still exist (23). Wars are an obstacle for the eradication of TB which has been a threat to peoples' lives for thousands of years. (3, 4, 24, 25, 26).

Family members who have contact with the patient, have the risk of infecting people as well as their co-workers (27, 28). Collective living area like schools, dormitories, barracks, and prisons(1, 29); and communal family life are similar due to people without any blood relations living together. In tuberculosis guidelines, it has been shown that the refugee patients are in the high-risk group in terms of contacted examination and that procedures like diagnosis and treatment of tuberculosis are taking place (1, 13). The outcomes that we attained from our study support the guidelines in terms of the average living space per person and the living style of refugees being communal. Our study shows that the work environment of the refugees should be similarly taken into account with their home environment, as well. Balbay et al. in their study in which they looked into living conditions of tuberculosis patients, have determined that 80,6 % of patients share the same home with 1-4 other people and 68,9 percent of the patients live in properties that have 2 or 3 rooms (30). It has been detected that the refugees live with many more people in our study. Additionally, the people who share the living area with the refugees being non-blood related (communal living), is another new information for the literature. According to data of State Institute of Statistics of our country, the number of persons per room is 1,27 (31). For a serious amount of patients of our study, the number of people that are sharing the same house is between 5 and 6.

In some studies of the literature, although performing tuberculin skin test (TST) and chest radiography screenings -if needed- are suggested (32); the analysis of the cost-effectiveness of screening programs had concluded that current radiographic screening programs have a minimum effect and that they are not low-cost (33). In our study, patients with tuberculosis and their contacts have been scanned and proceeded with their treatment. Though, certainly, it is not a scanning procedure that could be done due to numbers that reach millions on the first arrival of refugees. Some studies suggest anonymous scanning systems regarding security concerns (34, 35). The latent tuberculosis infection scanning was done with tuberculin in our study. It is seen that in both TC citizens and refugees, the count of the contact examinations per patient has been increased (1). In a study done in tent camps for refugees, similar results have been established in terms of tuberculosis patients and contact persons between refugees and Turkish citizens (36). The vaccination degree is above 95 % in temporary shelters (37). As seen here, health service in refugee shelters could be considered sufficient. These services are even more limited for refugees living out of camp(38). As for this study, it has been seen that communal life certainly causes an increase in the number of contacted individuals but this rise is caused mostly by out of camp refugees rather than the ones living in tent cities. The refugee live in the tent camp generally and also they easily reach health services in spite of living in such a limited space like 16 m². the our study results supported higher the count of the contact among refugees who living the communal life area who live out of tent camp.

On the other hand, the living areas of communal living people have been found significantly larger comparing to both nuclear families and the people who live in extended families. This result shows the ones who are in a communal lifestyle live in much larger places.

It is assumed that there are 244 million international immigrants worldwide in 2015, one-third of them being reported (39). In 2014, it is thought that 19.5 million refugees existed worldwide. Syrian refugees

live mostly in Turkey (40). 3.6 million refugees are living safely in Turkey by the year 2019. In addition to that; undocumented immigrants and refugees are still a crucial problem and usually, there are serious obstacles in the way of getting needed health services (1, 13, 41). In our study, the undocumented tuberculosis patients and contact people have been reported to relevant departments for registration certificates, as well as being given the proper health examinations.

Conclusion

It has been found that tuberculosis infects more people in war-related life conditions and this is caused by people -who are not blood-related- living together, communal living in other words. This is new information for the literature. The exposed number being higher in refugees than TR citizens proves that the refugees living out of camp are present in communal living spaces more often. The obstacles to reaching health services for refugees living out of camp should be examined.

Declarations

Ethics approval and consent to participate: Not applicable

Consent for publication: Not applicable

Corresponding author: Correspondence to Şerif Kurtuluş

Availability of data and materials: The statistical code is available from the corresponding author. Under ethical approval, individual level data of this kind cannot be publicly available. Individual level data can be made available on reasonable request as long as it is in line with ethical approvals.

Competing interests: The authors declare that they have no competing interests

Funding: This study has received no financial support

Authors' contributions:

CONCEPTION: ŞK, RC, ZS

DESIGN: ŞK, RC, ZS

SUPERVISION: ŞK, RC, ZS

FUNDINGS: ŞK

MATERIALS: ŞK, ZS

DATA COLLECTION AND/OR PROCESSING: ŞK, RC

ANALYSIS AND/OR INTERPRETATION: ŞK, RC, ZS

LITERATURE REVIEW: ŞK, RC, ZS

WRITER: ŞK, RC, ZS

CRITICAL REVIEW: ŞK, RC, ZS

Acknowledgements: We thank Melike Buyukakincak -medical student- (melike_buyukakincak@hotmail.com) for the translation of the report.

Authors' information (optional):

Ethics declarations: The study was approved by the Harran Universty Ethical Committee (September 09, 2019; session: 10; decision no: 26)

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Tables

Table 1: Study group's characteristics

	N	%
Type of Nationality		
Refugee	98	50,5
Turkish Citizen	96	49,5
Type of Family		
Nuclear Family	72	37,1
Extended Family	62	32,0
Communal Living	60	30,9

Table 2: Life Style Distribution According To Type of Nationality

	Type of Nationality	N	%
	Refugee		
Life style	Nuclear family	25	25,5
	Extended family	16	16,3
	Communal Living	57	58,2
	Turkish Citizen		
Life style	Nuclear family	47	49,0
	Extended family	46	47,9
	Communal Living	3	3,1

Table 3: Life Style, Living Area, And The Count Of The Contacts Comparasion

		F/p	
Type of Family			
Nuclear family	89,02±56,36	3,297/0,039	C > N *
Extended family	98,06±47,50		
Communal Living	110,33±33,84		
Number of Total Contacts			
Nuclear family	4,97±1,66	6,134/0,003	C > N > E*
Extended family	5,11±1,95		
Communal Living	6,02±1,83		

*C: Communal living N: Nuclear Family E: Extended Family

Table 4: Average Living Area Comparison According to Type of Nationality

Living Area		N	Avg±SS	T	P
	Type of Nationality				
	Refugee	98	78,97±51,08	-6,281	0,000
	Turkish Citizen	96	118,43±35,10		

Table 5: Correlation Comprasion of Living Area and Total The Count Of The Contact

	Living Area
Total The Count Of The Contact	r ^s 0,292* p 0,000