

## Accessibility difficulties, and utilization of healthcare services among Jordanian Roma with chronic diseases.

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### Abstract

**Purpose:** To examine factors that affect healthcare utilization among Roma population with chronic diseases in Jordan. It also explores behavior-seeking health care among them, their characteristics and ability to access healthcare.

**Design/Methodology/Approach:** A cross-sectional descriptive survey performed, data collection done through in-person interviews using a structured questionnaire based on the Canadian Community Health Survey. Andersen's behavioral model was implemented to examine the influences of predisposing, enabling, need, and outcome factors on healthcare utilization using binary logistic regression, and predictors for accessibility difficulties using multiple linear regression,

**Findings:** 98.8% of the participants stated that they had difficulties in getting the care needed for diagnosis, treatment, or consultation, and 24.8% said that they didn't utilize healthcare services last year. The number of chronic diseases and satisfaction level with the healthcare services significantly increase utilization, on the other hand; age, health insurance, resident location, number of chronic diseases and their duration as well as satisfaction with the healthcare are significantly affect accessibility difficulties to healthcare services.

**Practical implications:** Provide mobile health units to reach remote settlements, that provide efficient healthcare services that met their health needs, and to be integrated with local health system.

**Societal implications:** Efforts to involve Roma children in education. Establishing vocational training programs ended with employments. Establish sufficient and reasonable housing, to be side by side to the other population.

**Originality/value:** This study is considered as the first to address the Jordanian Roma health status, utilization and accessibility to healthcare services, the end results help in suggesting different approaches to improve health and promote health equity.

**Keywords:** Roma, Health equity, Utilization, Access to health, Public health, Community nursing.

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### Introduction

Non-communicable Diseases (NCDs) in Jordan are considered number one cause of deaths and morbidity, accounting for 78% of all deaths in 2016 [1].

NCDs not only cause premature death, but also have significant negative effects on the quality of life of people affected and have significant adverse economic impacts on individuals, communities, and societies [1,2]. Fortunately, the majority of the deaths attributed to NCDs are preventable by properly addressing their risk factors [3], beside; there is clear evidence that, at lower costs, primary care will have greater health outcomes [2,3]. Thus, individuals with NCDs and those with risk factors for NCD need proactive, patient-centered, community-based and affordable long-term care.

When exploring strategies to improve the health for chronic disease populations, it's crucial to recognize the multiple factors that prevent or limit an individual from utilizing and accessing the healthcare they need, often known as gaps or barriers in care. Therefore, improving utilization of healthcare, identifying factors associated with unmet healthcare needs and eliminating modifiable barriers to treatment can improve health outcomes at the end.

Concerning the Jordanian Roma population with chronic diseases, their situation seems to be much worse. Although of the early recognition that they have received here in Jordan, unfortunately, most of the Roma population are still suffering social, economic, political and cultural discrimination, that may force them to be in continuous travels, and living in tents without: electricity, running water, health facilities, schools, and health insurance with poor sanitation, unsafe drinking water and poor hygiene. Moreover, some of them are begging a cross houses and at traffic lights, they are keep move from one place to another. Most of them are isolated all over Jordan, and undeniably many of them suffer from poverty, unemployment, and illiteracy, although few others have settled in modern houses and merged with the community which results in low levels of: literacy, income, life span, access to health care, education, employment and quality of life, although few others have settled in modern houses and merged with the community [4]. This may result in serious long-term negative physical health outcomes [5,6].

There are two significances of this study; the first one is that the yielded information regarding health service utilization and barriers related accessing healthcare can be used to enhance the benefits of the offered healthcare services provided to Roma in

Jordan. The second one is that this study explores to enhance the body of knowledge concerning healthcare seeking among them.

Although of the clear consensus from the Jordanian general population that Jordanian Roma's are exposed to a wide range of difficulties that may affect their health status, and despite of the fact that the Jordanian healthcare system is considered as modern and high quality with highly qualified healthcare workers including nurses, physicians, and others [7]. No research has systematically documented the health challenges currently faced by them, moreover, the factors that influence the Jordanian Roma decision to seek professional care for these challenges are relatively unknown, It is for these reasons that utilization patterns among this particular community should be of interest to both researchers and healthcare providers.

## Materials and Methods

### Study design

A cross-sectional descriptive survey design was used. The data was collected at one point in time with the aim to create a clear picture of the determinist of health: healthcare services utilization, accessibility difficulties and factors related to as indicators to health equity among Roma population with chronic diseases in Jordan.

### Study population

The target population of the study was Jordanian Roma's, with chronic diseases and have accessed any official public or private healthcare services in Jordan. The accessible population will be patients with chronic diseases which are defined broadly as conditions that last 1 year or more and require ongoing medical attention or limit activities of daily living or both (CDC), and living in Jordan [1]. The included sample of this study was any Roma patients; 12 years or older, diagnosed at least a year ago; who have accessed the outpatient clinic provided by either public or private hospitals the last year, with self-reported diagnosed with chronic diseases, on the other hand severe mental health problems such as Schizophrenia, Dementia or late stage Alzheimer's disease also will be excluded due to difficulty in obtaining information directly from them.

### Sample and Sampling Method

After obtaining all required ethical approval, a convenience sampling was used to recruit the sample through the following plan:

The Jordanian Roma's leader Mr. Abo Ali was reached to help in facilitating contacting the settlement's leaders and in assigning a facilitator and interpreter in the four district locations; Amman, Madaba, Irbid and Almafraq, in order to get their approval in entering their settlements, and interviewing their residents, the settlement's leaders helped in identifying Roma population who are meeting the inclusion criteria, of course the purpose of the study and method of data collection

was described to them, and they informed that participation in this study is voluntary, residents who agreed to participate and sign the consent form was interviewed separately by the researcher in his/her tent.

### Sample Size Calculation

For multiple linear regression, a priori power analysis was conducted using G\*power 3.1, to identify the required sample size for two tailed correlational bivariate test with small to medium effect size  $r=0.2$ , a statistical power 0.95 and significant alpha 0.05. The desired sample size was 319 [8].

For the binary logistic regression, a minimum sample of 10 observations per independent variable in the model is suggested by Hosmer, et al. but warn that 20 observations per variable should be pursued if possible ( $p=408$ ) [9]. Since there are sixteen independent variables, therefore  $20 \times 16 = 320$  participant is required.

Again, it seems that both regression methods agreed on a sample size of almost 320, for both methods 10% will be added to cover the non-respondents; therefore, the total sample size will be 350 participants.

### Instruments

A structured interview using a questionnaire was used. The questionnaire was comprised of six sections: 1) Demographical data, 2) General health and health behaviors, 3) Perceived health status, 4) Access to health care services, 5) Satisfaction with the overall health services and waiting time, and 6) Food security, the last six sections are parts of the Canadian Community Health Survey (CCHS).

### Canadian Community Health Survey (CCHS)

The CCHS is a cross-sectional survey related to health status, healthcare utilization, and health determinants, it has been administered by Statistics Canada and has been used widely in research on health care [10-16].

### Ethical Considerations

To meet the guidelines of the University of Jordan committee for research involving human subjects, the researcher submitted an application for approval to the Institutional Review Board (IRB) prior to the study. A consent form for participants was given to participants with the required information to make an informed decision on whether to participate in the research study, especially noting that no specific personal information was required, which reduces the amount of discomfort as a result of participating in the study. After the researcher received approval from the IRB, participants were informed that their identities and survey responses would be kept confidential by the researcher and electronic data would be entered into SPSS by the researcher. Participants were also informed that the study's results would be available to them upon request.

Participant confidentiality is considered all the time through data collection, data storage, and data analysis. To ensure confidentiality, the consent form was discussed to and since almost all of them are illiterate, and they cannot read nor write, they were not able to sign a consent form, therefore their signatures is substituted by agreeing to complete the survey instrument. Moreover, the participants was informed that only the researcher will view and analyze the data, and all data was kept confidential, in addition; in the consent form, it was ensured that the participation in this study is voluntary, and each participant had the right to withdraw from this study at any time without being punished or compromised from their usual care. The researcher informed the participants that anonymity will be maintained, and they were not be asked to express or write their identifying data (name, job number... etc.). The computerized data was saved on a password in a protected computer.

### Reliability Analysis

In this study, SPSS is 20. Output produced Cronbach's alpha for five constructs: Difficulty in access to healthcare (diagnosis or consultation)=0.72; (17 items), Difficulty in access to healthcare (Surgery)=0.97; (15 items), Food security=0.7; (7 items).

As revealed in Table 2, the construct "Difficulty in access to healthcare (diagnosis or consultation)" has the highest alpha value of Cronbach, as high as 0.72. The acceptable values of alpha in many reports are ranging from 0.70 to 0.95 [17,18]. However others argue that alpha of 0.6 to 0.7 indicates an acceptable level of reliability, and 0.8 or greater a very good level [19,20].

These items are presented in Table 1, which shows the comprehensive results of the study of reliability.

Variable deleted	Related construct	Number of items	Constructs' Reliability before deletion	Constructs' Reliability after deletion
None	Difficulty in access to healthcare (diagnosis or consultation)	17	0.72	0.72
In the past 12 months, did (any of your children) ever not eat for a whole day because there wasn't enough money for food?	Food security	8	0.66	70

**Table 1.** Survey Items Cronbach's Alpha Values Reliability Analysis (N=347).

In addition, after eliminating one items (variables) from the construct (Food security) (In the past 12 months, did (any of your children) ever not eat for a whole day because there

wasn't enough money for food?), the reliability of the test increases from 0.66-which is considered as reasonable to 0.70. It can be concluded that these constructions of the instrument have achieved a reasonable degree of reliability.

### Data Collection Procedure

In the main data collection, the appropriate sample size for this study was (319), and I have added (310 participant to cover the non-respondent to get (350) individuals, but only (347) members participated; out of the (350) surveys administered, (3) had missing data; therefore, the analysis was done with only (347) participants which did not negatively affect the results.

However; some of the problems were arose in the data collection process, mainly participants refusal to participate in the study, others include denying in disclosing their monthly income, while their body heights and weights were severely missing; which made me to drop those three important variable from the analysis.

Participants were informed that it would take (15-20) minutes to complete the survey, and consent forms were clarified to them before data collection. Moreover, in order to preserve the privacy of the participants, since almost all of them are illiterate, and they cannot read nor write, they were not able to sign a consent form, therefore their signatures is substituted by agreeing to complete the survey instrument.

The data collection was done by a master degree nursing student, and prior to data collection, I provided him a detailed clarification for every single question, and informed him that my phone is always available for any inquiry, beside I have personally introduced him to the (Alnawar) leader, that he was provided a translator/facilitator in order to travel with the data collection student, he informed that participation in this study is voluntary and each participant had the right to withdraw from this study at any time without being punished or compromised from their usual care. The researcher was informed the participants that anonymity will be maintained, and they were not be asked to express or write their identifying data (name, job number...etc.).

The data collector student maintains high level of confidentiality and privacy, in which each participant was interviewed separately in his or her tent. The survey instrument was provided in Arabic language, and was translated verbally to the participants when needed. After data collection was completed, the data was transferred to SPSS spreadsheets.

### Data Analysis

Data was collected, coded and screened for completeness before entering the computer program. The analysis was performed by using Statistical Package for Social Science (SPSS) version 20; alpha level of 0.05 was used for. The distribution of the variables was reviewed for skewed distribution.

Two types of analysis were used: descriptive statistics and inferential analysis. Descriptive statistics used to estimate frequencies, mean, median, mode, standard deviation and percentages according to the level of variables was introduced and compared with population characteristics.

Inferential analysis used to predict the accessibility difficulties to healthcare services among Roma patients with chronic diseases through multiple linear regression analysis. Binary logistic regression analysis was used to identify the predictors of healthcare services utilization among Roma patients with chronic diseases in Jordan. The results were summarized and presented in tables, and graphs.

### ***Dependent variable***

For determining the factors that affect the healthcare services utilization among Roma population with chronic diseases in Jordan a binary logistic regression technique was used.

To explore the healthcare utilization, these dissertation targets on patient reach modern health institutions in the last 12 months. Furthermore, the dependent variable measures whether or not the Roma have reached modern health institutions over the last 12 months.

The dependent variable is coded as a binary answer (yes/no) and was founded on the question: "Over the last 12 months, how often visits have you went to modern health institutions?" due to the complexity over setting estimates for the number of visits and their interpretation a binary variable has been developed, reflecting the use or went to modern health institutions in the past year.

For the determining characteristics that affect access to healthcare services among Roma population with chronic diseases in Jordan? A multiple linear regression technique was used.

The all over accessibility difficulty construct, which represent the total scores of the participants difficulty with accessing healthcare; this new variable is considered as the Dependent variable. The total barriers range from 0 to 64; the lower the scores mean less difficulties in accessing healthcare services, in which the Likert scale was (Never: 0, Rarely: 1, Sometimes: 2, Most of the times: 3, and Always: 4).

### ***Independent variables***

For the both research methods/techniques mentioned above; binary logistic regression and multiple linear regression; the selection of independent variables are based on the proposed conceptual Anderson framework.

**Predisposing factors:** The predisposing factors include five factors which are: 1) Age, 2) Gender, 3) Marital status, 4) Educational level, and 5) Job category. Age will be categorized into three ordinal categories: less than 40 years, from 40 to 59 years, and equal or more than 60 years, Gender will be coded as male and female, marital status is coded as single, married, and widowed/divorced. Education level was intended to be measured by education attainments and is regrouping to a six

level variable: illiterate, primary school, less than high school, high school graduate, community college, and bachelor degree and above, but after finishing the data collection procedure; I found out that almost 100% of the Roma population in Jordan are illiterate, therefore this variable was dropped out from the study.

**Enabling factors:** The enabling factors include seven factors which are: 1) Family size indicates the number of persons in family. 2) Resident home which four nominal categories: Al-Mafraq, Madaba, Irbid and Amman. 3) Perceive distance to the healthcare services which is categorized into four nominal categories: near, too near, far and too far. 4) Satisfaction of the waiting time to get healthcare services which was classified into five ordinal categories: strongly unsatisfied, unsatisfied, neutral, satisfied and strongly satisfied. 5) Poverty status is a variable created from the ratio of the family's income to the corresponding annual poverty line (813.7 JD per individual) [21]. Family income less than 100% of the poverty line was coded as "poor"; between 100% and 199% of the poverty line was coded as "near poor"; and 200% and more of the poverty lined were coded as "not poor." Unfortunately; family income variable was dropped out as mentioned earlier. 6) The health insurance data was coded in two ways. Firstly, a dichotomous variable was generated to code Romas' general health insurance coverage as insured or uninsured. Secondly, complete information on Romas' health insurance coverage is generated by different kinds of health insurance: private, public, and other types of insurance. 7) Food insecurity; which was the sum scores of the food insecurity construct that composed of eight questions; each question is categorized into three levels: never true, sometimes true, and often true, the levels were coded as 0, 1, and 2 retrospectively, therefore the minimum score is 0; which indicates low food insecurity, and the maximum is 16; which indicates high food insecurity.

**Need factors:** The need factors include self-reported health status; represented by three domains: 1) Self-perception of physical health, 2) Self-perception of mental health and 3) Self-perception of stress in life, the first two domains will be rated as ordinal categories: poor, fair, good, very good and excellent, and the last domain will be measured as ordinal categories: Not at all very stressful, Not very stressful, A bit stressful, and Quite a bit stressful.

**Other independent variables:** These include satisfaction with waiting time and healthcare services, also health behaviors that influence in population characteristics and they are composed of two important factors; personal health practices, and the use of health services, the personal health practices are behaviors at the personal level that effects on the health status; examples are: eating practices, exercise, cigarette smoking status (yes, no, and how many cigarette/day), Argilla smoking status (yes, no, and how many times/day), Alcohol drinking status (yes, no, and how many times/day), the use of health services is considered a behavior. This behavior is the formal use of health service and community resources and is inclusive of type of visit, type of facility and nature of visit.

## Results

### Pre-analysis data screening and cleaning

The data were screened and cleaned prior analysis, also the assumptions for multiple linear regression and binary logistic regression were tested, in order to guarantee proper analysis [22].

### Socio-demographic characteristics

The sample size was determined to be (350), (3) individuals where removed due to sever data missing, therefore, the analysis was done with only (347) participants which did not negatively affect the results.

As seen in Table 2, the proportions of male and females respondents' are the same, (53.3 %, n=185) and (46.7%, n=162) retrospectively. Participant ages range from 12 to 91 years, the average age is 47.8 years with a Standard Deviation (SD) of 13.2 days, most of the respondents' age ranging from 41 to 60 years (59.7%). The majority of participants were married (89.1%, n=303) and over half of the sample lived in Amman (53.9%, n=187), the average family size is 6.79, with SD 3.5, most of them there family size ranges from 5 to 8 (45.8%), furthermore as big as (99.7%) were Illiterate that they cannot read nor write, and (82%, n=265) of the working age from 18 to 65 years are not working.

Socio-demographics characteristics	n	%	P value**
Gender			
Male	185	53	0.22
Female	162	47	
Age category in years (Mean=47.8, SD=13.2)			
12-20	14	4	0
21-40	82	24	
41-60	207	60	
>60	44	13	
Marital status (Includes those aged 18 or over) n=340			
Single	18	5.3	0
Married	303	89	
Divorced	6	1.8	
Widowed	13	3.8	
Resident home			
Almafraq	64	18	0
Madaba	38	11	
Irbid	58	17	
Amman	187	54	
Family size (Mean=6.79, SD=3.5)			

< 5	84	24	0
5-8	159	46	
> 8	104	30	
Educational level			
Illiterate (Cannot read nor write)	346	100	0
Secondary school	1	0.3	
Employment status (Includes those aged 18 to 65) n=323			
Currently working	58	18	0
Not working	265	82	
** $\chi^2$			

**Table 2.** Socio-demographics characteristics of the sampled roma with chronic diseases in Jordan, N=347.

### Health behavior/general health characteristics

Table 3 show that more than three quarters of the sampled Roma population with chronic diseases in Jordan have either or both Diabetes Mellitus and Hypertension; with (38.4%, n=218) and (36.8%, n=209) retrospectively, surprisingly 10 participants out of 374 have chronic scabies, and almost half of the participants the duration of their chronic disease is less than five years (Mean=5.0, SD=4.57), moreover less than half of them they don't have health insurance (55%, n=191), remarkably almost one quarter are "Not regular follow up" for their chronic disease condition (24.8%).

Health behavior/General health (N=347)	n	%	P value**
Name of the chronic disease			
Diabetes mellitus	218	38	0
Hypertension	209	37	
Cerebrovascular disorder	42	7.4	
Neurological and special senses disorders	34	6	
Cardiac disorder	22	3.9	
Respiratory disorder	17	3	
Others	16	2.8	
Chronic scabies	10	1.8	
Do you smoke cigarette?			
No	222	64	0
<20 cig/day	90	26	
21-40 cig/day	26	7.5	
>40 cig/day	8	2.3	
Do you smoke shisha?			

No	337	97	0
Once a day	6	1.7	
2-6 times a week	3	0.9	
Do you drink alcohol			
No	343	99	0
Once a day	2	0.6	
Once a week	1	0.3	
Years in chronic disease (Mean=5.0, SD=4.57)			
<4	167	48	0
6-Apr	105	30	
>6	75	22	
Do you have health insurance?			
No	191	55	0.06
Yes	156	45	
Frequency of follow up (visit per year)			
More than 6	69	20	0
6-Apr	157	45	
3-Feb	32	9.2	
1	3	0.9	
Not regular follow up*	86	25	
*When the pain increases, When I get tired/sick, when money available,			
**χ <sup>2</sup>			

**Table 3.** Health behavior/general health characteristics (N=347).

In reference to smoking status and alcohol drinking; the prevalence of cigarette smokers are (36%), and as low as (3%) and (1%) are shisha smokers and regular alcohol drinkers retrospectively.

Table 4 demonstrates that the mean overall satisfaction with waiting time is 55.6% (SD=14.2%), with (Very unsatisfied/Unsatisfied) percentage is (31.7%, n=110), and (Very satisfied/satisfied) percentage is (12.4%, n=43).

While the mean of overall Satisfaction with the healthcare services received is 53.1% (SD=13.2%) with (Very unsatisfied/Unsatisfied) percentage is (18.1%, n=66), and (Very satisfied/satisfied) percentage is (16.4%, n=57).

Satisfaction level † (N=347)	n	%	P value**
Overall satisfaction with waiting time (Mean=55.6%, SD=14.2%)			0
Very unsatisfied	10	2.9	
Unsatisfied	100	28.8	
Neutral	194	55.9	
Satisfied	41	11.8	
Very satisfied	2	0.6	
Satisfaction with the healthcare services received (Mean=53.1%, SD=13.2%)			0
Very unsatisfied	11	3.2	
Unsatisfied	55	15.9	
Neutral	224	64.6	
Satisfied	56	16.1	
Very satisfied	1	0.3	
† Using a scale of 0 to 10, where 0 means "Very dissatisfied" and 10 means "Very satisfied", how satisfied were you with the healthcare services that you receive? Min = 0; Max = 10.			
**χ <sup>2</sup>			

**Table 4.** Satisfaction levels for the waiting time and healthcare services received (N=347).

**Predictors for healthcare services utilization**

As per Table 5, the individual predictors were examined further and out of (16) variables were identified according to Anderson model, only (3) were significant; which are: “Number of chronic diseases the participant has”; B=0.64, OR=1.89, p=0.03, indicating that a person who has more than one chronic disease is 1.89 times greater utilization of the healthcare services than the person who has only one. The second significant predictor is health insurance; B=1.31, OR=3.72, p=0.00, in which Roma with chronic disease who are “Health insured” are 3.63 greater times to utilize healthcare services than who are not. The third significant predictors is “Satisfaction with the healthcare services” using a scale of 0 to 10, where 0 means "Very dissatisfied" and 10 means "Very satisfied", people who scores (5-10) are greater times to utilize healthcare services than who scores (0-4) with B=0.77, OR=2.24, p=0.00. On the other hand; four predictors were almost significant which are: “family size more than 5 members” compared to less than 5, “Residing in Madaba in reference in Almafaraq”, “Perceive distance to the healthcare services” compared to (Near/too near) and “Duration of chronic diseases (years)” with (B=0.60, OR=1.81, p=0.06), (B=0.96, OR=2.61, p=0.07), (B=-0.58, OR=0.56, p=0.05) and (B=-0.50, OR=0.61, p=0.08) respectively.

Predictors	B	SE B	Wald	P-value	Odds Ratio	95% CI for Exp (B)	
					Exp (B)	Upper	Lower
Constant	-2.78	5.56	0.25	0.62	0.06		
Predisposing characteristics							
Age group (years)							
<40 (Reference)							
40-59	0.48	0.37	1.7	0.19	1.61	0.79	3.31
≥60	-0.14	0.48	0.08	0.78	0.87	0.34	2.24
Gender							
Male (Reference)							
Female	0.06	0.28	0.04	0.84	1.06	0.61	1.82
Marital status							
Single (Reference)							
Married	-0.47	0.6	0.6	0.44	0.63	0.19	2.03
Divorced/widowed	-1.02	0.81	1.61	0.2	0.36	0.07	1.75
Job category							
Not working (Reference)							
Currently working							
Enabling variables							
Health insurance							
No (Reference)							
Yes	1.31	0.26	25.3	0	3.72	2.23	6.2
Family size (n)							
<5 (reference)							
>5	0.6	0.32	3.44	0.06	1.81	0.97	3.4
Resident home							
Al-Mafraq (Reference)							
Madaba	0.96	0.53	3.27	0.07	2.61	0.92	7.4
Irbid	0.14	0.42	0.11	0.74	1.15	0.5	2.62
Amman	0.59	0.39	2.26	0.13	1.8	0.84	3.88
Perceive distance to the healthcare services							
Near/too near (Reference)							
Far/too far	-0.58	0.3	3.72	0.05	0.56	0.31	1.01
Satisfaction of the waiting time to get healthcare services							
Unsatisfied/strongly unsatisfied (Reference)							
Neutral	-0.11	0.28	0.15	0.7	0.9	0.51	1.56
Satisfied/strongly satisfied	0.19	0.43	0.2	0.65	1.21	0.52	2.81
Food insecurity score							
0-8 (reference)							
9-16	-0.42	0.32	1.69	0.19	0.66	0.35	1.23
Need factors							

Number of chronic diseases the participant has							
Only one							
Two or more	0.64	0.3	4.54	0.03	1.89	1.05	3.4
Self-perception of stress in life							
Not at all very stressful/Not very stressful/A bit stressful (Reference)							
Quite a bit stressful/Extremely stressful	0.41	0.3	1.84	0.18	1.51	0.83	2.74
Duration of chronic diseases (years)	-0.5	0.29	3.05	0.08	0.61	0.35	1.06
Self-perception of physical health							
Poor/Fair (Reference)							
Good/Very Good/Excellent	-0.17	0.39	0.18	0.67	0.85	0.4	1.81
Self-perception of mental health							
Poor/Fair (Reference)							
Good/Very Good/Excellent	-0.1	0.27	0.13	0.71	0.91	0.53	1.54
Outcome variable							
Satisfaction with the healthcare services ¥							
0-4 (reference)							
5-10	0.81	0.28	8.53	0	2.24	1.3	3.84
Note. df=21, -2 Log Likelihood=397.749,							
$\chi^2$ (21)=73.6842, p<0.000.							
***p < 0.001, **p<0.01, *p<0.05.							

£ Using a scale of 0 to 16, where 0 means "Very secure" and 16 means "Very insecure. Min=0; Max=16.

¥ Using a scale of 0 to 10, where 0 means "Very dissatisfied" and 10 means "Very satisfied", how satisfied were you with the healthcare services that you receive? Min=0; Max=10.

SE B: Unstandardized beta, this value is like to the standard deviation for a mean. The higher the number, the greater spread out away from the regression line, the higher spread out the numbers is, the less likely that significance will be found.

**Table 5.** Predictors of the roma with chronic diseases utilization of healthcare services using binary.

### Access to healthcare

As seen in Table 6, almost 98.8% (n=343) of the participants state that they have difficulties in getting the specialist care needed for a diagnosis or consultation, on the other hand as low as 8.1% (n=28) said that they have difficulties in getting the needed surgery, in reference where they follow up their chronic conditions; more than half of them 55.9% (n=194) reported that they follow in only private clinics, whereas 36% (n=125) in public clinics, regarding to the perceived distance to the healthcare facility; mode of transportation, and time to reach to the healthcare facility; the majority 73.5% (n=255) perceived distance to healthcare facility is Far or too far, and as high as 78.4% (n=272) said that they used Taxi for reaching the healthcare facility, and as low as 1.7% (n=6) are using self or Friend or relative vehicles. More than 41.8% (n = 145) took more than 30 minutes to reach their healthcare facility, and only 17% (n=59) took less than 15 minutes.

No	317	91	
Yes	28	8.1	
Where to follow up			0
Private	194	56	
University	3	0.9	
Public	125	36	
Public + Private	25	7.2	
Perceived distance to the healthcare facility			
Near/too near	92	27	
Far/too far	255	74	
Mode of transportation to the healthcare facility			0
Walk	54	16	
Taxi	272	78	
Bus	15	4.3	

**Barriers of accessing healthcare services**

As seen in Table 7, sixteen items were used to assess the participants accessibility difficulties, and the overall scores were ranged from 0 to 64, the lower the scores mean less difficulties in accessing healthcare services, the total mean of the difficulty score is 49.8% (SD=26.9%). The items were arranged decently from the highest mean difficulty to the lowest, the greatest barrier seems to be “Transportation problems, other than fees problems” with a mean of 95% (SD=17.4%), then the following items “Unable to afford transportation fees”, “Unable to afford fees or prescribed drugs”, “Unable to afford fees or prescribed drugs and “Language Problems” all have difficulty scores ranged from 84% to 87%, whereas the following items “Did not know where to go (i.e, information problems) or no one till you where to go”, “The appointment was canceled or postponed by physician or hospital”, “Unable to leave the house because of a health problem”, “Unable to access to health care services due to deterioration in health status” have difficulty scores ranged from 20% to 29%.

Self or Friend or relative vehicle	6	1.7	
Time to reach to the healthcare facility			0
Less than 15 minutes	59	17	
15-30 minutes	145	42	
31 minutes-1 hour	86	25	
More than 1 hour	57	16	

**Table 6.** Characteristics of the access to healthcare (N=347).

Accessibility difficulties	Never	Rarely	Sometimes	Most of	Always	Mean%
	%	%	%	%	%	(SD %)
	(n)	(n)	(n)	(n)	(n)	
1. Transportation problems, other than fees problems	4.60%	0%	0%	8.40%	87%	94.80%
	-16	0	0	-29	-302	-17.40%
2. Unable to afford transportation fees	15.00%	0%	0.60%	5.80%	78.70%	86.70%
	-52	0	-2	-20	-273	-28.6
3. Unable to afford fees or prescribed drugs	16.10%	0%	0.60%	7.80%	75.50%	85.40%
	-56	0	-2	-27	-262	-29.4
4. Language Problems	10.40%	0.60%	8.40%	18.40%	62.20%	84.30%
	-36	-2	-29	-64	-216	-25.4
5. Service not available in the area	30.30%	0.60%	4.90%	14.10%	50.10%	70.70%
	-105	-2	-17	-49	-174	-35.20%
6. Service not available at time required	32.00%	0.60%	8.60%	14.70%	44.10%	67.70%
	-111	-2	-30	-51	-153	-35.00%
7. Difficulty getting a referral	55.00%	1.40%	15.60%	17.90%	10.10%	45.10%
	-191	-5	-54	-62	-35	-30.20%
8. Difficulty getting an appointment	60.80%	3.20%	12.70%	16.40%	6.90%	40.60%
	-211	-11	-44	-57	-24	-21.00%
9. Waited too long between booking appointment and visit	73.80%	2.00%	7.20%	12.10%	4.90%	34.20%
	-256	-7	-25	-42	-17	-25.80%
10. Communication problem with physicians	39.50%	33.10%	19.90%	3.20%	4.30%	33.40%
	-137	-115	-69	-11	-15	-21.20%
11. Communication problem with nurses	43.80%	32%	17.60%	3.70%	2.90%	31.70%
	-152	-111	-61	-13	-10	-20.20%
12. Waited too long to see the specialist (i.e, in-office waiting)	82.40%	1.20%	4.90%	9.20%	2.30%	29.50%
	-286	-4	-17	-32	-8	-21.80%

13. Unable to access to health care services due to deterioration in health status	86.20%	0.30%	2.60%	3.70%	7.20%	29.20%
	-299	-1	-9	-13	-25	-28.60%
14. Unable to leave the house because of a health problem	95.10%	0.90%	0.90%	1.40%	1.70%	22.70%
	-330	-3	-3	-5	-6	-13.20%
15. The appointment was canceled or postponed by physician or hospital	98.30%	0.00%	1.20%	0.30%	0.30%	21%
	-341	0	-4	-1	-1	-6.80%
16. Did not know where to go (i.e, information problems) or no one till you where to go	99.40%	0%	0.30%	0.30%	0%	20.40%
	-345	0	-1	-1	0	-3.80%
Accessibility difficulties						49.84%
						-26.90%

**Table 7.** Accessibility difficulties to healthcare services (N=347).

### **Predictors for the accessibility difficulties to healthcare services**

To answer this research question, multiple liner regression developed using the “enter” mode the all over accessibility difficulty, which represent the total scores of the participants’ difficulty with accessing healthcare; this new variable is considered as the Dependent variable. The total barriers range from 0 to 64; the lower the scores mean less difficulties in accessing healthcare services, in which the Likert scale was (Never: 0, Rarely: 1, Sometimes: 2, Most of the times: 3, and Always: 4). The actual mean score of the all items in the construct was 25.1, with standard deviation of 7.6. The predicted independent variables used in the analyses were directed by elements in the Andersen model of healthcare utilization that was categorized as Predisposing, Enabling and Need Factors. To meet the assumption of the multiple liner regression dummy variables was created for the categorical variables that are more than two [23].

Standard multiple linear regression was performed; that is, all the predictor variables are entered into the analysis in one step to investigate whether predisposing factors, enabling characteristics and need variables could significantly predict

participants’ accessibility difficulties to healthcare services. Although several regression methods can be used, the forced entry (standard) approach was used in this study where all predictors selected on the basis of the literature review were forced to the regression model at the same time because there is no theoretical context suggesting the value of one predictor over the other.

The results of the regression (see Table 8) show that the model explained ( $R^2=45.2\%$ ) of the variance and that the model was a significant predictor of accessibility difficulties to healthcare services,  $F(20, 320)=12.151, p<0.000$ . The individual predictors were examined further and out of 21 variables were identified according to Anderson model, almost half of them (10) were significant; which are: (Age group compared to (less than 40 years); the age category: (40-59 years) ( $\beta=-0.134, p=0.04$ ) and the age category (more than 59 years) ( $\beta=-0.158, p=0.03$ ). Health insurance categories (No, Yes); ( $\beta=-0.351, p<0.000$ ). Resident home compared to Almafra; resident in Madaba ( $\beta=-0.242, p<0.000$ ), and in Amman ( $\beta=0.268, p<0.000$ ) [24]. Number of chronic disease (continuous); ( $\beta=0.121, p=0.02$ ). Duration of chronic diseases (Years); ( $\beta=-0.137, p<0.00$ ). Satisfaction with the healthcare services (Continuous: 0-10) ( $\beta=-0.096, p=0.04$ ). Self-perception of mental health (Poor/fair, Good/very good/excellent), ( $\beta=-0.210, p<0.00$ ). Food insecurity score (Continuous: 0-16) ( $\beta=0.991, p<0.00$ )).

Predictors	B	SEB	Beta	t	P. value	Zero-ordered
Constant	67.01	15.98		4.193	0	
Predisposing characteristics						
Age group (years)						
<40 (Reference)						
40-59	-2.19	1.032	-0.13	-2.12	0.035	0.052
≥ 60	-3.069	1.442	-0.16	-2.13	0.034	-0.018
Gender						
Male (Reference)						
Female	-0.18	0.8	-0.01	-0.23	0.822	-0.111

Marital status						
Single (Reference)						
Married	-2.014	1.75	-0.08	-1.15	0.251	-0.002
Divorced/widowed	-0.645	2.247	-0.02	-0.29	0.774	-0.009
Job category						
Not Working (Reference)						
Currently working	-1.059	1.049	-0.05	-1.01	0.313	-0.055
Enabling variables						
Health Insurance						
No (Reference)						
Yes	-5.742	0.733	-0.35	-7.83	0	-0.314
Family size (n)	0.609	0.569	0.062	1.071	0.285	-0.013
Resident home						
Al-Mafraq (Reference)						
Madaba	-6.201	1.489	-0.24	-4.16	0	-0.138
Irbid	0.835	1.228	0.038	0.68	0.497	0.283
Amman	-4.393	1.096	-0.27	-4.01	0	-0.255
Perceive distance to the healthcare services						
Near/too near (Reference)						
Far/too far	-1.295	0.833	-0.07	-1.56	0.121	0.054
Satisfaction of the waiting time to get healthcare services						
Unsatisfied/strongly unsatisfied (Reference)						
Neutral	0.226	0.797	0.014	0.284	0.777	-0.044
Satisfied/strongly satisfied	0.242	1.217	0.01	0.199	0.842	-0.064
Food insecurity score	0.991	0.163	0.299	6.094	0	0.42
Need factors						
Number of chronic diseases the participant has (n)	1.427	0.587	0.121	2.431	0.016	0.217
Self-perception of stress in life						
Not at all very stressful/Not very stressful/A bit stressful (Reference)						
Quite a bit stressful/Extremely stressful	0.246	0.895	0.012	0.275	0.784	0.099
Duration of chronic diseases (years)	-0.242	0.084	-0.14	-2.88	0.004	-0.19
Self-perception of physical health						
Poor/Fair (Reference)						
Good/Very Good/Excellent	-1.486	1.106	-0.06	-1.34	0.18	0.097
Self-perception of mental health						
Poor/Fair (Reference)						
Good/Very Good/Excellent	-3.513	0.762	-0.21	-4.61	0	-0.154
Outcome variable						
Satisfaction with the healthcare services ¥	-0.603	0.299	-0.1	-2.01	0.045	-0.312
The zero-order correlations are Pearson's correlations between the IV's and the DV.						
sr:semi partial correlation						
¥ Using a scale of 0 to 10, where 0 means "Very dissatisfied" and 10 means "Very satisfied", how satisfied were you with the healthcare services that you receive? Min=0; Max=10.						
SE B: Unstandardized beta, this value is like to the standard deviation for a mean. The higher the number, the greater spread out away from the regression line, the higher spread out the numbers is, the less likely that significance will be found.						

**Table 8. Predictors of the roma with chronic diseases accessibility difficulties to healthcare services using standard multiple regression.**

Of the ten previously significant mentioned predictors, eight are inversely associated; with the accessibility difficulties to healthcare services, this means that once these variables increase, accessibility difficulties decrease. Moreover; it seems that the “health insurance” ( $\beta=-0.35$ ,  $p<0.000$ ) and ( $B=-5.74$ ,  $p<0.000$ ) variable had the strongest negative predictive relationship to the dependent variable, this means that the health insured participants have 5.74 units accessibility difficulty lower than not insured, while the “Satisfaction with the healthcare services” ( $\beta=-0.01$ ,  $p=0.04$ ) and ( $\beta=-0.603$ ,  $p=0.04$ ) variables had the weakest negative predictive relationship to the dependent variable, this means that for every one unit increase in the satisfaction with healthcare services there is a decrease of 0.01 units accessibility difficulty.

Furthermore; the “food insecurity” variable accounted for the greatest Zero-ordered correlation, the results of the Pearson correlation indicated that there was a significant positive association between “food insecurity” and “accessibility difficulties to healthcare services”; ( $r(339)=0.420$ ;  $p<0.000$ ), followed by the association between “Health insurance” and “accessibility difficulties to healthcare services”; ( $r(339)=-0.31$ ;  $P<0.000$ ), which shows a significant negative association.

## Discussion

Based on the results, as high as 98.8% of the participants stated that they had difficulties in getting the specialist care needed for a diagnosis or consultation, on the other hand; as low as 24.8% said that they didn't utilize healthcare services last year. This result may be reflected on the participants poor health outcomes as increase morbidity and mortality, as well as worsen their health status, especially when they have poor living conditions, and social determinants of health, for example poor nutrition, high illiteracy rates, high levels of unemployment and social exclusion, that was documented among Roma in several European countries compared to the general population [25-29]. And evidence by greater prevalence of communicable and non-communicable diseases [30,31].

In reference to the difficulties to access the healthcare services, the greatest barrier seems to be “Transportation problems, other than fees problems”, then the following items “Unable to afford transportation fees”, “Unable to afford fees or prescribed drugs”, and “Unable to afford fees or prescribed drugs”, these types of barriers also consistent with a study among Slovakian Roma which reported that lack of money for medication and transportation to be the most common accessibility difficulties [32,33].

Andersen's model was used as the conceptual framework to identify the factors that determine utilization and accessibility

difficulties of healthcare services among Roma population with chronic diseases in Jordan. The two main factors that alter on utilization and accessibility to healthcare services directly as specified by this model are population characteristics and outcomes. Population characteristics composed of predisposing characteristics, enabling resources, and needs, while the outcomes is reflected by the participant's satisfaction with the healthcare services.

### *Predisposing factors*

According to the previously stated results, none of the socio-demographic characterizes of the participants alter their utilization of healthcare services, however several studies showed that it does; an example of the most commonly associated factors are: gender, age and marital status [34-41].

However, the only significant socio-demographic attribute in this study that affect accessibility difficulties among Jordanian Romas is their age, in which both age categories: (40-59 years) and (more than 59 years) surprisingly shows a significant minimal less difficulty barriers to health care services compared to (less than 40 years); with ( $\beta=-0.134$ ) and ( $\beta=-0.158$ ) retrospectively. Although the previous studies found that non-elderly accessibility difficulties are mainly due to lack of health insurance, this result is not [42-46]. This result indicates that further studies are required to better understand this variation.

### *Enabling variables*

Regarding enabling variables, and its role in utilization and accessibility status among Jordanian Romas to healthcare services, the results showed that participants who are health insured are significant more likely to utilize healthcare services, and had significant less difficulty in accessing healthcare services, this result is consistent with a lot of studies that found significant association between utilization of healthcare services and having health insurance [34,47].

Surprisingly that (55%) of the participants doesn't have health insurance, (51.9%) and (58.6%) for males and females retrospectively, as for the general Jordanian population; in 2015, the percentage of uninsured are (31.9%) [48]. Elsewhere in Europe the percentage of Roma people without insurance varied greatly between countries, ranging from (2.3%) in Slovakia to (67.7%) in Albania [49].

Based on the above health insurance status, we conclude that in the all previously mentioned countries, there is a difference in the health insurance status between Roma and Non-Roma for the benefit of the latter group, which is strongly suggests inequity, and a lot of things need needs to be done to find out causes and solutions to this problem, that it is considered as a barrier to access and utilize healthcare services which result in unmet healthcare needs.

Romas who are living in Amman and in Madaba showed significant less accessibility difficulties to healthcare services compared to living in Almafraq, also living in these areas are showed almost significance utilization of healthcare services

compared to participants who are living in Almafraq, this might indicate that Romas living in Almafaraq are facing the worse accessibility and utilization of healthcare services in Jordan. On the other hand there is a positive significant correlation between Food insecurity score scores and accessibility difficulties to healthcare services; this finding is consistent with other studies which amplify the effect of the disease and result in bad health outcomes both physical and mental consequences [50-55].

### Needs factors

The results showed that the more participants “Number of chronic diseases” they have the more likely to utilize healthcare services, and had significant more difficulty in accessing healthcare services, this result is compatible with other studies; however duration of chronic diseases and Self-perception of mental health is only the predictors for accessibility difficulties[56-59].

**Outcome variable:** Finally, regarding the outcome variables the results implied that the better participants “Satisfaction with the healthcare services” the more likely to utilize healthcare services, and had significant less difficulty in accessing healthcare services, this result is compatible with other studies [60-66].

### Conclusion

The result of this study showed the presence of differences among Roma in accessing and utilizing healthcare services, these differences are clearly indicating inequitable health status, this will result in bad health outcomes, therefore the decision makers are needed to be notified to excretes more efforts to improve accessibility and utilization of healthcare services for this community, also to take measures to improve their social status and integrate them in the general community.

### Limitations

There are a few limitations in this study. The first is one is that it was designed in a cross-sectional technique, This study approach was a self-reported household sample, which may have resulted in recall bias and impacted the survey results' accuracy. Moreover two important variables were dropped from the analysis which are the income and body mass index which may provide much clear image about the healthcare services utilization and accessibility difficulties.

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