

**College of Health Sciences  
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**RESEARCH ON LOST TO FOLLOW-UP OF PATIENTS AT THE  
OUTPATIENT CLINIC OF NORK MARASH MEDICAL  
CENTER**

Master of Public Health Thesis Project Utilizing Professional Publication  
Framework

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## TABLE OF CONTENTS

Acknowledgments.....	ii
Executive Summary.....	iii
INTRODUCTION .....	1
1.1 Background information .....	1
1.2 Aim/Research questions/ Objectives .....	4
2. METHODS .....	5
2.1. Study design.....	5
2.2. Study protocol.....	6
2.3. Study instruments.....	8
2.4. Study population .....	9
3. ETHICAL CONSIDERATIONS.....	10
4. STUDY LIMITATIONS .....	10
5. DATA ANALYSIS.....	11
6. RESULTS .....	11
6.1. General characteristics .....	11
6.2. Patient satisfaction .....	14
6.3. Predictors for lost to follow-up .....	14
6.4. Reasons for lost to follow-up from patients' perspective .....	16
6.5. Other results .....	17
7. DISCUSSION .....	18
8. CONCLUSION AND RECCOMENDATIONS .....	20
REFERENCES .....	23
Appendix 1.Patient information form .....	25
Appendix 2.Questionnaire # 1. Patients remaining in follow-up.....	26
Appendix 3. Questionnaire # 2. Patients lost to follow-up .....	30
Appendix 4. Stata output for sample size calculation.....	34

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## **Executive Summary**

**Purpose.** The proposed project aimed to examine the factors predisposing to lost to follow-up and explore the reasons for drop out at the Yerevan Nork Marash Medical Center (NMMC).

**Background information.** A follow-up program is an integral aspect of high-quality care in any health care facility. One of the steps for establishing a comprehensive system for patient follow-up is the investigation of causes/determinants contributing to lost to follow-up. Different researches revealed, that low perceived severity of illness, coupled with the costs and inconvenience of care, patient satisfaction from provided services, the patient-provider communication skills have influenced the follow-up status of patients.

NMMC provides a wide range of cardiology and cardiovascular surgery services to both adult and pediatric populations of Armenia. Since March 2000 a collaborative project was underway between American University of Armenia and NMMC with the aim is to develop and implement quality improvement program in NMMC. By the physicians of the hospital lost to follow-up was identified as one of the weak points in the NMMC activities. The presented study was carried out at NMMC Adult Cardiology and Arrhythmology Departments in order to examine the predictors for lost to follow-up and discover reasons for them.

**Methods.** The study design was an analytical, cross-sectional group comparison (two groups). The first group was composed of patients remaining in the follow-up and the second group composed of lost to follow-up patients. The needed information on all patients admitted to the Outpatient clinic's Adult Cardiology Department or Arrhythmology Department during data collection period was collected and entered into the developed Patient Information Form. Patients who were present on their follow-up visit, were contacted by telephone the next day of the visit and were administered the survey questionnaire designed for them (Questionnaire # 1). The criterion for considering a patient as lost to follow-up was set as the absence of a visit after a week of the recommended date for follow-up. Patients who didn't come to follow-up were contacted after a week and administered another questionnaire (Questionnaire # 2).

**Sample.** The sample size was calculated considering the prevalence of satisfaction as 90% in the group of patients remaining in the follow-up and it was hypothesized to detect at least 25% lower satisfaction in the group of patients lost to follow-up. It was considered also the fact that the lost patients composed 20 % in the target population. Overall, 112 patients in the group of patients remaining in the follow-up and 30 patients lost to follow-up were interviewed.

**Ethical considerations.** The research proposal was reviewed and approved by the Institutional Review Board (IRB) within the College of Health Science at the AUA. Before the interview an oral consent was provided to patients.

**Results.** Two groups were similar with respect to distributions across age, gender and departments. There was statistically significant association between the outcome (remain in follow-up or lost to follow-up) and type of secondary visit (secondary outpatient versus secondary post-surgical). There was no statistically significant difference between the groups' current health status distribution as '*fair/poor*' versus '*good/very good/excellent*' (p value was 0.08). In the group of patients remaining in the follow-up 94,5% were satisfied with services,

while in the group of patients lost to follow-up 89,7% were satisfied. Only type of visit was identified as a predictor of the outcome. The odds of outcome (remain in follow-up versus lost to follow-up) was by 2.5 times higher in the group of patients with secondary post-surgical visit vs. patients with secondary outpatient visit (p value was 0.03).

The reasons for not coming to follow-up were explored among the 30 patients lost to follow-up. As the results showed, almost half of the lost patients (n=14) planned to come to follow-up later. Almost one third of the lost patients pointed as a reason that they ‘feel good and have no need to come to follow-up’. The time for recommended follow-up was inconvenient for 33.3% of patients.

**Conclusions/Recommendations.** The study showed that patient satisfaction was enough high at the identified departments. Patients with secondary outpatient visits were more likely to drop out from follow-up than patients with secondary post-surgical visits. The examination of reasons for lost to follow-up from patients’ perspective revealed the areas where the changes are needed. Based on the obtained results it could be recommended:

- To develop standardized written follow-up protocols for post-surgical and ambulatory patients with different conditions.
- It was recommended to develop an electronic database for patients’ daily flow and follow-up in the Adult Cardiology Department.
- The results of the study underlined the importance of the establishment of a follow-up center in the hospital.
- To conduct larger scale survey to measure the exact drop out rate and examine other predictors for lost to follow-up (patients’ education, income, traveling time and/or distance, functional assessment for cardiovascular system).

## **INTRODUCTION**

### **1.1 Background information**

Quality is an attribute that medical care can have in varying degrees (1). By the 1980s an important term for addressing the quality of health care was *quality assurance*, which was replaced by the descriptive phrase *continuous quality improvement* in the early 1990 (2,3). *Continuous quality improvement* promotes a measurement and assessment cycle that allows for continuous and ongoing study and improvement of patient care processes (2). In this scope, performance improvement is one of the results of quality improvement (2).

Performance improvement can be reached through performance assessment/measurement. The goal of performance measurement in health care is “to accurately understand the cause(s) of current performance so better results can be achieved through focused improvement actions” (2). According to the Joint Commission there are nine dimensions of performance measurement, one of which is the *continuity*-“the degree to which the patient’s care is coordinated among disciplines, among organizations, and over time” (2) One of the aspects of continuity of care is the patients’ follow-up. A follow-up program is an integral aspect of high-quality care in any health care facility (4). This enables health care providers to have full information about both short and long-term effects/results of their prescribed treatment and to make relevant decisions. One of the steps for establishing a comprehensive system for patient follow-up is the investigation of causes/determinants contributing to lost to follow-up. In reality, the underlying characteristics that predispose a patient to become lost to follow up are difficult to identify and control (5). It is stated that the longer follow-up programs last, the greater the loss to follow-up, which may undermine the completion of health care goals (6). Moreover, in different studies directed to the examination of the causes of losses to follow-up several predictors were

identified (7-9). In a study of outpatients with essential hypertension from a medical clinic a subset of dropouts was interviewed (8). Patients who were less severely ill by several indicators were the most likely to drop out. It was revealed that the low perceived severity of illness, coupled with the costs and inconvenience of care and the lack of physician enthusiasm for the treatment of mild hypertension, leads to non-compliance with follow-up (8). In another study with the aim to identify and elucidate the reasons of lost to follow-up, 91% of the participants mentioned “that they were asymptomatic” as the main reason why they had not returned (9). Decisions about whether or not to comply often cannot be predicted by therapists or researchers, while they are rational from the patient’s perspective (10). Several studies measured the prevalence of compliance with recommendations, including follow-up, and identified the reasons for non-compliance for particular diseases (11-14). In two studies dealing with patients after percutaneous breast core biopsy, surgical or non-surgical follow-up was recommended to patients (15-16). The assessment of recommended follow-up revealed that the compliance was higher for patients receiving surgical recommendation than for patients receiving imaging surveillance recommendation (15-16). The role of patient satisfaction from provided services, the patient-provider communication skills, the understanding of the purpose, the time and place of follow-up by patients also have influenced the follow-up status of patients (17-18).

Health professionals need to understand reasons for non-compliance if they are to provide supportive care. The underlying reasons/causes for non-compliance should be studied for a particular setting (disease, population, and health care facility) to make appropriate recommendations and conclusions.

The proposed project aimed to examine the factors predisposing to lost to follow-up and explore the reasons for drop out at the Yerevan Nork Marash Medical Center (NMMC). NMMC provides a wide range of cardiology and cardiovascular surgery services to both adult and

pediatric populations (19). The hospital consists of an Outpatient Clinic with three Departments - Adult Cardiology, Pediatric Cardiology and Arrhythmology, Inpatient Clinic Surgical Department and Intensive Care Unit (ICU). The majority of patients are treated in outpatient settings alone, as their condition does not need hospitalization. In other cases, patients are seen in Inpatient Clinic or the Emergency Room prior to admission to the Outpatient Clinic, and/or follow-up (19).

Since March 2000, a collaborative project is underway between the Center for Health Services Research and Development (CHSR) at the American University of Armenia (AUA) and the Nork Marash Medical Center (NMMC). The aim of the joint project is to develop and implement quality improvement program in NMMC (20). In the scope of this project, NMMC has undergone internal evaluation to assess the extent of its compliance with Joint Commission International Accreditation (JCIA) standards. The evaluation revealed that NMMC has the ability to generate all the clinical, financial, and utilization data needed to meet its managerial and other needs (20).

In June 2001, under the framework of the AUA/NMMC project (ANP), a feasibility study for the establishment of a patient follow-up center at NMMC was performed (4). As a weak point of NMMC functioning, the personnel previously had identified the lack of standardized protocols for the follow-up of patients who undergo cardiac surgery at the hospital (4). Although the study presented a feasibility and cost analysis of the establishment of a patient follow-up center (PFUC) at the NMMC, the center was not established because of the lack of finances. Furthermore, in July 2001 under the same framework of ANP a report on the Data Collection and Analysis in NMMC was declared. The report underlined that "although the system is designed to capture the occurrence of the events of interest indefinitely after the

patient's discharge, there is a high rate of lost to follow-up, which makes it impossible to have a complete account of events that occur following discharge" (19). According to an expert opinion, the drop out rate at the Outpatient Clinic was about 15-20 % and there were some factors predisposing to the lost to follow-up such as patients' health status and the cost of services. Also, patients themselves provided some reasons for drop out. Both the predisposing factors and the reasons for lost to follow-up need to be studied to make clear recommendations for improvement of the continuity of care at NMMC.

In 2003 a study was performed by ANP staff among patients treated in the Inpatient Clinic. One of the purposes of the study was to define the satisfaction of patients (mainly surgical) with doctors, nursing care and different services provided in Inpatient Clinic and Outpatient Clinic. The study revealed that about 96% of patients were satisfied by nursing and 92% by doctor care at Outpatient Clinic (unpublished data).

## **1.2 Aim/Research questions/ Objectives**

**Aim of the study.** The present project aimed to examine the factors predisposing to drop outs from follow-up and to explore the reasons for these losses at the Outpatient Clinic of NMMC. The study was performed under the framework of the ANP collaborative project.

**Research questions.** The research questions of the study were:

1. What are the characteristics of patients who return to follow-up compared with patients who do not return for follow-up (drop-out patients)?
2. What is the patient satisfaction in the Outpatient Clinic?
3. What are the predictors for the loss to follow up?
4. What are the major reasons for lost to follow-up from the patients' perspective?

**Study objectives.** The main objectives of the study were:

1. Compare the characteristics of patients, who return for follow-up with those who drop out (age, gender, type of visit, etc.)
2. Provide data on patient satisfaction with the services provided at the Outpatient Clinic
3. Reveal the causes predisposing to drop out from follow-up
4. Explore the reasons of lost to follow-up among drop out patients
5. Reveal the obstacles and make recommendations to improve the follow-up service and, thus, the quality of health care and patient health outcomes at NMMC.

For the study, it was hypothesized, that in the Outpatient Clinic, the patient satisfaction would be 90% if measured for both surgical and non-surgical patients. It was also hypothesized, that there would be by 25% more satisfied patients in the group of patients who kept their follow-up visits, than in patients who were lost to follow-up ( $H_0$ ).

## **2. METHODS**

### **2.1. Study design**

The study design was an analytical, cross-sectional group comparison (two groups). The first group was composed of patients remaining in the follow-up and the second group composed of lost to follow-up patients. The study provided descriptive data regarding patients' age, gender, type of visit and current health status. These data were compared between the two groups of patients. The analytical part of the study analysed the possible factors predisposing to the lost to follow-up and explored the reasons for them among lost patients.

The independent variables represented characteristics of patients who visit the Outpatient Clinic's Adult Cardiology or Arrhythmology Departments, such as their age, gender, current

health status, the type of visit (post-surgical or ambulatory) and patient satisfaction. The dependent variable was the outcome of the visit in terms of the recommended visit for follow-up, whether it happened or did not happen.

## **2.2. Study protocol**

There are journals in the Outpatient Clinic's Adult Cardiology Department where the nurses write down the follow-up day and time for every patient who needs follow-up, even if the follow-up day would be several months later. When a patient comes to follow-up, nurses mark the visit in this journal. The journals also have the information whether the visit was supposed to be primary (the first visit of the patient) or secondary (a follow-up visit). In the Outpatient Clinic's Arrhythmology Department the above mentioned information is kept in the separate electronic database.

The needed information on all patients admitted to the Outpatient clinic's Adult Cardiology Department or Arrhythmology Department was collected and entered into the developed Patient Information Form (Appendix 1). Patients' telephone numbers were taken from electronic databases of the Adult Cardiology and Arrhythmology Departments. Every day, the information of the previous day's visits was taken from the journals. Patients who were present on their follow-up visit, were contacted by telephone the next day of the visit and were administered the survey questionnaire designed for them (Questionnaire # 1, Appendix 2). The criterion for considering a patient as lost to follow-up was set as the absence of a visit after a week of the recommended date for follow-up. Patients who didn't come to follow-up were contacted after a week and administered a different questionnaire specifically developed for them (Questionnaire # 2, Appendix 3). Patients who made unscheduled visit during these seven days

were not considered as lost to follow-up and were not enrolled in the study. On the other hand, if during the phone conversation the lost patient mentioned that he/she planned to come to follow-up later, after one week of recommended date of follow-up, he/she was enrolled in the study.

These patients were considered as lost to follow-up. This reason for lost to follow-up was included in the Questionnaire #2 as one of options in the question related to the reasons of not coming to follow-up visit. There were patients who made more than one visit during the data collection period. Each patient participated in the survey only once.

To survey patients remaining in the follow-up, all patients who met the eligibility criteria and performed the follow-up visit in the specified department from June 13, 2003 to July 5, 2003 were contacted. Overall, 167 telephone numbers were used to survey 112 patients. Only 2 persons refused to participate. It was impossible to contact the patients using the remaining 53 telephone numbers (there were no such persons under these numbers or the numbers didn't exist).

Data on lost patients were collected both retrospectively and prospectively. For this purpose the contacts of lost patients from June 2, 2003 to July 17, 2003 were used. Overall, 56 phone numbers were used to survey 30 patients. Only 4 patients refused to participate and it was impossible to contact the patients using 22 phone numbers (there were no such persons under these numbers or the numbers didn't exist).

Mostly, in order to interview the patients, more than one phone call was made. Moreover, many patients from the lost to follow-up group were contacted more than after seven days from the recommended follow-up day (if the patient was out of town). The time when the majority of interviews were made was after 18:00 p.m.

### **2.3. Study instruments**

All study instruments were developed by the student investigator and were revised by experts and ANP project manager. A Patient Information Form was used to identify and contact study participants. This form included the name of the patient, his/her telephone number, the date of recommended follow-up, the age and gender, the information if the patient came to follow-up visit or not and, finally the result of the interview. Two different questionnaires (Questionnaire # 1 & 2) were developed for patients remaining in the follow-up and patients lost to follow-up. The questionnaires were administered by telephone interview. The interviews lasted about 5 minutes for patients remaining in the follow-up (Questionnaire #1) and 7 minutes for patients lost to follow-up (Questionnaire # 2). An oral consent to participate in the study was taken before the interview. Although two types of questionnaires were developed, they mostly included the same questions. There were questions related to patients' current health status, patient satisfaction with provided services and patient-provider communication skills of personnel, perception of affordability of services. The main difference between the questionnaires was the question concerning the reasons for lost to follow-up including in the questionnaire developed for lost patients. This question had both open-ended and close-ended response options and aimed to catch all possible reasons for not coming to follow-up. Overall, there were 13 questions in the Questionnaire # 1 and 14 in the Questionnaire # 2.

The Questionnaire # 1 was pretested in the Outpatient Clinic among 15 patients who were not enrolled in the study and came to their follow-up visit. After this procedure the needed corrections to the questionnaires were performed.

## **2.4. Study population**

The target population of the study consisted of patients from the Outpatient Clinic's Adult Cardiology Department and the Arrhythmology Department who needed follow-up. The study population consisted of patients who were enrolled in the study and expressed willingness to participate.

The eligibility criteria for participation in the study were as follows:

- Patients who were recommended to make a follow-up visit to the Adult Cardiology Department or the Arrhythmology Department of NMMC
- Patients aged more than 18 years
- Residents of Yerevan

The exclusion criteria were as follows:

- Patients who were already interviewed once

The sample size was calculated using the formula for two-sample comparison of proportions in the Stata statistical software (version 7.0). The prevalence of satisfaction was considered as 90% in the group of patients remaining in the follow-up and it was hypothesized to detect at least 25% lower satisfaction in the group of patients lost to follow-up. It was considered also the fact that the lost patients composed 20 % in the target population. Considering the desirable 80 % power and alpha error of 0.05, the sample size was calculated as 112 patients in the group of patients remaining in the follow-up and 28 in the group of drop-out patients. The Stata output of the sample size calculation is presented in Appendix 4.

Finally, 112 patients remaining in the follow-up and 30 patients lost to follow-up were interviewed.

### **3. ETHICAL CONSIDERATIONS**

The research proposal was reviewed and approved by the Institutional Review Board (IRB) within the College of Health Science at the AUA. An oral consent was provided to patients (Appendix 5). In those cases when the patient refused to participate, his/her willingness was respected. The study possessed minimal risk for patients, as the probability and magnitude of expected harm or discomfort were equal and not greater than that of routine physical and psychological tests performed in ordinary patients' daily life.

Although the collected data included the information on patients' names and telephone numbers, these data were not entered into the computerized database and were not analyzed.

### **4. STUDY LIMITATIONS**

There were some limitations of the study. First of all, some of the possible predictors of the lost to follow-up were excluded from the study because these predictors were difficult to investigate. As it was stated before, only patients living in Yerevan were enrolled in the study. While selecting patients for the study it was revealed that in the group of patients lost to follow-up there were more patients from the regions than in the group of patients remaining in the follow-up. Although, there is no collected data to approve that fact, this information can be checked in further studies. Patients living in the regions were excluded from the study because the phone survey was not the best one for them due to the lack of phone contacts in many regions and villages.

Another possible predictor could be traveling distance, but the information about it from the patient's perspective can be very subjective. The interval between the previous referral and the follow-up visit of interest also could be one of the predictors for drop out (if the interval is longer

the probability of drop out is higher). Unfortunately, this information wasn't in the database, and patients weren't asked this question because the answers couldn't reflect the exact duration. On the other hand, some patients complained that sometimes the interval was too long.

Another possible limitation of the study was that the consideration of patients remaining in the follow-up or lost to follow-up is a relative one. Based on expert opinion many of the lost patients later refer to this hospital. At the same time patients remaining in the follow-up can later become lost to follow-up.

All interviews were made by one student investigator, which could lead to interviewer bias. Another possible limitation of the study could be recall bias.

## **5. DATA ANALYSIS**

Single data entry and data analysis were performed using SPSS 11.0 statistical software by the student investigator. Patient Information Form was entered in one database. From this database the results of the interviews (participate, refuse to participate, etc) and distribution of patients by departments were calculated. Both Questionnaires (#1 & # 2) were entered into another database. Because of time constrains only range checking was used for data cleaning.

For data analyses the frequencies, t-test for continuous data, chi-square test of independence for dichotomous data, simple linear regression, simple logistic regression and multiple logistic regression statistical methods were used.

## **6. RESULTS**

### **6.1. General characteristics**

**Age and gender.** The two groups were similar with respect to age distribution (Table 1). The

mean age of patients remaining in the follow-up was 57.92 ranging from 19 to 83 years of age (SD 11.34). The mean age of the lost patients was 56.27 ranging from 28 to 77 years of age (SD 12.64). A t-test for mean age difference (assuming equal variances) revealed that there was no statistically significant difference between the mean ages of two groups ( $p=0.49$ ). A chi-square test of independence revealed that the groups were similar with respect to gender distribution ( $p=0.73$ )

**Table 1. General characteristics of study population**

General characteristics	Remain in the follow-up n=112	Lost to follow-up n =30	p-value
<b>Mean Age in years (SD)</b>	57.92 (11.34)	56.27 (12.64)	0.49
<b>Gender (%)</b>			
<i>Male</i>	60 (53.6)	15 (50)	0.73
<i>Female</i>	52 (46.4)	15 (50)	
<b>Departments (%)</b>			
<i>Adult Cardiology</i>	76 (67.9)	25 (83.3)	0.10
<i>Arrhythmology</i>	36 (32.1)	5 (16.7)	
<b>Type of secondary visit (%)</b>			
<i>Outpatient visit</i>	42 (37.5)	18 (60)	0.03*
<i>Post-surgical visit</i>	70 (62.5)	12 (40)	

\*Statistically significant result.

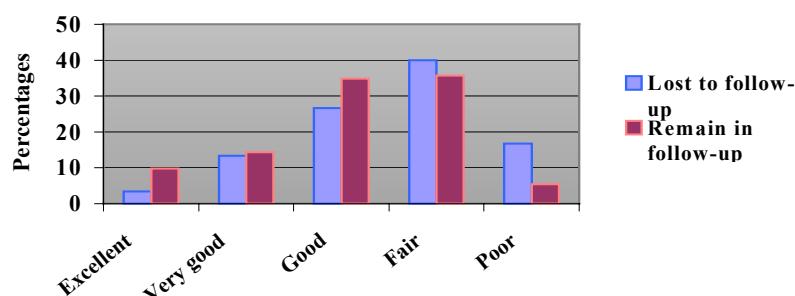
**Departments.** For each group the distribution of patients across the departments was different (Table 1). In both groups there were more interviewed patients from the Adult Cardiology department than from Arrhythmology. This can be explained by the fact that usually during a day more patients refer to the former than to the latter department. The groups were homogenous with respect to departments ( $p=0.10$ ).

**Type of secondary visits.** In the follow-up group there were more patients with secondary post-surgical visit than with secondary outpatient visit, while it was visa versa in the group of patients lost to follow-up (Table 1). The chi-square test for group homogeneity revealed that the outcome appeared to be statistically associated with the type of visit ( $p=0.03$ ).

**Current state of health.** In both groups patients' current health status was assessed by one question with five response categories (Likert scale- excellent, very good, good, fair, poor). Another question was asked to reveal if there was a change in health after the last visit.

In the group of patients remaining in the follow-up the highest proportion of patients rated their health as 'fair'- 35.7 % (Figure 1). The ratios between '*fair/poor*' and '*good/very good/excellent*' was 41.1 %: 58.9%. Among those with 'fair' health 65% mentioned that after their last visit their health improved.

**Figure1. Patients' current health status**



In the group of patients lost to follow-up 40% of respondents rated their current health as 'fair'. The ratios between '*fair/poor*' and '*good/very good/excellent*' was 56.7%: 43.3%. Among those with 'fair' health 50% mentioned that their health now was better compared with the health before their last visit.

There was no statistically significant difference between the groups' current health status distribution as '*fair/poor*' versus '*good/very good/excellent*' (p value was 0.08).

A chi-square test was performed to find if the type of visit (secondary ambulatory versus secondary post-surgical) was independent from the patients' current health status, if consider all study participants as one group (n=142). The result of the test shown statistically significant association (p=0.02).

## **6.2. Patient satisfaction**

Patient satisfaction was calculated using the Likert-type summary scale. The sum was calculated from the results of three questions: a) perception of affordability of services- four response categories, b) overall satisfaction from services-five response categories, c) patient-provider communication skills- five response categories. Patients who gave responses from ‘excellent’ to ‘good’ and consider the services affordable were considered as satisfied. Thus, 94.5% of patients remaining in the follow-up were satisfied with services (against hypothesized 90%), while in the group of patients lost to follow-up 89.7% were satisfied (against the hypothesized 65%). The difference of 4.8 % between the groups’ satisfaction was not statistically significant (the hypothesis of existence of 25% difference in patient satisfaction was rejected).

## **6.3. Predictors for lost to follow-up**

The following variables were entered into the simple logistic regression model as possible covariates to lost to follow-up: age, gender, department, current health status, type of visit, and patient satisfaction (Table 2). Only type of visit (secondary post-surgical versus secondary ambulatory) was the predictor of the outcome (remain in the follow-up or lost to follow-up). The odds of outcome was by 2.5 times higher in the group of patients with secondary outpatient visit vs. patients with secondary post-surgical visit (95 % CI: 1.096, 5.699). So, post-surgical patients were less likely to drop out than patients with outpatient visit (p value was 0.029).

**Table 2. Simple logistic regression of follow-up status by different predictors**

Predictor variables	Odds ratio	Confidence Intervals	P-value
<b>Age</b>	0.988	(0.955; 1.022)	0.498
<b>Gender</b>			
<i>Female (reference population)</i>	1		
<i>Male</i>	1.154	(0.515; 2.584)	0.728
<b>Department</b>			
<i>Arrhythmology (reference population)</i>	1		
<i>Adult Cardiology</i>	0.422	(0.149; 1.193)	0.104
<b>Current state of health</b>			
<i>Poor (reference population)</i>	1		
<i>Fair</i>	0.360	(0.093; 1.390)	0.138
<i>Good</i>	0.246	(0.60; 1.008)	0.51
<i>Very good</i>	0.300	(0.060; 1.509)	0.144
<i>Excellent</i>	0.109	(0.010; 1.163)	0.066
<b>Type of visit</b>			
<i>Secondary outpatient visit (reference population)</i>	1		
<i>Secondary post-surgical visit</i>	2.499	(1.096; 5.699)	0.029*
<b>Patient satisfaction</b>			
<i>Not satisfied (reference population)</i>	1		
<i>Satisfied</i>	0.421	(0.095; 1.870)	0.255

\*Statistically significant result

For further investigation multiple regression analyses of the outcome were performed in order to find the best model and to check for potential confounders like current state of health, patient satisfaction, etc. Then every two covariates in the multivariable analyses were checked for interactions. Analyses showed that there is no any significant interaction between the covariates. It appeared that while in simple logistic regression model type of visit was statistically associated with follow-up status, in multiple regression model with current state of health and type of visit current state of health confounded this association making it statistically not significant. Finally, the best model wasn't created because of the lack of more than one statistically significant variable in it.

#### 6.4. Reasons for lost to follow-up from patients' perspective

The reasons for not coming to follow-up were explored among the 30 patients lost to follow-up. One question with 9 yes/no options and 4 'specify' options was tended to include all possible reasons. The results are presented in Table 3.

**Table 4. Reasons for not coming to follow-up**

Reasons for not coming to follow-up	Frequencies (%)
<i>I planned to come to follow-up later</i>	14 (46.7)
<i>I feel good and have no need to come to follow-up</i>	11 (36.7)
<i>The time was not convenient</i>	10 (33.3)
<i>The recommended treatment didn't help</i>	6 (20)
<i>I'm not satisfied with the service</i>	6 (20)
<i>The recommended treatment/diagnostic procedure was expensive</i>	5 (16.7)
<i>It was difficult to reach the hospital</i>	5 (16.7)
<i>I didn't know that the follow-up visit was recommended</i>	5 (16.7)
<i>I didn't try the recommended treatment</i>	4 (13.3)
<i>Other reason</i>	7 (23.3)

Most of the patients provided more than one reason. As the results showed almost half of the lost patients (n=14) planned to come to follow-up later. This result underlined the relativity of the definition of lost to follow-up stated for the study. On the other hand, although the option was given, these patients couldn't specify when they have planned their next follow-up visit (after one week, month, when they would find appropriate time or would feel better or would have money, etc.).

Almost one third of the lost patients pointed as reason that they ‘feel good and have no need to come to follow-up’. Among these patients nobody reported current state of health as ‘poor’, but controversially 4 patients (36.4%) reported it as ‘fair’.

The time for recommended follow-up was inconvenient for 33.3% of patients. For 20% of lost patients the recommended treatment didn’t help and/or they weren’t satisfied with the service. The recommended treatment was expensive for 16.7% of patients. Another 16.7% mentioned that it was difficult for them to reach the hospital and/or they didn’t know that a follow-up visit was recommended. The option of ‘I didn’t try the recommended treatment’ was reported by 13.3% of patients. Under the option of ‘other reason’ there were seven different reasons.

## **6.5. Other results**

The patients were asked questions related to the recommendations given by doctors during their last visit. In the group of patients remaining in the follow-up 92 % were recommended drugs, 2.7% - surgical intervention, 8 %- diagnostic procedure, 38.4 % - changes in diet for controlling blood cholesterol level and 89.3 % were recommended to make regular follow-up visits. The recommendations given to patients lost to follow-up were the follows: 96.7 % were recommended drugs, 6.7% - surgical intervention, 6.7 % diagnostic procedure, 16.7%- changes in diet for controlling blood cholesterol level and 96.7 % were recommended to perform regular follow-up visits. There were no statistically significant differences between the groups’ distribution across the given recommendations besides recommendation for dietary changes. In the group of patients who remain in the follow-up more patients were recommended to follow a diet to control their cholesterol level (p value of difference in proportions of 38.4% versus 16.7% was 0.026).

In the group of patients remaining in the follow-up 35.7 % paid for their last visit, for 63.4% it was free of charge or covered by hospital insurance, and 0.9 % didn't remember whether they paid. Among the lost to follow-up patients 33.3 % mentioned that a payment was due for the visit they had omitted, 59.5 % mentioned that the omitted visit should be free of charge or covered by hospital insurance, and 13.3 % did not know. The groups were homogenous with respect to this distribution and the payment wasn't associated with the follow-up status.

An open-ended question was asked to the patients whether they have a recommendation to make the services provided by NMMC Outpatient Clinic better. There were 18 responses in the group of patients remaining in the follow-up and 8 responses in the lost to follow-up group. The responses were analyzed together. Most of the responses were related to the cost of services as 15 patients recommended decreasing the charges to make the services more affordable. There were 4 responses with the recommendation to shorten the waiting time in the Outpatient Clinic and 2 responses to shorten the time of 6 months follow-up period.

## **7. DISCUSSION**

Overall, the process of data collection and the data analyses allowed having more comprehensive understanding of the processes in the Outpatient Clinic (patients' flow, examinations, follow-up, etc), defining the obstacles and the ways to overcome them.

During the data collection process, it was revealed that the ways for making follow-up appointments were different between the two departments of the Adult Outpatient Clinic. In the Adult Cardiology Department the nurses used hand written journals for marking the recommended follow-up day, which created difficulties in the data collection. Sometimes it was difficult to read the names of patients, or if they were patients with primary or secondary visits.

Later it appeared that there were more than one patient with the same name in the database. In contrary, at the Arrhythmology Department the days of recommended follow-up were directly entered into the database. Every day the schedule of patients was printed and used by the staff. The information on the type of visit, purpose of follow-up, the time and the outcome of follow-up (rescheduled, canceled or performed follow-up) were easily obtained from the database.

The results of the study were practically important as they can be used not only to answer the research question but also for practical interventions and other studies. Although the stated hypothesis on patient satisfaction was rejected, the obtained baseline data on it could be important for ongoing quality/performance assessment and improvement in the Clinic. Overall, the patient satisfaction in the Outpatient Clinic could be pointed as high enough, but it was lower than patient satisfaction in the Inpatient Clinic.

It was revealed that patients with secondary outpatient (non surgical) visits were more likely to drop out than patients with post-surgical visits. This could be explained by the high perceived severity of surgery both by patients and doctors. On the other hand, this result needs to be examined over time, after six months of surgery with the covered insurance.

Patients who were drop out reported poorer health than patients who remain in the follow-up. This controversial finding could be explained by the fact that there were more post-surgical patients with reported better health in the group of patients who remain in the follow-up than in the other group. A small sample size of patients lost to follow-up could put this result under the question.

The analysis of reasons for lost to follow-up showed that the highest frequency had the option of '*I planned to come to follow-up later*' (46,75 %). In spite this fact this reason couldn't be pointed as the main reason. Mostly patients mentioned about this reason after they brought

another one. So, considering this fact the main reasons for lost to follow-up were the facts that patients were asymptomatic and/or the time of recommended follow-up was inconvenient for them. This reason was obtained in other studies also (8-9). This result could be explained by the fact that patients accepted follow-up visit mostly as a treatment measure not as a preventive one. On the other hand, physicians seemed indifferent to the fact of patient lost to follow-up. There were no current and ongoing studies on patients health outcomes in the Outpatient Clinic performed by physicians themselves. In the process of creation of a comprehensive patient follow-up system the involvement of both patients and physicians are important.

The time of recommended follow-up was not convenient for 33.3% of lost patients. This could be explained by the fact that the time wasn't discussed enough with patients and/or, in the case of any inconvenience, they had no flexibility to change their appointment. If they already omitted the visit the new visit could be appointed after three-four weeks only, which increased the risk to be lost to follow-up.

It is appropriate to pay attention to the fact that 20% of lost patients were not satisfied with services and another 20% mentioned that the recommended treatment didn't help. Although the affordability of services wasn't identified as a predictor to lost to follow-up among lost patients, 16.7 % pointed that the recommended diagnostic procedure/treatment was expensive. Moreover, among the recommendations for the improvement of services most of the responses were to make the services more affordable.

## **8. CONCLUSION AND RECOMMENDATIONS**

To answer the research questions, the data on patients' characteristics like age, gender, department, type of visit and current health status were collected and analyzed (Table 1). The

patient satisfaction was measured and compared between two groups of patients. The study revealed high patient satisfaction in the selected departments and in both groups of patients. There was no statistically significant difference between the levels of patient satisfaction in both groups as it was hypothesized. There was strong negative linear relationship between patient satisfaction and current state of health. Only the type of visit was the predictor for lost to follow-up was revealed. Patients with secondary outpatient visits were more likely to drop out than post-surgical patients. The reasons for lost to follow-up were explored among 30 lost patients. Most frequently patients felt good and had no need to come to the scheduled visit. For one third of lost patients the time of recommended follow-up visit wasn't convenient. The study can serve as a ground for larger studies on lost to follow-up.

Based on the obtained results it could be recommended:

- To develop standardized, written follow-up protocols for post surgical patients (different for different surgical interventions) and for ambulatory patients (different for different diagnosis). The protocols should be distributed to the patients after the surgery or their first ambulatory visit. The protocols should include the information on appropriate follow-up schedule, the way of rescheduling and underline its importance as a preventive measure. The protocols should be consistent with the clinical guidelines of the NMMC.
- Instead of hand-written journals it was recommended to develop an electronic database for patients' daily flow and follow-up in the Adult Cardiology Department. For this purpose the practice of Arrhythmology Department could be used.
- It was recommended for physicians, while talking with the patients, underline the importance of follow-up for both patients and themselves. For this purpose the physicians should be involved into the quality assurance/improvement process more actively.

- The results of the study again underlined the importance of the establishment of follow-up center in the hospital. This would enable to find actively lost patients, collect the information on their current health status and their needs. One of the possible strategies to decrease lost to follow-up could be the notification of patients about the recommended visit two-three days before using telephone or mail.
- It was recommended to discuss the question of affordability of services with Hospital Board and to develop new strategies to make the services cheaper.
- A larger scale survey could be conducted to measure the exact drop out rate and examine other predictors for lost to follow-up. For this purpose it was recommended to include patients from regions also using as a mean of contact both telephone and mail. This could permit to compare the drop out rate from Yerevan and other regions. It was recommended also to include more variables in the survey like patients' education, income, traveling time and/or distance for having all possible predictors and cofounders. For assessing patients' current health status a functional assessment tool for cardiovascular system could be used. Qualitative research methods could be suggested to explore more reasons for not coming to follow-up.

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## Appendix 1. Patient information form

### Patient Information Form

ID	Name	Status (Remain in follow-up -1, lost to follow-up-2)	Departm. (Adult Cardiology-1, Arrhythmology- 2)	Telephone #	Date of follow- up	Result	Other
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							

1. Participate
2. Refuse to participate
3. Have unscheduled visit
4. Impossible to contact
5. Other

**Appendix 2.Questionnaire # 1. Patients remaining in follow-up**  
**QUESTIONNAIRE –1 Remain in follow-up)**

**Consent form:**

**ID** \_\_\_

**Interview date** \_\_ / \_\_ / \_\_

**Age** \_\_ **Gender** 1. Male 2. Female

<p><b>1. Overall how would you rate your current state of health now?</b></p> <p>Excellent.....1      Very good.....2      Good.....3      Fair.....4      Poor.....5</p>	<p><b>2. Compared to your health before your previous visit to Outpatient Clinic at NMMC, how would rate your health now?</b></p> <p>Much better now.....1      Somewhat better now.....2      About the same.....3      Somewhat worse now.....4      Much worse now.....5</p>
<p><b>3. From your previous visit till now have you visited another health care facility for any heart related events?</b></p> <p>1.Yes    2.No (If No, go to the Q # 5)</p>	<p><b>4. What facility have you visited?</b></p> <hr/>
<p><b>5. What was the reason of your last visit to Outpatient Clinic? (Check only one response)</b></p> <p>a. Secondary outpatient visit      b. Secondary post-surgical visit</p>	<p><b>6. What primary treatment/diagnostic procedure was recommended to you during your previous visit to Outpatient Clinic? (Check all that apply)</b></p> <p>a. Conservative (drugs)      b. Surgical intervention      c. Diagnostic procedure      d. Periodic follow-up      e. Changes in diet      f. Nothing was suggested      g. Don't know      h. Other</p>
<p><b>7. Who examined you during your previous visit to Outpatient Clinic? (Check all that apply)</b></p> <p>a. Doctor      b. Resident      c. Nurse      d. Don't know/ Don't remember/ Was not introduced</p>	<p><b>8. Did you pay for your last visit to Outpatient Clinic?</b></p> <p>1. Yes      2. No, it was covered by hospital insurance      3. No, it was free of charge      88. Don't know      If Yes, how much?      _____ drams</p>

<b>9. What is your perception of affordability of services provided at NMMC?</b>	<b>10. How would you assess the overall service provided at Outpatient Clinic?</b>
Too expensive.....1	Excellent.....1
Rather expensive.....2	Very good.....2
Acceptable price.....3	Good.....3
Inexpensive.....4	Fair.....4
	Poor .....5
<b>11. How would you assess the patient-provider communication skills of health care providers at Outpatient Clinic?</b>	<b>12. Would you refer to this Outpatient Clinic again if needed?</b>
Excellent.....1	1. Yes
Very good.....2	2. No
Good.....3	88. Don't know
Fair.....4	
Poor .....5	
<b>13. What would you recommend to make services better at Outpatient Clinic at NMMC?</b>	

**Thank you for your participation!**

## Հարցաթերթիկ –1 (Հնտագա այցին ներկայացողների համար)

Համաձայնություն:

Տարբերակման համարը \_ \_ \_

Հարցազրույցի ամսաթիվը \_ \_ / \_ \_ / \_ \_ Տարիքը \_ \_ Սեռը 1.Արական 2.Իգական

<p>1. Ընդհանուր առմամբ Դուք ինչպե՞ս կգնահատե՞ք Ձեր առողջական վիճակը հիմա</p> <p>Գերազանց.....1 Շատ լավ.....2 Լավ.....3 Միջին.....4 Վատ.....5</p>	<p>2. Ինչպե՞ս կգնահատե՞ք Ձեր առողջությունը հիմա համեմատած Ձեր առողջության հետ մինչև Ձեր նախորդ այցը ՆՄԲԿ-ի Ամբուլատոր Կլինիկա</p> <p>Շատ ավելի լավ, քան մինչև այցը .....1 Որոշ չափով ավելի լավ, քան մինչև այցը ...2 Այժմ գրեթե նույնը, ինչ մինչև այցը .....3 Որոշ չափով ավելի վատ, քան մինչև այցը...4 Շատ ավելի վատ, քան մինչև այցը .....5</p>
<p>3. Ձեր նախորդ այցից հետո մինչև հիմա Դուք այցելե՞լ եք այլ բուժաստատություն սրտի հետ կապված այլ խնդիրով</p> <p>1. Այն 2. Ոչ (Եթե ոչ, անցիր հարց # 5)</p>	<p>4. Ի՞նչ հաստատություն եք այցելել</p> <hr/>
<p>5. Ո՞րն էր Ձեր Ամբուլատոր Կլինիկա կատարած նախորդ այցի նպատակը (Նշել միայն մեկ պատճախան)</p> <p>a. Կրկնակի ամբուլատոր այց b. Կրկնակի հետ-վիրահատական այց</p>	<p>6. Ի՞նչ առաջնակի բուժում/ախտորոշիչ միջամտություն էին խորհուրդ տվել Ձեզ Ձեր Ամբուլատոր Կլինիկա կատարած նախորդ այցի ժամանակ (Նշել բոլոր հնարավոր պատճախանները)</p> <p>a. Դնդորայքի ընդունում b. Վիրահատական միջամտություն c. Ախտորոշիչ միջամտություն d. Կանոնավոր հետազա այցելություն e. Փոփոխություններ սննդակարգում f. Ոչինչ խորհուրդ չի տրվել g. Չեմ հիշում h. Այլ</p>
<p>7. Ո՞վ քնննեց Ձեզ Ձեր Ամբուլատոր Կլինիկա կատարած նախորդ այցի ժամանակ (Նշել բոլոր հնարավոր պատճախանները)</p> <p>a. Բժիշկը b. Ռեգիդենտ/պրակտիկանտ c. Բուժքույրը d. Չեմ իմանում/Չեմ հիշում/ Զններկայացավ</p>	<p>8. Դուք վճարե՞լ եք Ձեր Ամբուլատոր Կլինիկա կատարած նախորդ այցի համար</p> <p>1. Այն 2. Ոչ, այն ծածկվել էր հիվանդանոցային ապահովագրությամբ 3. Ոչ, այն ձրի էր 88. Չեմ հիշում Եթե այն, ապա ինչքա՞ն դրամ</p>

<p>9. Ինչպե՞ս եք Դուք ընկալում ՆՄԲԿ-ի ծառայությունների մատչելիությունը</p> <p>Ծառ թաճկ.....1 Բավականին թաճկ.....2 Ընդունելի արժեքի.....3 Ոչ թաճկ.....4</p>	<p>10. Ինչպե՞ս կգնահատե՞ք Ամբուլատոր Կլինիկայի ծառայությունները ընդհանուր առմամբ</p> <p>Գերազանց .....1 Ծառ լավ .....2 Լավ .....3 Միջին .....4 Վատ .....5</p>
<p>11. Ինչպե՞ս կգնահատե՞ք Դուք իիվանդ-աշխատող փոխարարներությունները Ամբուլատոր Կլինիկայի բուժաշխատողների կողմից</p> <p>Գերազանց .....1 Ծառ լավ .....2 Լավ .....3 Միջին .....4 Վատ .....5</p>	<p>12. Անհրաժեշտության դեպքում Դուք կրկին կդիմե՞ք այս Ամբուլատոր Կլինիկա</p> <p>1. Այն 2. Ոչ 88. Զգիտեմ</p>
<p>13. Ի՞նչ խորհուրդ կտայիք ՆՄԲԿ-ի Ամբուլատոր Կլինիկայի ծառայությունները լավագնելու համար</p> <hr/> <hr/>	

Ընդունակալություն մասնակցության համար

**Appendix 3. Questionnaire # 2. Patients lost to follow-up**  
**QUESTIONNAIRE –2 (Drop-out patients)**

**Consent form:**

ID \_\_\_\_

Interview date \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Age \_\_\_\_

Gender 1. Male 2. Female

<p><b>1. Overall how would you rate your current state of health now?</b></p> <p>Excellent.....1      Very good.....2      Good.....3      Fair.....4      Poor.....5</p>	<p><b>2. Compared to your health before your last visit to Outpatient Clinic at NMMC, how would rate your health now?</b></p> <p>Much better now.....1      Somewhat better now.....2      About the same.....3      Somewhat worse now.....4      Much worse now.....5</p>
<p><b>3. From your last visit till now have you visited another health care facility for any heart related events?</b></p> <p>1. Yes    2. No (If No, go to the Q # 5)</p>	<p><b>4. What facility have you visited?</b>  <hr/></p>
<p><b>5. What was the reason of your last visit to Outpatient Clinic? (Check only one response)</b></p> <p>a. Secondary outpatient visit      b. Secondary post-surgical visit</p>	<p><b>6. What primary treatment/diagnostic procedure was recommended to you during your last visit to Outpatient Clinic? (Check all that apply)</b></p> <p>a. Conservative (drugs)      b. Surgical intervention      c. Diagnostic procedure      d. Periodic follow-up      e. Changes in diet      f. Nothing was suggested      g. Don't know      h. Other</p>
<p><b>7. Who examined you during your last visit to Outpatient Clinic? (Check all that apply)</b></p> <p>a. Doctor      b. Resident      c. Nurse      d. Don't know/ Don't remember/      Was not introduced</p>	<p><b>8. Please, tell if the payment was supposed for visit to Outpatient Clinic, which you have missed?</b></p> <p>3. Yes      4. No, it was supposed to be covered by hospital insurance      5. No, it was supposed to be free of charge      88. Don't know      It Yes, how much?  <hr/>drams</p>

<p><b>9. What is your perception of affordability of services provided at NMMC?</b></p> <p>Too expensive.....1 Rather expensive.....2 Acceptable price.....3 Inexpensive.....4</p>	<p><b>10. How would you assess the overall service provided at Outpatient Clinic?</b></p> <p>Excellent.....1 Very good.....2 Good.....3 Fair.....4 Poor .....5</p>
<p><b>11. How would you assess the patient-provider communication skills of health care providers at Outpatient Clinic?</b></p> <p>Excellent.....1 Very good.....2 Good.....3 Fair.....4 Poor .....5</p>	<p><b>12. Would you refer to this Outpatient Clinic again if needed?</b></p> <p>1. Yes 2. No 88. Don't know</p>
<p><b>13. What are the main reasons you did not come to follow-up? (Check all that apply)</b></p> <p>a. The recommended treatment did not help b. The recommended treatment/diagnostic procedure was expensive c. The time was not convenient Specify _____ d. It was difficult to reach the hospital Specify _____ e. I feel good and have no need to come to follow-up. f. I was not satisfied from the service. g. I didn't tried the recommended treatment h. I didn't know that follow-up visit was recommended i. I planned to come to follow-up later Specify _____ j. Other reason _____</p>	
<p><b>14. What would you recommend to make services better at Outpatient Clinic at NMMC?</b></p> <hr/> <hr/>	

**Thank you for your participation!**

## Հարցաթերթիկ –2 (Հնտագա այցին չներկայացած հիվանդներ)

Համաձայնություն:

Տարբերակման համարը \_\_\_\_\_

Հարցազրույցի ամսաթիվը \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_ Տարիքը \_\_\_\_\_ Սեռը 1.Արական 2.Իգական

<p><b>1.</b> Ընդհանուր առմամբ Դուք ինչպե՞ս կզնահատե՞ք Ձեր առողջական վիճակը հիմա</p> <p>Գերազանց.....1 Շատ լավ.....2 Լավ.....3 Միջին.....4 Վատ.....5</p>	<p><b>2.</b> Ինչպե՞ս կզնահատե՞ք Ձեր առողջությունը հիմա համեմատած Ձեր առողջության հետ մինչև Ձեր վերջին այցը ՆՄԲԿ-ի Ամբուլատոր Կլինիկա</p> <p>Շատ ավելի լավ, քան մինչև այցը .....1 Որոշ չափով ավելի լավ, քան մինչև այցը ...2 Այժմ գրեթե նույնը, ինչ մինչև այցը .....3 Որոշ չափով ավելի վատ, քան մինչև այցը...4 Շատ ավելի վատ, քան մինչև այցը .....5</p>
<p><b>3.</b> Ձեր վերջին այցից հետո մինչև հիմա Դուք այցելե՞լ եք այլ բուժհաստատություն սրտի հետ կապված որևէ խնդիրով</p> <p>1.Այո 2.Ոչ (Եթե ոչ, անցիր հարց # 5)</p>	<p><b>4.</b>Ի՞նչ բուժհաստատություն եք այցելել</p> <hr/>
<p><b>5.</b> Ո՞րն էք Ձեր Ամբուլատոր Կլինիկա կատարած վերջին այցի նպատակը (Նշել միայն մեկ պատասխան)</p> <p>a. Կրկնակի ամբուլատոր այց b. Կրկնակի հետ-Վիրահատական այց</p>	<p><b>6.</b> Ի՞նչ առաջնակի բուժում/ախտորոշիչ միջամտություն էին խորհուրդ տվել Ձեզ Ձեր Ամբուլատոր Կլինիկա կատարած վերջին այցի ժամանակ (Նշել բոլոր հնարավոր պատասխանները)</p> <p>a. Դեղորայքի ընդունում b. Վիրահատական միջամտություն c. Ախտորոշիչ միջամտություն d. Կանոնավոր հնտագա այցելություն e. Ոչինչ խորհուրդ չի տրվել f. Չեմ հիշում g. Այլ _____</p>
<p><b>7.</b> Ո՞վ քննեց Ձեզ Ձեր Ամբուլատոր Կլինիկա կատարած վերջին այցի ժամանակ (Նշել բոլոր հնարավոր պատասխանները)</p> <p>a. Բժիշկը b. Ռենգենաս/պրակտիկանտ c. Բուժքույրը d. Չեմ իմանում/Չեմ հիշում/Չներկայացավ</p>	<p><b>8.</b> Խնդրում եմ ասացեք, արդյոք Դուք պեսք է վճարեի՞ք Ամբուլատոր Կլինիկայի այն այցի համար, որին Դուք չներկայացաք</p> <p>1. Այո 2. Ոչ, այն ծածկվելու էր հիվանդանոցային ապահովագրությամբ 3. Ոչ, այն ձրի էր լինելու 88. Զգիտնմ Եթե այո, ապա ինչքա՞ն _____ դրամ</p>

<p><b>9.</b> Ինչպե՞ս եք Դուք ընկալում ՆՄԲԿ-ի ծառայությունների մատչելիությունը</p> <table> <tr> <td>Ծառ թաճնկ</td> <td>1</td> </tr> <tr> <td>Բավականին թաճնկ</td> <td>2</td> </tr> <tr> <td>Ընդունելի արժեք</td> <td>3</td> </tr> <tr> <td>Ոչ թաճնկ</td> <td>4</td> </tr> </table>	Ծառ թաճնկ	1	Բավականին թաճնկ	2	Ընդունելի արժեք	3	Ոչ թաճնկ	4	<p><b>10.</b> Ինչպե՞ս կգնահատեիք Ամբողջատոր Կլինիկայի ծառայություններն ընդհանուր առմամբ</p> <table> <tr> <td>Գերազանց</td> <td>1</td> </tr> <tr> <td>Ծառ լավ</td> <td>2</td> </tr> <tr> <td>Լավ</td> <td>3</td> </tr> <tr> <td>Միջին</td> <td>4</td> </tr> <tr> <td>Վատ</td> <td>5</td> </tr> </table>	Գերազանց	1	Ծառ լավ	2	Լավ	3	Միջին	4	Վատ	5
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<p><b>11.</b> Ինչպե՞ս կգնահատեիք Դուք հիվանդաշխատող փոխարարքնությունները Ամբողջատոր Կլինիկայի բուժաշխատողների կողմից</p> <table> <tr> <td>Գերազանց</td> <td>1</td> </tr> <tr> <td>Ծառ լավ</td> <td>2</td> </tr> <tr> <td>Լավ</td> <td>3</td> </tr> <tr> <td>Միջին</td> <td>4</td> </tr> <tr> <td>Վատ</td> <td>5</td> </tr> </table>	Գերազանց	1	Ծառ լավ	2	Լավ	3	Միջին	4	Վատ	5	<p><b>12.</b> Անհրաժեշտության դեպքում Դուք կրկին կդիմեի՞ք այս Ամբողջատոր Կլինիկա</p> <ol style="list-style-type: none"> <li>Այո</li> <li>Ոչ</li> <li>88. Զգիտեմ</li> </ol>								
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<p><b>13.</b> Որո՞նք են պատճառները, որ Դուք չներկայացաք Ձեր հետազա այցին (Նշենի բոլոր հնարավոր պատասխանները)</p> <ol style="list-style-type: none"> <li>Առաջարկված բուժումը չօգնեց</li> <li>Առաջարկված բուժումը /ախտորոշիչ միջամտությունը թաճնկ էր</li> <li>Ժամանակը հարմար չէր Բացատրել</li> <li>Հիվանդանոց հասնելը դժվար էր Բացատրել</li> <li>Լավ եմ զգում և կարիք չունեմ հետազա այցին գալու</li> <li>Գոհ չեմ ծառայությունից</li> <li>Առաջարկված բուժումը չփորձնեցի</li> <li>Ես չգիտեմ, որ հետազա այց էր նշանակվել</li> <li>Ես պլանավորել էի ավելի ուշ գալ հետազա այցի Բացատրել</li> <li>Այլ պատճառ</li> </ol>																			
<p><b>14.</b> Ի՞նչ խորհուրդ կտայիք ՆՄԲԿ-ի Ամբողջատոր Կլինիկայի ծառայությունները լավացնելու համար</p> <hr/> <hr/>																			

Ծնորհակալություն մասնակցության համար

#### **Appendix 4. Stata output for sample size calculation**

. sampsi 0.90 0.65, p(0.8) r(0.25)

Estimated sample size for two-sample comparison of proportions

Test Ho:  $p_1 = p_2$ , where  $p_1$  is the proportion in population 1

and  $p_2$  is the proportion in population 2

Assumptions:

alpha = 0.0500 (two-sided)

power = 0.8000

$p_1$  = 0.9000

$p_2$  = 0.6500

$n_2/n_1$  = 0.25

Estimated required sample sizes:

$n_1$  = 112

$n_2$  = 28

Appendix 5.Consent form

**American University of Armenia  
Department of Public Health**

**INSTITUTIONAL REVIEW BOARD/COMMITTEE ON HUMAN RESEARCH  
CONSENT FORM TEMPLATE**

Research on Lost to Follow-up of Patients at Nork Marash Medical Center

Hello! I'm Lusine Abrahamyan. I'm from American University of Armenia. I'm doing a study as a part of my course assignment. The aim of this study is to explore the causes predisposing to losses to follow-up at Nork Marash Medical Center. Your telephone number was taken from that center, but this is an independent investigation. You have been contacted because I had the information that you have been recommended a follow up \_\_\_\_ later after your last visit to this hospital. I'm interested if you have already visited the hospital for the follow-up? (Select the appropriate questionnaire depending on the answer).

I'm going to ask you some questions related to your health, the services provided in this hospital *and the reason why you did not go there for follow-up* (for only drop-out patients). I want to assure you that your answers will contribute to the further development of follow-up service in this hospital. This will take from you at about 5-7 minutes. You can refuse to participate or to answer any question you feel uncomfortable. This is voluntary survey and you can stop the interview at any time you want. Every effort will be made to protect the confidentiality of the information provided inssofar as it is legally possible. It will not affect on your further treatment at this hospital. I can provide you the contact of a person you will be interested in the research or in the case of any question (Michael Thompson, American University of Armenia. Telephone (374 1) 51 25 12).

## Հայաստանի Ամերիկյան Համալսարան Հանրային Առողջապահության Ֆակուլտետ Համաձայնություն

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Բարև Ձեզ: Ես Լուսինն Աբրահամյանն եմ՝ Հայաստանի Ամերիկյան Համալսարանի Հանրային Առողջապահության Ֆակուլտետի ուսանող: Ես կատարում եմ հետազոտություն որպես իմ ուսումնական ծրագրի մաս: Հետազոտության նպատակն է ուսունասիրներ Նորք Մարաշ Բժշկական Կենտրոնում հիվանդների հետազա այցելի պակասին նպաստող պատճառները: Ձեր հեռախոսահամարը վերցվել է կենտրոնից, սակայն սա անկախ հետազոտություն է: Ձեզ զանգահարնել եմ, որովհետև ունեի տեղենկություն, որ Ձեզ խորհուրդ է տրվել հետազա այց կատարել հիվանդանոց Ձեր վերջին այցելությունից \_\_\_\_\_ հետո: Ինձ հետաքրքրում է, արդյոք Դուք կատարե՞լ եք Ձեր հետազա այցը հիվանդանոց: (Ընտրել համապատասխան հարցաթերթիկը կախվածպատճառանից):

Ես կկամնայի հարցնել Ձեզ Ձեր առողջության, հիվանդանոցում մատուցված ծառայությունների վերաբերյալ և Ձեր հետազա այցին չներկայանալու պատճառների մասին (այս մասը հարցնել միայն հետազա այցին չներկայացածներին): Ես հավաստիացնում եմ Ձեզ, որ Ձեր պատասխանները կնպաստեն այս հիվանդանոցում հետազա այցելի ավելի արդյունավետ կազմակերպմանն ու զարգացմանը: Հարցերին պատասխանելը Ձեզանից կապահանջի 5-7 րոպե ժամանակ: Հարցազրույցին մասնակցելը կամավոր է և Դուք կարող եք մերժել Ձեր մասնակցությունը: Ինչպես նաև, կարող եք չպատասխանել զանկացած հարցի, որը Ձեզ հաճնի չէ կամ դադարեցնել հարցազրույցը զանկացած պահի: Ամեն ջանք կգործադրի Ձեր տրամադրած տեղենկատվության գաղտնիությունը պահպանելու համար: Այն չի ազդելու այս հիվանդանոցում Ձեր հետազա բուժման վրա: Ես կարող եմ տրամադրել Ձեզ այն անձի հեռախոսահամարը, ում կարող եք դիմել, եթե հետաքրքրվեք հետազոտությամբ կամ ունենաք որևէ հարց (Մայք Թոմփսոն, Հայաստանի Ամերիկյան Համալսարան, Հեռ. (374 1) 51 25 12):