AN EVALUATION OF INTERVIEWER CHARACTERISTICS IN TDHS-2013 UNDER CONSIDERATION OF RESPONSE BEHAVIOR[1]

CEVAPLAMA DAVRANIŞI ALTINDA TNSA-2013 GÖRÜŞMECİ ÖZELLİKLERİNİN BİR DEĞERLENDİRMESİ

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ABSTRACT

Close relation between survey quality and influencing factors draws an attention when evaluating quality. In this regard, estimation of survey error, as an indicator of survey quality, and investigating sources of it are gaining an importance. Non-response error that constitutes a large part of the survey error can be evaluated within the interviewer characteristics. Furthermore, interviewer, who play a critical role on survey, contributes to total survey error in terms of gaining cooperation with the sample unit and maintaining motivation of respondent. Considering all of these, interviewer characteristics should be evaluated within specific indicators such as response behavior and accuracy of estimates. In this regard, main objective of the study is to evaluate characteristics of interviewers on the basis of household and women interviews. Available data sets of TDHS-2013 and a special data set, namely data collection staff data, were used for this study. The findings put forward that survey experience of interviewers is significant on interviewers' completion/response rates. Furthermore, interviewers' socio-demographic characteristics such as place of birth, graduation status, and studying on social sciences previously differ in completion/response rates. It is expected that this study will light the way for future studies will focus on interviewer on survey quality.

KEYWORDS: survey quality, interviewer characteristics, response, DHS, Turkey

ÖZET

Araştırma kalitesi değerlendirilirken, araştırma kalitesi ve etkileyenleri arasındaki yakın ilişki dikkat çekmektedir. Bu bağlamda, araştırma kalitesinin bir göstergesi olan araştırma hatasının tahmini ve belirleyicilerinin araştırılması önem kazanmaktadır. Araştırma hatasının önemli bir kısmını oluşturan cevapsızlık hatası, görüşmeci özellikleri, kapsamında değerlendirilebilir. Ayrıca, araştırma üzerinde önemli rolü olan görüşmeci, örneklem birimi ile etkileşim kurması bakımından ve cevaplayıcıların motivasyonunu sağlaması açısından toplam araştırma hatasına katkıda bulunur. Tüm bunlar düşünüldüğünde, görüşmeci özellikleri cevaplama davranışı ve tahminlerin doğruluğu gibi göstergeler açısından değerlendirilmelidir. Bu bağlamda, çalışmanın temel amacı TNSA-2013 görüşmeci özelliklerini hanehalkı ve kadın görüşmeleri temelinde değerlendirmektir. Çalışmada TNSA-2013 veri setleri ile çalışma için oluşturulan saha personeli veri seti kullanılmıştır. Çalışmanın bulguları görüşmeci deneyiminin tamamlanma/cevaplama oranları üzerinde etkili olduğunu göstermektedir. Ayrıca görüşmecilerin doğum yeri, mezuniyet durumu, sosyal bilimlerde çalışmış olması gibi sosyo-demografik özellikleri tamamlanma/cevaplama oranlarına göre farklılaşmaktadır. Bu çalışmanın araştırma kalitesi üzerinde görüşmeciye odaklanacak çalışmalar için kaynak oluşturması beklenmektedir.

KEYWORDS: araştırma kalitesi, görüşmeci özellikleri, cevaplama, TNSA, Türkiye

INTRODUCTION

Interviewing is a main method to collect social data, obtain knowledge, and understand the social life experiences in social surveys. Requirement for the better data quality is a growing interest for many researchers in order to obtain more accurate estimates and make more accurate interpretations. Total survey error, which reflects the survey quality, might be defined as the difference between survey estimate and true population value in the most general sense. Sources of the survey error are need to be identify in order to minimize total survey error and increase the survey quality. Error types such as specification error, frame error, non-response error, measurement error, and processing error contribute to the total survey error inevitably. Measurement error that comprise the information systems, settings, mode of data collection, respondents, interviewers, and survey instruments reveals systematic bias on survey estimates. In this regard, interviewer is prone to create bias on survey estimates as well as other measurement error components.

Interviewer, which is one of the principal components of interviewing, is defined as the main actor of the data collection process in social surveys. – Effect of interviewer is stemmed from not only asking and probing questions, making clarifications, giving feedbacks, formulating the responses, recording the answers, but also his/her behaviors, attitudes, expectations, preferences, and socio-demographic characteristics..

Interviewer variance, which is originated from unobserved characteristics of interviewer, cause variability on survey estimates. In this regard, interviewer has a significant role on measurement error of the survey variance in terms of socio-demographic characteristics. Additionally, interviewer rapport between interviewer and respondent has substantial influence on survey estimates, too. Face to face interviews, in which interaction between respondent and interviewer is more intensively than other modes of data collection. Interviewer variance on unit non-response basis is usually higher in face to face surveys compared to telephone interviews considering varying characteristics of interviewers (Davis et al., 2010). Since 1968, interaction between respondent and interviewer has been interested by many survey statisticians. Cannel and Khan (1968) were the first ones who used behavior coding schemes to explain interaction between interviewer and respondent. This interaction should be provided by keeping respondents motivated during the interview to obtain high quality data (Blom and Korbmacher, 2013; Schaeffer et al., 2010; Groves et al., 2009). Similarly, Groves (2004) and Fowler (1991) pointed out that interviewer should train the respondent during the interview.

Studies focused on how to identify interviewer characteristics that have an influence on survey cooperation are essential to understand interviewer variability considering there is no standardized way to cooperate with respondents. There are several studies which try to explain interviewer variation in refusal rates with multivariate analyses (Durrant et al., 2010; Pickery et al., 2001; Olson and Peytchev, 2007; Loosveldt and Beullens, 2014). However, there is no significant study which aims to understand varying interviewer characteristics on survey cooperation in Turkey. In this regard, this first study will try to understand linkage between characteristics of interviewers who worked for TDHS-2013 and participation of respondents. . Furthermore, specified level of response and completion rates were evaluated based on socio-demographic characteristics of interviewers within the context of study.

LITERATURE REVIEW

Survey design is a whole process that is supplied with previous experiences, theories, advantages and disadvantages of alternative design choices. In this respect, main objective of a good survey design is to maximize survey quality

as soon as possible within the constraints of the survey such as cost and time. Assessing survey quality is a substantial issue that making interpreations on the level survey quality is possible with survey assessments. Total survey error, namely quantifying the level of error is used as a tool to decide best design choice by comparing alternative research designs.

Controlling survey quality with various methods such as control charts and spiral of progress has been interested by many researchers especially in last decades (Deming, 1944; Juran and Gryna, 1980; Andersen et al., 1979; Biemer and Trewin, 1997). Avoiding behaviors that have an influence on survey quality and specified seven tools that affect survey quality were investigated in early studies (Crosby, 1980; Ishikawa, 1982). On the other hand, definition of the survey quality varies across the related studies and statistical organizations (Groves et al., 2004; Biemer and Lyberg, 2003). The term "data quality" includes accuracy, timeliness, richness of detail, accessibility of the data, and level of confidentially protection can be ranked as common characteristics across the various quality definitions. In this regard, estimation on the level of total survey error and sources of the error especially within the context of measurement error are useful when evaluating survey quality. Researchers have investigated the non-sampling errors on survey estimates by using various statistical methods and models (Assael and Keon, 1982; Groves and Lyberg, 2010).

Unit level non-response error, that occurs when respondents are reluctant to participate in a survey, consists of a large part of the survey error. The U.S. Census Bureau approach that was developed by Hansen and his colleagues tries to explain the variance originated from non-response within the total variance. In this regard, variability and bias on survey estimates were tried to explain by the models based on mean square error (Hansen et al., 1963; Bailar and Dalenius, 1969). Response rates for the Turkey Demographic and Health Survey and its possible covariates have been studied based on the models (Türkyılmaz and Ayhan, 2012).

Since 1920s, contribution of the interviewer to the total survey error have been interested by many survey statisticians in terms of matching characteristics of interviewer and respondent, experience, preferences, and demographic characteristics of interviewers (Rice, 1929; Gubrium and Holstein, 2001; Turner et al., 1998; Cannell et al., 1981; Lyberg and Kasprzyk, 1991; De Leeuw and Collins, 1997; Dijkstra and Van der Zouwen, 1987). Interviewer bias may be defined as a function depending on some interviewer dynamics such as training and experience (Freeman and Butler, 1976; Fowler and Mangione, 1990).

Relation between interviewer and respondent at the first contact is so important that the interview starts with this interaction. Willingness to the

survey participation is shaped by the interviewers and their influence on participation decision according to the recent studies (Korbmacher, 2014; Sakshaug et al., 2012). Interviewer has a considerable effect on contact and interaction with the respondent especially in face to face surveys. In this regard, many studies interested in roles of the interviewer within the survey quality context (Feldman et al., 1951; Hanson and Marks, 1958). As mentioned previously, varying demographic and other characteristics of interviewers cause non-response in face to face interviews compared the interviews conducted by telephone (Davis et al., 2010). It may be considered that, face to face interviews more prone to refusal at the first contact process than other modes of data collection in terms of interviewer effect. After the finding sample unit, cooperating with it and persuading the respondent to participate survey are other significant issues which can be improved by doorstep interaction strategies (Campanelli et al., 1997; Morton-Williams, 1993). Introducing the objectives of the survey properly, arranging time and environment for the interview affect the cooperation with the respondent, inevitably. Additionally, attitudes, expectations, behaviors, and other characteristics of the interviewer contribute to the contact process. Therefore, interviewer variance may occur starting from the first contact with the respondent.

In this respect, researchers have tried to explain interviewer variation in refusal rates by using multi-level cross-classified logistic models (Durrant et al., 2010; Pickery et al., 2001; Olson and Peytchev, 2007). Furthermore, it is known that matching characteristics of interviewer and respondent helps to achieve higher response rates (Moorman et al., 1999). Being confident along with having experience allow interviewers to achieve higher cooperation rates. Moreover, it is found that, interviewers who reassured the respondents achieve higher response rate, as well (Morton- Williams, 1993). There are different findings on respondent behavior in terms of interviewer's expectations. A study conducted by Singer and Kohnke-Aguire (1979) concludes a weak association between interviewer expectations and respondent behaviors. Conversely, the study conducted by Korbmacher J.M. (2014) puts forward that expectations of interviewers are among main characteristics of interviewers in terms of getting respondents' consent to participate in the Survey of Health, Ageing and Retirement in Europe (SHARE). It should be noted that the concepts of these studies are not fully matched and this may result in conflicting evidence. Moreover, there are surveys which aim to understand interviewer characteristics on the survey estimates by conducting multi-level statistical analysis. For instance, Interviewer Attitude Survey (IAS) conducted by the UK Office for National Statistics collected detailed data about interviewers such as socio-demographic characteristics, work backgrounds, interviewing

strategies, behaviors and attitudes, persuasion of reluctant persons, working at different times and travel preferences.

Interviewers should be assigned randomly for face to face surveys in order to make estimations on variation among interviewers by interpreting the intra-interviewer correlation coefficient (ICC). ICC has been used as a useful indicator when evaluating interviewer characteristics and survey quality. Groves (1989) investigated the variance among interviewers with intra-interviewer correlation based on different modes of data collection. Similarly, Hansen et al. (1961) evaluated interviewer variance based on survey items by using ICC for the 1950 U.S. Census of Population and Housing. As a recent study, Korbmacher J.M. (2014) found that ICC consists of the 36% of the overall variance in German part of the Survey of Health, Aging and Retirement (SHARE).

DATA AND METHODS

The data source comes from the 2013 Turkey Demographic and Health Survey, which is the 10th of quinquennial demographic surveys conducted by Hacettepe University Institute of Population Studies. The data sets cover information on fertility, nutrition, family planning, maternal and child health, and child and infant mortality (HUIPS, 2014). Survey results of the TDHS-2013 were presented with the level of national, type of settlement (urban and rural), five geographical regions of Turkey, twelve Nomenclature of Territorial Units for Statistics (NUTS1) statistical regions, and seven largest metropolitan cities of Turkey.

Considering the sampling design of the TDHS-2013 a weighted, multistage, stratified cluster design approach was adopted. The complex survey design was implemented to assure that obtain acceptably accurate survey estimates about demographic characteristics and health indicators for various survey domains. Sample units of the TDHS-2013 are whole population for the household interviews and women in their reproductive age group (15-49) for the women interviews.

The household and women data sets are nationally representative data sets that include detailed information on household level identification, interviewer identification, date of interview, total number of interview, and result codes of interviews. Result codes have various response categories such as "completed", "none of the household members of no eligible member present at home during the visits", "none of the household members present at home during the survey period", "postponed", "refused", "dwelling vacant/ address not a dwelling", "dwelling destroyed", "dwelling not found", "partly

completed", "woman is not at home during the visit", "woman is not at home during the survey date", and "other".

Apart from the TDHS-2013 data sets, another data set, namely "TDHS-2013 Data Collection Staff Data Set", was used for the analyses. "TDHS-2013 Data Collection Staff Data Set"" were constructed by Census and Survey Processing System 5.0 (CsPro 5.0) software package. In total, 382 TDHS-2013 Application Form, 167 TDHS-2013 Interview Form and 139 Fieldwork Preference Form data were entered into the data files in CsPro 5.0. Finally, these data files were converted to IBM Statistical Package for the Social Sciences (SPSS) data files and all analyses were performed by using IBM SPSS 21.

As it was understood from the form types, recruitment steps for the field work consists of three main steps: first application process, personal interview process, and training process. The number of main data collection staff who worked as supervisor, interviewer, editor, measurer, and for the data entry or various combinations of them is one hundred thirty-six.

"Data Collection Staff Data" which includes information on demographic and other characteristics of the data collection staff was constructed with the forms which were filled by the interviewer candidates and jury members during application, personal interview, and fieldwork preference stages. *"TDHS-2013 Fieldwork Application Form"* covers the information about applicants such as their date of birth, place of birth, graduation status, survey experience, language ability and availability status during the survey period. This form was filled by applicants both in online and with hand. *"TDHS-2013 Fieldwork Interview Form"* includes valuable information on background characteristics of candidates such as educational status, social insurance, and scholarship, health problems (if any), survey experience at HUIPS and other institutions such as TURKSTAT, any university, and any private corporations, main reason for TDHS-2013 participation, computer knowledge, language abilities, and availability status for going anywhere covered within the field work. Furthermore, these forms provide information about jury members' opinions and comments about their general impressions of the candidates, such as their maturity and availability for the job. Additionally, possible positions among data collection staff positions according to jury members for each candidate are noted down in these forms. This form was filled by the jury members in HUIPS for the applicants who were not eliminated at the end of the first application process and called for the personal interview. Lastly, *"TDHS-2013 Fieldwork Preference Form"* was filled by the applicants who were found as successful at the end of the interview evaluation and accepted for the training process. It collects information on candidates' team mate preferences, region of work preferences, and their availability, i.e., whether or not they ask to be excused for some days, during the field work.

Variables for Descriptive and Multivariate Analyses

Determining the profile of interviewers who worked for TDHS-2013 will be useful to understand interviewer characteristics when evaluating their possible effect on response behavior of the respondents. Therefore, descriptive tables regarding the interviewer characteristics of TDHS-2013 were presented. Afterwards, multivariate analyses with the aim of understanding interviewer characteristics behind the response behavior were conducted with household and women levels.

Considering the socio-demographic characteristics of interviewers, "age" refers to completed age of interviewers based on their date of birth and recoded into four groups: "15-19", "20-24", "25-29", "30 and over". The "place of birth-five regions" variable were constructed with "West", "South", "Central", "North", "East" and "Abroad" based on interviewer's province of birth. This classification was made according to the different geographical five parts of Turkey. The "status of graduation", namely status of being student, variable has two different categories "student" and "graduated". Thus, the variable "status of being student", which refers to whether an interviewer is student or not, was categorized as a binary variable including "yes" and "no" categories. Furthermore, "educational status" variable refers to educational level of interviewers with "MA/PhD student", "graduated from university", "student at university-class 3-4", and "student at university-class 1-2-prep".. The "department" variable that was generalized according to the well-known fields of the study has "natural and applied sciences", "educational sciences", "social sciences", "economics and administrative sciences", and "health sciences". The variable named "social science background" with "yes" and "no" categories was created by using the "department" variable. The "yes" category of "social science background" includes "social sciences" whereas "no" category includes other background fields: "natural and applied sciences", "educational sciences", "economics and administrative sciences", and "health sciences". Apart from these variables "working status", "social insurance", "scholarship", variables on computer knowledge such as "programming", "data entry", "familiar", and "no experience", "survey experience", variables on language ability such as "Kurdish", "Arabic", "English", and "other", variables on reason for survey participation such as "earning money", "travelling", "gaining experience", and "adventure with friends "have been included in the data set as dichotomous variables. The variable "working status" refers to whether interviewer was working or not. Similarly, "social insurance" variable refers to whether interviewers had a social insurance or not and "scholarship" variable refers to whether interviewers were getting a scholarship from any institutions at the time of the survey.

Furthermore, variables regarding interviewer performance such as "completed number of interviews", "average time of an interview", "number of days which were spent for the interviewers", and "status of metropolitan interviewer" were added to data collection staff data set. The "number of completed interviews" was constructed by using the result codes of the interview, the "average time of an interview" was constructed by using the start time and end time (hour-minute) of interviews, "number of days which were spent for the interviewers" was constructed by using the date of interview, and "status of metropolitan interview" was constructed by using the province of interview. The variable "status of metropolitan interviewer" means whether the interviewer had at least one interview in metropolitan provinces in Turkey in which more than one million population live. These variables were added to data collection staff data set considering their possible effects on interviewer performance. Similarly, factors such as "mean number of household members" and "mean number of children aged under five" were added to the data set considering the influence on interview time and interviewer performance.

Some of the independent variables on socio-demographic characteristics of interviewers such as age and place of birth were recorded by merging categories since the case numbers are not adequate for logistic regression analyses (see Table 3).

Finally, interviewer specific completion rate and response rate within the household and women level were calculated based on the result codes

Table 1. Result codes of the interviewers

Result of household interview		Result of women interview	
Completed	C	Completed	EWC
No household member/no competent member at home	HP	Not at home	EWNH
Entire household absent for extended period of time	HA	Postponed	EWP
Postponed	P	Refused	EWR
Refused	R	Partially completed	EWPC
Dwelling vacant or address no a dwelling	DV	Respondent incapacitated	EWI
Dwelling destroyed	DD	Other	EWO
Dwelling not found	DNF		
Partially completed	PC		
Other	O		

Calculations were made based on the household and women level completion rate and response rate as the following:

of the interviews (see Table 1). The dichotomous dependent variables for the models were constructed based on these completion/response rates.

$$Household\ Response\ Rate = \frac{C}{C + HP + P + R + DNF + PC}$$

$$Household\ Completion\ Rate = \frac{C}{C + HP + HA + P + R + DV + DD + DNF + PC + O}$$

$$Eligible\ Women\ Response\ Rate = \frac{EWC}{EWC + EWNH + EWP + EWR + EWPC + EWI + EWO}$$
$$= Eligible\ Women\ Completion\ Rate$$

Formulas that were indicated above were identified according to the definitions of Demographic and Health Surveys (DHS) for household level and individual level response rates (Rutstein and Rojas, 2006).

Statistical Analyses

Binary logistic regression models were used in order to understand response behavior of sample units under the impact of interviewer characteristics. The logistic regression analyses help to determine response probabilities, namely odd ratios, based on the set of covariates. The formula of the logistic regression models that were conducted to understand effect of a set of covariates on binary dependent variable through the probabilities as follows:

Expected value of outcome

According to the results of the logistic regression models, rejecting the null hypothesis, refers to at least one parameter is not equal to zero. In other words, there is an association between independent variable and a dependent variable. As a result, exponential function of the regression coefficient was estimated by the model.

The first logistic regression model has a binary variable, which refers achieving 95% response rate for the household interviews. The second logistic regression model has a binary variable, which refers achieving 85% completion rate for the household interviews. Lastly, the third logistic regression model has a binary variable, which refers achieving 90% completion rate (equally response rate) for women interviews. The binary dependent variable for the analyses as the following:

All the models in logistic regression analysis were employed with both "Enter" method and "LR Forward" method which are available in the SPSS to determine the influence of interviewers on response/completion rates. Covariates for the logistic regression models are presented in Table 2. Categories of these variables were presented in following tables in "Results".

Table 2: Models in Logistic Regression Analyses

Dependent variable 1	*Receiving 95% response rate for the household interviews*
Dependent variable 2	*Receiving 85% completion rate for the household interviews*
Predictors	
	Age in 2 categories
	Place of birth-5 regions
	Educational status-4 categories
	Background in 2 categories
	Survey experience in 2 categories
	Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories
	Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories
	Mean number of household members
	Average time of a household interview
	Number of days spent for household interviews
Dependent Variable 3	*Receiving 90% response/completion rate for the women interviews*
Predictors	
	Age in 2 categories
	Place of birth-5 regions
	Educational status-4 categories
	Background in 2 categories
	Survey experience in 2 categories
	Language ability-Kurdish in 2 categories
	Language ability-Arabic in 2 categories
	Language ability-English in 2 categories
	Status of metropolitan interviewer in 2 categories
	Mean number of children aged under 5
	Average time of a woman interview
	Number of days spent for women interviews

The value , which is a proportion of explained variation by the model was given along with the results of the models. This indicator helps to understand how well observations are represented by the model in logistic regression analyses.

RESULTS

Results of the Descriptive Analyses

Most of the data collection staff were female since they were accepted for the interviews quite easily compared with male ones. Additionally, another reason for the preference of female interviewers that women questionnaire includes questions regarding with women's health. Thus, male interviewers usually worked as supervisor, measurer, or field editor in TDHS-2013. According to prerequisite for the application, most of the data collection staff are in the age group 20-29 (Table 3). Most of the interviewers were from the Central and East regions, respectively. This is mostly originated from that the survey was conducted from Ankara and survey interviewers were university students in Ankara. Additionally, university students from the East region were preferred since their language ability in Kurdish. Because there were many sample provinces from the East region in Turkey for TDHS-2013. Interviewers who graduated from the university consist of most part of the data collection staff with approximately 59 percent. Some of the MA/PhD students or undergraduate students could not take part in the field work of the TDHS-2013 most probably due to some national educational exams and midterms and final exams in their universities during the fieldwork time. Status of being student is compatible with the educational status of interviewers, too. Most of the students who applied for the TDHS-2013 fieldwork come from the social sciences background. This may be associated with the close interest in field work. Students who were interested in natural sciences and economics and administrative sciences follows the social sciences with 19.1 percent among TDHS-2013 data collection staff.

As expected, most of the interviewers were not working in anywhere, 94.7 percent, so they could be able to participate field work of TDHS-2013. Furthermore, most of the interviewers have graduated from their universities in recent years. Most of the interviewers had no scholarship from any institutions and no social insurance from any insurance institutions. This situation might be considered in line with their working status.

Other criteria for the application are language ability such as Kurdish, English, Arabic, and other considering the sample provinces in East region.

English, Kurdish, and Arabic are the most common languages among interviewers, respectively. Moreover, more than half of the interviewers have at least one survey experience in any institutions. At this point, I should be noted that some of the experiences covers the surveys on a small scale in universities or internship experience of interviewers. The ability on computer in terms of programming, data entry, being familiar, and no experience were asked by the personal interview forms. Most of the interviewers are familiar with the computers, and some of them have experience on programming and data entry. Furthermore, the reason of participation of TDHS-2013 were asked to candidates during the personal interviews in order to understand their motivation for the survey. In this regard, most of the interviewers stated that gaining experience is main interest for their participation to the survey. Secondly, earning money and travelling constitute the main reasons for survey participation.

Table 4 demonstrates the interviewer level response rate categories on the level of household interviews and women interviews. Most of the interviewers achieved the response rate above 0.95 for household interviews and between 0.90 and 0.94 for women interviews. In other words, 64.3 percent of the interviewers achieved response rate above 0.95 for the household interviews and 40.4 percent of the interviewers achieved response rate in the interval 0.90-0.94 for the women interviews. This is possibly stemmed from the refusals on the women interviews after the completed household interviews. These rates are in line with the household level and women level response rates for the TDHS-2013 (93.3 percent for household level, 89.9 percent for women level). It should be noted that completion rate is not equal to response rate at the household level since they have different dynamics while response rate is equal to completion rate at the women level (Table 1).

Table 5 presents interviewer characteristics by their success on response rates. The 90.0 percent response rate was specified as threshold to understand the differences among interviewers. Interviewers who were born in Central region achieved higher response rates in households and women interviews compared to interviewers who were born in other regions. At the same time, interviewers who were born in East region follow the interviewers who were born in Central region in terms of their achieved response rates on household and women level. Graduated students seem to have higher level response rates compared with undergraduate students. Interviewers who came from the any area in social sciences seem to be more successful than interviewers who came from the other study fields. However, the achieved response rates for both interviewers who were interested from social sciences and other sciences are close to each other. In this regard, we may conclude that there is no significant difference between interviewers from social

Table 3: Characteristics of Data Collection Staff

	Percent	Number		Percent	Number
Gender			**Language-Kurdish**		
Female	69.9	95	None	71.3	97
Male	30.1	41	Less	14.7	20
			Good	14	19
Age					
15-19	0.7	1	**Language-Arabic**		
20-24	50.7	69	None	91.2	124
25-29	44.9	61	Less	5.1	7
30 and over	3.7	5	Good	3.7	5
Place of birth (5 regions)			**Language-English**		
West	14.0	19	Yes	28.3	32
South	14.0	19	No	71.7	81
Central	38.2	52			
North	9.6	13	**Research experience**		
East	22.1	30	No	47.1	64
Abroad	2.2	3	Yes	51.5	70
Educational Status			**Computer knowledge-Programming**		
MA/PhD student	13.5	18	No	91.2	124
Graduated from university	58.6	78	Yes	5.1	7
University-3/4 class	18.8	25			
University 1/2/prep class	9.0	12	**Computer knowledge-Data Entry**		
			No	86.8	118
Status of being student			Yes	9.6	13
No	55.2	74			
Yes	44.8	60	**Computer knowledge-Familiar**		
			No	8.8	12
General Department			Yes	87.5	119
Natural Sciences	19.1	26			
Educational Sciences	6.6	9	**Computer knowledge-No experience**		
Social Sciences	52.9	72	No	95.6	130
Economics and Administrative Sciences	19.1	26	Yes	0.7	1
Health Sciences	1.5	2			

	Percent	Number		Percent	Number
			Reason of survey participation-earning money		
Working status			No	62.5	85
Not working	94.7	125	Yes	27.2	37
Working	5.3	7			
			Reason of survey participation-travelling		
Social Insurance			No	76.5	104
Yes	15.5	20	Yes	13.2	18
No	84.5	109			
			Reason of survey participation-gaining experience		
Scholarship	3.1	4	No	41.2	56
Yes	96.9	125	Yes	48.5	66
No					
			Reason of survey participation-adventure with friends		
			No	89.7	122
			Yes	0.0	0
Total	**100.0**	**136**	**Total**	**100.0**	**136**

Table 4: Response Rates for Household and Women Interview

Household	Percent	Number
<0.80	8.5	11
0.80-0.89	7.8	10
0.90-0.94	19.4	25
0.95 and over	64.3	83
Total	100.0	129
Women	**Percent**	**Number**
<0.80	11.5	12
0.80-0.89	26.9	28
0.90-0.94	40.4	42
0.95 and over	21.2	22
Total	100.0	104

Table 5: Interviewer Characteristics by response rates on household and women levels

	Household Level			Women Level		
	< 90.0	>= 90.0	Number	< 90.0	>= 90.0	Number
Age						
20-24	50.0	51.4	63	51.4	54.8	53
25-29	27.8	47.6	55	40.5	45.2	43
30 and over	22.2	1.0	5	8.1	0	3
Place of birth-5 regions						
West	27.8	12.4	18	13.5	17.7	16
South	22.2	13.3	18	10.8	8.1	9
Central	22.2	40.0	46	37.8	41.9	40
North	11.1	10.5	13	13.5	8.1	10
East	16.7	21.0	25	21.6	22.6	22
Abroad	0.0	2.9	3	2.7	1.6	2
Educational status						
MA/PhD student	16.7	14.6	18	13.5	18.0	16
Graduated	66.7	57.3	71	59.5	57.4	57
University 3-4	11.1	19.4	22	18.9	14.8	16
University 1-2-prep class	5.6	8.7	10	8.1	9.8	9
Social science background						
No	35.3	48.6	57	44.4	43.5	43
Yes	64.7	51.4	65	55.6	56.5	55
Working status						
Not working	94.4	95.1	114	91.9	96.7	93
Working	5.6	4.9	6	8.1	3.3	5
Research experience						
No	50.0	49.0	60	48.6	50.0	49
Yes	50.0	51.0	62	51.4	50.0	50
Kurdish						
Yes	5.6	18.4	20	16.2	16.4	16
No	94.4	81.6	101	83.8	83.6	82

	Household Level			Women Level		
	< 90.0	>= 90.0	Number	< 90.0	>= 90.0	Number
Arabic						
Yes	5.6	6.8	8	2.7	6.6	5
No	94.4	93.2	113	97.3	93.4	93
English						
Yes	25.0	29.9	30	25.7	38.8	28
No	75.0	70.1	73	74.3	61.2	56
Other language						
Yes	0.0	4.0	4	2.7	5.0	4
No	100.0	96.0	115	97.3	95.0	93
Reason for participation						
Earning money						
No	72.2	61.9	78	70.3	62.9	65
Yes	22.2	29.5	35	27.0	25.8	26
Travelling						
No	83.3	77.1	96	86.5	75.8	79
Yes	11.1	14.3	17	10.8	12.9	12
Gaining experience						
No	33.3	42.9	51	48.6	37.1	41
Yes	61.1	48.6	62	48.6	51.6	50
Total	**100.0**	**100.0**	**123**	**100.0**	**100.0**	**99**

sciences and interviewers from other study fields in terms of achieved higher response rates. It can be understood from the Table 5 the response rates for the interviewers who have experience or not are not so different from each other in terms of achieving higher response rates. The result confirms that there is a debate on interviewer's experience to get higher response rates in the literature. Additionally, it is difficult to make interpretation on language ability of interviewers due to the low case numbers. Considering the interviewers' motivation to take part in TDHS-2013, interviewers who stated that they considered to gain experience by participating the TDHS-2013 are more likely to get high response rates compared the other ones.

Results of the Multivariate Analyses

As we mentioned in data and methods section, binary dependent variables for the logistic regression analyses are specified levels of response rates and completion rates for both household interviews and women interviews. First model was conducted on the 0.95 response rate for the household interviews. Model 1 explains the approximately 23% and 33% of the total variation in relative risks of "household response rate" for the Step 1 and Step 2. The "number of days which were spent for household interviews" and "average time of a household interview" are significant variables on achieving the 95% response rate for household interviews. Considering the last model, the odds of receiving 95% response rate for household interviews based on average time of a household interview is 1.392. In contrast with it, the risk of receiving the 95% response rate decreases with the increase in number of days that were spent for household. The negative result for the number of days spent for a household interview may be associated with the reluctant interviewers and their reduced motivation with increasing days spent for the fieldwork. The first model results are presented in Table 6.

Table 6: Results of the Logistic Regression Analysis (Model 1)

Results of logistic regression analysis on household response rate by selected independent variables: Logistic Regression Model 1

Variables	Exp(B)	Significance	R^2 (Nagelkerke)
Step 1			0.231
Average time of a household interview	1.421	0.001*	
Constant	0.100	0.008*	
Step 2			0.331
Average time of a household interview	0.971	0.005*	
Number of days spent for household interviews	1.392	0.003*	
Constant	0.366	0.301	

*Model 1 was performed under control of the variables: age, place of birth, educational status, social science background, survey experience, working status, language ability, status of metropolitan interviewer, and mean number of household members.

Example

Table: The Results of Logistic Regression- ANALYSIS II

The Results of Logistic Regression

Predictor Variable	β	SE	Wald	df	Sig	R	Exp (β)
Female	,324	,187	3,012	1	,083	.39	1,383329
General High school (1)	-1,503	,439	11,709	1	,001	.39	,222
High school success(1)	,667	,223	8,981	1	,003	.39	1,949
Engineering (1)	,443	,183	5,860	1	,015	.39	1,557
Motives	1,741	,182	91,260	1	,000	.39	5,704
Time	,792	,125	39,867	1	,000	.39	2,208

- The model correctly classified 75% of the students as either high achievers or low achievers.

- The model chi-square (χ^2) is 292.796 with 6, and statistically significant.

- The Cox and Snell R^2 was .29. The Negelkerke R^2 was .39.

The Model 2 was performed on the 0.85 completion rate for the household interviews. The results of the logistic model with the Forward LR method are presented in Table 7. Average time of a household interview spent by interviewer and having at least one household interview in metropolitan provinces are significant variables on reaching the 85 percent completion rate for household interviews. As expected, average time of a household interview affects the completeness of the household questionnaires. Interviewers who have not had household interview in metropolitan provinces of Turkey, have higher relative risk on number of completed interviews. This may be regarding that respondents in metropolitan provinces usually works and they couldn't be found in their home to interview. In other words, the result can be associated with the higher non-response in metropolitan provinces in Turkey. Because, number of completed interviews that is a component of completion rate calculation has an influence on household level non-response, directly. The risk of receiving 0.85 completion rate for interviewers who had no household interviews in metropolitan provinces is 4 times higher compared to interviewers who had at least one interview in these provinces.

Results of the third regression model on the 0.90 level of completion/ response rate for women interviews are presented in Table 8. The significant model explains 37% of the total variation. Survey experience, being metropole

Table 7: Results of Logistic Regression Analysis (Model 2)

Results of logistic regression analysis on household completion rate by selected independent variables: Logistic Regression Model 2

Variables	Exp(B)	Significance	R^2 (Nagelkerke)
Step 1			0.338
Average time of a household interview	1.611	0.000*	
Constant	0.026	0.000*	
Step 2			0.419
Average time of a household interview	1.512	0.001*	
Metropolitan interviewer (reference=yes)			
No	4.073	0.006	
Constant	0.022	0.000*	

*Model 1 was performed under control of the variables: age, place of birth, educational status, social science background, survey experience, working status, language ability, status of metropolitan interviewer, and mean number of household members.

Table 8: Results of Logistic Regression Analysis (Model 3)

Results of logistic regression analysis on women response/completion rate by selected independent variables: Logistic Regression Model 3

Independent variables	Exp(B)	Significance	R^2 (Nagelkerke)
Step 1			0.088
Average time of a women interview	1.105	0.049*	
Constant	0.117	0.136	

*Model 3 was performed under control of the variables: age, place of birth, educational status, social science background, working status, language ability, number of days spent for women interviews, and women who have children aged under 5.

interviewer for women interviews, and average time of a woman interview are significant variables on receiving 90% completion rate for women interviews. One minute increase in average time of a woman interview increases the probability of receiving 90% completion rate for women interviews with 20% relative risk. This may be associated with increase in average time of a woman interview that result in completion of woman interviews. In contrast to previous models, interviewers who have ever participated any survey have less tendency on receiving 90% completion rate for women interviews compared to interviewers who have no survey experience. The odds ratio for the interviewers who have at least one survey experience is 0.14 to receive 0.90 completion/response rates for the women interviews.

CONCLUSION AND DISCUSSION

The findings put forward that interviewers who take part in TDHS-2013 field work have various characteristics considering the descriptive results. In this regard, place of birth of interviewers based on the five regions in Turkey, graduation status of interviewers, studying on social sciences previously, and interviewer's motivation to participate in TDHS-2013 field work vary among interviewers' performance indicators. Performance indicators, namely response and completion rates for household and women interviews, are main interests for the multivariate analyses. Logistic regression analysis was performed to understand the relation between response/ completion rates and interviewer characteristics based on the odds ratios. Unfortunately, multivariate analyses have not demonstrated any significant interviewer characteristics on response/completion rates of interviewers except for survey experience. This is possibly because the low case numbers that were included in the models and other characteristics that were not covered in the models such as their expectations and attitudes of interviewers as a result of the lack of information. However, some systematic variables such as average time of an interview, number of days spent for the interviews, and having at least one interview in metropolitan provinces in Turkey have been found as significant variables on response/completion rates. This might be associated with the higher level of nonresponse in metropolitan provinces.

Considering the study, recruitment forms collecting not only information on interviewer characteristics, but also information on attitudes, behaviors, and expectations of interviewers will allow to make further detailed analyses. Furthermore, recruitment forms should be well-designed so that analyses on data collection staff could be made properly. As another indicator that presents the interviewer performance may be studied based on person level contact history over a finite time period with the aim of explaining variance among interviewers. Therefore, person level contact history data should be covered in main data sets of further TDHSs. Another important finding is related to average time of an interview for interviewers. Average interview time is a fluctuating variable in TDHSs because of too long and too short interviews. Therefore, modules that are not changeable in terms of respondent characteristics (namely, including non-filters) should be preferred for survey time related studies.

Lastly, several strategies should be developed to reduce interviewer variance in both cooperation with the respondent and during the interview. Interpersonal skills, ability of persuasion, ability of making contact with another person, matching characteristics of interviewers and respondents may be main criteria in recruitment stage of interviewers. Experience

of interviewers should be taken into consideration in terms of achieving higher response rates. Candidates who have high level of confidence and communication skills should be preferred firstly compared other ones. Undoubtedly, training that cover the adopting survey objectives, interviewing process, persuasion strategies for respondents to participate in survey, appropriate probing and clarifying techniques during the interviews, and giving the appropriate feedback techniques is another process which should be considered comprehensively.

Considering all mentioned above, the evaluation of interviewer characteristics within the context of response behavior, response time, and accuracy of estimates are required when evaluating survey quality from the total survey error perspective. To best our knowledge, there is no significant study in Turkey on evaluating survey interviewers by focusing on their characteristics and performance indicators. Thus, the study provides new evidence on the contribution of interviewers within the survey quality on the Turkey basis.

NOTES

1 This paper is based on the M.A. thesis titled "Evaluation of Interviewer Characteristics and Analysis on Interviewer Effect in TDHS-2013" at Hacettepe University, Institute of Population Studies, Social Research Methodology Program.

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