

Analysis of Truthful Responses and Influencing Factors of MSM's Sensitive Questions

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Received date: 17 Feb 2017; Accepted date: 13 Mar 2017; Published date: 20 Mar 2017.

Citation: Tang W, Han M, Tan M, Zhong X, Kong C, et al. (2017) Analysis of Truthful Responses and Influencing Factors of MSM's Sensitive Questions. J Epidemiol Public Health Rev 2(2): doi <http://dx.doi.org/10.16966/2471-8211.141>

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Abstract

Background: Our study examined truthful responses to sensitive questions in Chongqing City and Sichuan Province in China in a Self-Administered Questionnaire Survey among men who have sex with men (MSM), and to understand truthful responses to sensitive questions, we probe into its factors among them in this paper.

Method: Randomly drawing 272 MSM volunteers from multiple sources and areas in Chongqing city and Sichuan province from July to September 2015 from project research numbered 2012ZX10001007-007 by convenience sampling, which conduct a questionnaire survey among them with an anonymous self-made questionnaire on their truthfulness of sensitive questions with the assistance of investigators and analyze the data of factors independently associated with truthful response of sensitive question by comparing two sample rates to identify.

Results: Of the 270 respondents who reported their accurate response rate during the project of follow-up investigation, we know the educational level and marital status can affect MSM's truthful response of sensitive question by the univariate analysis. The rate of complete truthfulness is 63.77%, as to the reasons of non-complete truthfulness, 57.89% respondents were due to memories confusion.

Conclusion: Single MSM who is high-educated tends to have high truthfulness; the truthfulness can be improved by winning trust of MSM group, informing them of the social values and significance design of this activity, enhancing scientific questionnaire, improving investigators' ability of communication etc.

Keywords: MSM; Truthful Response; Bias; Accuracy; Privacy of Patient Data Retrospective study

Introduction

Sexual behavior has become a major route of spreading AIDS virus, especially sexual behaviors between males. According to the data in 2011 from China's Ministry of Health, homosexual accounts for 17.4% in spreading AIDS virus [1], while in 2014, among the carriers and patients of AIDS virus, 73.5% of them were infected by homosexual [2] which was 56.1% higher than the year of 2011, which means that at present homosexual is a main spreading way in new cases in China. Therefore, MSM are high-risk population of AIDS [3,4,5]. As the main research object of AIDS epidemiology, MSM have sparked international concern [6]. Questionnaire survey is usually used in MSM epidemiology, which will inevitably involve such sensitive questions as sexual behaviour, the usage of condom and some other questions, all of which may puzzle investigators [7], hence causing intentional concealment and unintentional incorrect information [8]. Meanwhile the accuracy of the questionnaire [9] may be affected by many factors like its designs, the attitude of the investigators and their way to conduct and so on. The article aims at studying the main factors of responses to sensitive questions in order to improve truthful responses by accepting specific measures. In this way, relevant references and suggestions can be provided for sensitive questions of epidemiology research. The questionnaire is simply designed with concise questions which lay foundation of the accomplishment of the study. The innovation of this study lies in the self-assessment of the

accuracy of previous sensitive questions and the truthful responses after answering sensitive questions but not the question itself. The deficiency of this study is that it is a summative assessment study of cohort study and extensive supplement study without controlled trail, and the method of assessment is controversial and needed to be further verified.

Methods

Study Population

From July to September in 2015, 272 MSM were recruited by peer referral and trained recruiters from project research numbered 2012ZX10001007-007 by convenience sampling in Chongqing (Chongqing City, Wanzhou District) and Sichuan (cities of Mianyang, Nanchong, Suining, Yibin, and Luzhou), using convenience sampling technique. The inclusion criteria for all participants were (1) age ≥ 18 years, (2) biologically male and had been engaged in sex with other biological males, (3) willing to provide informed consent and willingly participate in the investigation and sign a written notice.. The exclusion criteria included MSM with severe mental illness, a language barrier, and/or those with a mental deficiency.

Survey Material

Survey adopts self-made questionnaire including questionnaire of general information and that of truthfulness of sensitive questions. The

former includes age, places of living, nationality, literacy, jobs, career, marital status, incomes etc.. While the latter contains number of sexual partner, sexual behaviors, the usage of condom etc.

Survey Approaches

Based on the project that MSM take antiviral drugs to prevent HIV infection after having sex, the studying objects of the survey were recruited by convenience sampling, which begun in 2013. Follow-up was conducted every 12 weeks in past 96 weeks in both Chongqing and Sichuan province. 272 volunteers were chosen from the last follow-up to participate in the self-administered questionnaire anonymously, self-evaluating repeatedly the truthfulness of the repeatedly follow-up and its influencing factors.

Quality Assurance

Investigators were trained before the site investigation begun, uniform the method and instruction of investigation. Preliminary survey was conducted before the formal survey and the eligible questionnaire was resumed after filled anonymously and independently by the survey objects that had been recruited into the program for at least 2 years, some even 10 years due to several times participation, thus built deep feelings and high credibility with the investigators. Anonymous self-administered questionnaire was used, what's more, it did not involve sensitive questions, and therefore the outcome is credible.

Description: This research includes three investigators; all had prolonged connection with the survey objects. Only one of the investigator, who have built connection for 12 years, is in charge of organization and management of the survey objects. This investigator, having a good interpersonal relationship, is very familiar with the living habit of the survey objects. The other two investigators are assistants in charge of data classification. Instruction: This survey is anonymous survey, which only gain understanding on the rate of truthful response, do not interfere with the preliminary results (PrEP preventability medication cohort study).

Statistical Analysis

Questionnaire responses were entered and checked for logic verification by using EpiData 3.1. Data (EpiData Software is from EpiData Entry version 2.0 and above released by the non-profit organization "The EpiData Association" Odense, Denmark In Danish: EpiData foreningen). The association receives NO baseline budget from anyone. EpiData Software has since 2000 grown from securing the principles of Epi Info V6 to an independent and documentation based system with several translations and numerous downloads. To secure continued viability organizations and governments work is being done to secure for the future, see also the license principles - the ambition is to convert the programs to open-source within few years. Contact the EpiData Association for clarification. info@EpiData.dk SAS 9.2 (SAS is the leader in analytics. Through innovative analytics, business intelligence and data management software and services, SAS helps customers at more than 83,000 sites make better decisions faster. Since 1976, SAS has been giving customers around the world THE POWER TO KNOW[®] was used for statistical analysis of the questionnaire response. Rate and ratio were adopted for descriptive statistical analysis and chi-square test for univariate analysis. The testing standard is $\alpha = 0.05$ (bilateral) in the univariate analysis. GraphPad Prism 6.0 (GraphPad Prism was originally designed for experimental biologists in medical schools and drug companies, especially those in pharmacology and physiology. Prism is now used much more broadly by all kinds of biologists, as well as social and physical scientists. More than 200,000 scientists in over 110 countries rely on Prism to analyze, graph and present their scientific data. It is also widely used by undergraduate and graduate students. Graphpad were applied for diagram.

Results

Characteristics of Subjects

Generally speaking, 272 MSM will be chosen to participate the self-administered questionnaire. The survey received 270 effective questionnaires with effective recovery rate 99.26%, because the other two piece of questionnaire without important sensitive response of this research, such as: "the number of sexual partners, sexual frequency, sexual behavior condom usage and whether your information accuracy etc., Which results in missing value beyond 20%? With good recovery rate, the outcome shown that the rate of complete truthful responses is 63.33% (total amount 171), while the rate of non-complete truthful responses shown 36.67% (with total amount 99).

Comparison of MSM's Feature (complete accurate responses)

Taking the essential features of subjects as grouping variate and making univariate analysis of the truthful response to sensitive questions (non-complete accuracy=0, complete accuracy=1), the result shown that the differences of sensitive questions between literacy ($X^2=6.8419$, $p=0.0327$) and marital status ($X^2=6.0400$ $p=0.0488$) is of statistic meaning, which means that the higher the single MSM is, the higher his truthful responses are. Outcome shown in (Table 1) (Figure 1).

Variable	Sample Capacity	Entirely Accurate (n=169)	Chi-square	P-value
Age, years				
<25	56	37 (66.07%)	5.7154	0.1263
26 ~ 30	80	56 (70.00%)		
31 ~ 40	68	44 (64.71%)		
>40	66	34 (51.52%)		
Household registration				
Urban	183	122 (66.67%)	2.7174	0.0993
Rural	183	122 (66.67%)		
Ethnologic				
Han	261	166 (63.60%)	0.0198 ^b	0.8881
Minority	9	5 (55.56%)		
Education level				
Junior high or lower	42	21 (50.00%)	6.8419	0.0327
Senior high	76	44 (57.89%)		
College/university or higher	152	106 (69.74%)		
Employment status^a				
In employment	225	143 (63.56%)	0.0001	0.9919
Student and Retired or unemployed	44	28 (63.64%)		
Occupation^a				
National party and government organs	108	71 (65.74%)	0.3825	0.8259
Local enterprises and institutions	94	58 (61.70%)		
Else	67	42 (62.69%)		
Marital status				
Unmarried	190	129 (67.89%)	6.0400	0.0488
Married	55	30 (54.55%)		
Divorced or widowed	25	12 (48.00%)		
Average monthly income (RM B)^a				
<1000	39	29 (74.36%)	3.0905	0.3779
1001 ~ 3000	106	67 (63.21%)		
3001~ 5000	96	61 (62.24%)		
>5001	26	14 (53.85%)		

Table 1: Comparing The Feature of "Complete Truth" (n=270)

^a Missing Value of Samples=1.

^bthe Chi-square Correction test

“Complete Accurate” Responses (n=171)			“Non-complete” Responses (n=99)		
Self-exposure Reasons (multiple)	Frequency	Percents	Self-exposure Reasons (multiple)	Frequency	Percents
Investigators being pleasurable	145	84.80	Being confused sometimes	54	54.55
For self, family and friends’ health	129	75.44	Infringing privacy	18	18.18
Questions being easy to answer	125	73.10	Questionnaire being too complicated	12	12.12
Feeling to be concerned	82	47.95	Feeling down in the dumps	11	11.11
Good for drug guidance	63	36.84	Can’t stand the way been questioned	7	7.07
Feeling to be approval	60	35.09	Bad attitudes of doctors	3	3.03
Other reasons	5	2.93	Other reasons	6	6.06

Table 2: Reasons of Self-reported in influencing sensitive responses

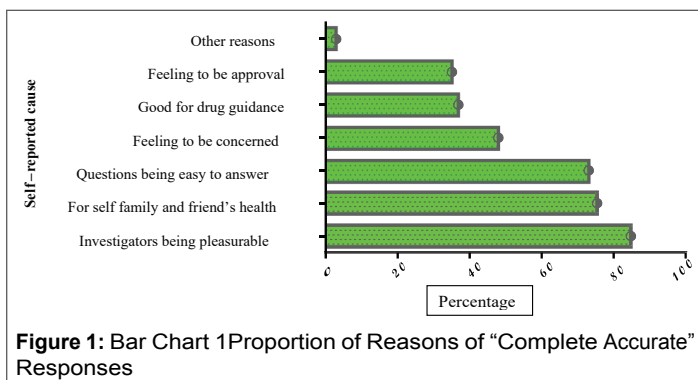


Figure 1: Bar Chart 1 Proportion of Reasons of “Complete Accurate” Responses

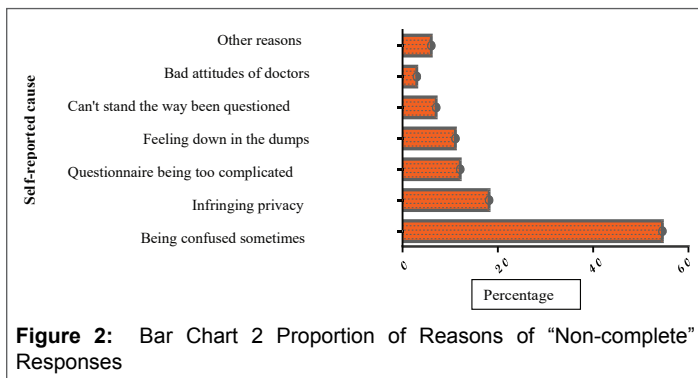


Figure 2: Bar Chart 2 Proportion of Reasons of “Non-complete” Responses

Influencing Factors of Sensitive Questions in Self-reported MSM

By analyzing the influencing factors of self-reported, reasons of exact response were found to be “Investigators being pleasurable” (84.80%) or “For self, family and friends’ concern” (75.44%). Details are shown in Table 2, proportions of reasons in bar chart 2; the reasons of non-accurate responses were mostly found to be “Being confused sometimes” (54.55%) or “Infringing privacy” (18.18%). Details are shown in Figure 2, proportions of reasons in bar chart 2.

Discussion

1. Control the process to reduce information, and follow the forgetting curves to reduce information bias which is the main bias in epidemiology research. In which recall bias is the inevitable factor in retrospective research. This analysis shows that “Being confused sometimes” is the largest source of truthful information losses, accounting for 54.55% of the untruthful responses. Respondents’ vague memory or forgetting of the research contents will cause magnificent information bias, which fits the research result of Dong Wei [10]. It is easy to find in retrospective research that information

bias affects the truthfulness of research result [11,12]. The working model of human memory system reveals that information classified as short-term memory has two destinations, be forgotten or convert into long-term memory. Germany psychologist Hermann Ebbinghaus put forward famous “Forgetting Curve”. He discovered the forgetting law that newly learned knowledge will be forgotten at a rapid speed, and then slows down, but information in long-term memory will be hard to forget [13]. The 2012ZX10001007-007 program investigated situations in the past two weeks, while this research investigated the truthfulness of information gathered in each follow up of the program. This research is an investigation on long-term situation and implicit memory. The process of forgetting is not equilibrium. Paranoid personality disorder will affect the ability [14] for spouse or colleagues to identify the truth, and people who have attention deficit disorder will suffer memory decline [15]. Therefore, before the research starts, respondents should be screened properly after their personality was understood by Stress-coping Measure Scale and Behavior Scale, and untruthfully results should be rejected. At the same time, Gerd Mietzed from Germany mentioned that the most losses of long-term memory are caused by information interference. Retrospective interference means new information has great effects on old information. Information would be declined during the process of controlling, as to the important information; man tends to depend upon it according to its importance [16]. Therefore, important information should be screened in when design research contents.

2. Good communication skill of investigators will raise the rate of truthful response. Good communication skill of investigators and trust relationship between investigators and respondents will raise the rate of truthful response. Research result shows that 84.8% of truthful response comes from “investigators being pleasurable”, while 47.95% from “Felling to be concerned”, 35.09% from “feeling to be identified”. On the contrary, bad “user experience” respondents received will lead to untruthful response. For example, 10.1% of those who refuse to respond truthfully are due to “Can’t stand the way been questioned” and “Bad attitudes of doctors”. Therefore, certain measures can raise the rate of truthful response, such as winning MSM’s trust, having good micro-skills of talking, having good inter-personal interaction and attraction, respecting, caring and identifying/approving social roles, protecting privacy. This result is in coherence with the research of Gao G et al. [17], Baer A et al. [18] and Meisheng Z et al. [19]. Among all the factors, trust is the most important one. However, it is hard to acquire trust of sensitive group. Staffs who have long been working on related problems have advantages. It should be considered to bring the leader of those staffs into this research. Therefore, before an epidemiology research, investigators should be trained with standard expression and questioning methods in order to raise the awareness of caring and identify/approval.

3. Emphasize on social value of the information provided by respondents will raise the truthfulness of response. This research finds that MSM people, having great sense of social responsibility is eager to be valued and approved. When investigator explained the contribution, meaning and value of the result, 75.44% of the truthful response come from "For self, family and friends' health", while 36.84% form "Good for drug guidance". Famous American psychologist Rosenthal put forward Pygmalion Effect, which believes praise, trust, and expectation has the power to change one's behavior. When someone receive others' trust, praise and expectation, he or she feels being supported by society and hence enhance self-value and become confident and dignity, and acquire positive motivation to achieve the expectation in order to avoid disappointment and maintain the continuity of the social support [20]. Therefore, it is much easier to get a truthful result if investigators explain the meaning of research, and the social value of the information provided by respondents.
4. The design of questionnaire affects truthful response to sensitive questions. This research shows that the design of questionnaire and questions affects the truthful response of MSM sensitive questions. To design sensitive question properly (Question being easy to answer") will receive 73.1% truthfulness. On the contrary, inappropriate questioning methods will reduce the rate of truthfulness response, such as 18.18% of the respondents felt "Infringing privacy", and 12.12% felt "Questionnaire been too complicated". It can be concluded that questionnaire design should focus on questioning methods, alternative answers and expressions to avoid untruthful response due to design flow of questionnaire. This result is in coherence with the research of [21]. Therefore, accessibly expression and clear format will raise the rate of truthfulness response.

Conclusion

This study provides evidence that a high-educated respondent tends to have high truthfulness in an anonymous self-administered questionnaire survey conducted among MSM in China. Meanwhile, truthfulness of questionnaires can be acquired by improving the scientific of questionnaire survey and the communication ability of investigators etc., For example, winning the trust of MSM groups by acknowledging them the value and meaning of the survey. To gain trust of MSM groups and better answering the sensitive questions, such aspects should be noticed like good Microskills Hierarchy, interaction and attraction among people, the attitude of respect, the acceptance of love and social roles, protecting the privacy of MSM group, avoiding hurtful remarks and actions etc.

Due to its deficiency, such survey like Stress-copying Measure Scale, Behavior Scale and so on are conducted to understand the individual feather of study objectives and to select important information. The survey methods should be carefully used if investigator does not contact the survey objectives for a long time.

Acknowledgment

We thank all participants and investigators for their help. We are also grateful to the staff and volunteers from the local community-based organizations in Sichuan and Chongqing for their aid in the data collection during this research. Funding: This study was supported by the National Key Project for Infectious Diseases of the Ministry of Science and Technology of China (grant number 2012ZX10001007-007).

Conflict of Interest

The authors have declared that no competing interests exist.

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Supplementary Information

The Real-response Situation

To verify the validity of “Taking Tenofovir Disoproxil Fumarate, (TDF) to prevent new HIV infections among balance control of opening and multicenter controlled clinical intervention by cohort study”, We do this study with an anonymous self-made, will not affect the results of that you and our cooperation before, please answer the following questions. Thank you for your cooperation!

Answer way: please in “” painting “√”, (such as:). All questions in the questionnaire can multi-select. Thank you for your cooperation!

1) General information:

1.1) Date of birth:

month _____ year _____

1.2) Household registration

A. Urban B. Rural

1.3) Ethnologic

A. Han B. Minority

1.4) Education level

A. Junior high or lower B. Senior high C. College/university or higher

1.5) Employment status

A. In employment B. Student and Retired or unemployed

1.6) Occupation

A. National party and government organs B. Local enterprises and institutions C. Else

1.7) Marital status

A. Married B. Divorced or widowed C. Unmarried

1.8) Average monthly income (RMB)

A. <1000 B. 1001~3000 C. 3001~5000 D. >5001

2) Be analogous to “the numbers of sex partners, Sex number, Sexual behavior, the use of condoms” and so on, you answered the information is accurate and true or not in the previous cohort study, please select:

A. Non-complete B. Complete Accurate

*If you painting “A”, please select the reason in following: (multi-select):

A. Infringing privacy B. Feeling down in the dumps C. Bad attitudes of doctors
D. Can't stand the way been questioned E. Questionnaire being too complicated F. Being confused sometimes
G. Other reasons _____

*If you painting “B”, please select the reason in following: (multi-select):

A. Questions being easy to answer B. For self, family and friends' health C. Feeling to be concerned
D. Feeling to be approval E. Good for drug guidance F. Investigators being pleasurable
G. Other reasons _____