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Global Adult Tobacco Survey (GATS) in Poland 2009-2010 – study strengths, limitations and lessons learned

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Abstract

Objectives. A tobacco surveillance system is crucial for improving the planning and implementation of effective tobacco control policies. The purpose of the presented study was to describe a review of the process of implementation and methodological assumption of a Global Adult Tobacco Survey (GATS) conducted in Poland. The study strengths and limitations are evaluated, as well as some recommendations given for further tobacco surveillance activities in Poland.

Material and Methods. The Global Adult Tobacco Survey (GATS) was implemented in Poland between 2008-2010. The survey population selection process was based on a three-stage stratified geographically-clustered sample of a non-institutional population aged 15 years and over. Those who lived in institutions were not surveyed. The GATS questionnaire was very detailed and provides a significant amount of data. The filed work was preceded by several training sessions for all survey staff and the pretest. Questionnaires were administered in respondents' homes during the face-to-face interviews.

Results. Of the 14,000 households selected for the survey, 8,948 (63.9%) households and 7,840 (93.9%) sampled individuals completed the interviews. The total survey response rate was 65.1%.

Conclusions. GATS was an important step towards obtaining representative, current data on the tobacco epidemic in Poland. Basic results of the study are currently available. More in-depth analysis will provide useful data for public health experts and policymakers to assign resources and establish health priorities. Unfortunately, competing targets and lack of awareness on the part of stakeholders still constrains the financial resources available to those undertaking tobacco control research in Poland. The circumscribed capacity to undertake multidisciplinary policy research limits both the quality and quantity of such studies. There is an urgent need to establish a nationally coordinated plan for surveillance of data collection, use, access and dissemination, with defined institutional roles for each of these functions and and the funds dedicated to the research.

Key words

smoking, tobacco, adults, Poland, GATS

INTRODUCTION

Cigarette smoking is one of the most important modifiable risk factors for numerous diseases, including cancer, cardiovascular and chronic respiratory diseases [1, 2]. A number of epidemiological studies have also confirmed the impact of passive exposure to tobacco smoke on the health of non-smokers. Environmental tobacco smoke exposure is especially dangerous for pregnant women and children [1, 3, 4]. In long-term smokers, smoking is responsible for over 50% of all avoidable deaths, and 50% of these are due to cardiovascular disease, which are related to the amount of daily tobacco smoking and duration of smoking [5].

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In Poland, tobacco was responsible for 23% of all NCDs, 90% of trachea, bronchus and lung cancer. The proportion of deaths attributable to tobacco was close to 31% in men and 12% among women aged 30 years and over [1]. In the communicable disease group, tobacco deaths accounted for 26% of all lower respiratory infection deaths and 28% of all tuberculosis deaths. In general, according to the World Health Organization (WHO), 225 of all the deaths of adults aged 30 and over in 2004 was attributed to tobacco use. In a nationally household representative survey to assess tobacco use and diseases burdens in 16 countries in 2008-2010, it was discovered that the rates of lung cancer in men are very high in Poland [1, 3, 5, 6, 7]. Smoking-attributable death rates were higher on average in both men and women in CEE countries, including Poland, than in the EU-15 countries, and still seems to be on the increase, especially for women aged 45-64 [8].

Prior efforts to combat tobacco smoking in Poland have been in place since the 1970s [6]. There has been a buildup

of events and programmes from the 1980s in order to reduce tobacco smoking in Poland. Community-based programmes were introduced in the 80s on the local level in various provinces. The WHO Health for All strategy resulted in the National Health Programme which was implemented in 1990. The programme aimed at reducing health inequalities and promoting health. Cessation clinics were also established in the 1990s. There were also a variety of counter-media campaigns carried out in Poland since 1991. Legislative initiatives were also undertaken to reduce smoking prevalence and its consequences. The Act on Protection of Health Against the Consequences of Consumption of Tobacco and Tobacco Products was passed by the Polish Parliament on 9 November 1995 [9]. This Act, the primary law on tobacco control, covered many aspects of tobacco control, including, but not limited to: restrictions on public smoking; sales to minors; production and sale of smokeless tobacco products; packaging and labeling; tobacco advertising, promotion and sponsorship; and sanctions for violations of provisions of this Act; several amendments of the tobacco control Act were subsequently endorsed [10].

In women, current smoking prevalence was the highest in Poland (24.4%), and over the years a reduction in tobacco consumption among men and women was observed; however, this process slowed down, especially in the female population, and for many years tobacco use ha remained at a similar level or has even increased in certain age groups [8, 11, 12]. However, the National Health Survey in Poland in 2006 showed that most of the smokers in Poland (over 80% of smokers) would like to quit smoking [5].

In the 1990s, due to the decline in social acceptance of smoking, conducting intensive educational activities concerning the health consequences of smoking and legislative solutions, the proportion of smokers declined (1995-1999 – men 45%, women 23%). Unfortunately, in recent years, the declining trend among young adult women stopped. Furthermore, there has been an increase in annual cigarette sales and consumption from 500 cigarettes in 1923 to 70 billion cigarettes per year in 2007 [6].

For years, tobacco smoking has represented the largest single preventable cause of death for the adult population in Poland. According to analysis conducted in 2008, the average financial cost of premature death is 621,000 zlotys (PLN) per person, averaging 5.5 billion zlotys for over 8,000 premature deaths from second-hand smoke recorded in 2002 [6].

The expected effects of policies and programmes to reduce tobacco use has not been achieved at a sufficient level [10]. Tobacco control in Poland needs to be strengthened by preparing more suitable activities and projects. Monitoring tobacco consumption is crucial for tobacco control policies in terms of identifying specific groups at risk and factors that are linked with smoking [13]. Monitoring and evaluation is a vital aspect of the Polish National Action Plan 2009–2013, which has the objective to decrease tobacco use.

Unfortunately, surveillance data from past surveys are not comparable across studies or time, because the methods used were based on varying standards, criteria and methodology. There had been no agreement on standards, criteria or methods to be used for data collection.

Thus, implementing the GATS in Poland was an important step towards strengthening the tobacco surveillance system in Poland. In 2009, Kaleta et.al conducted a study explaining and promoting the aims and objectives of GATS. The study also explained the process of the implementation of GATS, based on current experiences of the WHO Country Office in Poland [14].

Following-up on previous reports, the purpose of the presented study was to describe a review of the process of implementation and methodological assumption of the GATS in Poland. The study strengths and limitation were evaluated, as well as some recommendations given for further tobacco surveillance activities in Poland in order to develop well-tailored, effective tobacco control strategies.

GATS as a part of Global Tobacco Surveillance System (GTSS). Due to the unavailability of country-specific data internationally, the World Health Organization (WHO), Centres for Disease Control and Prevention (CDC), and the Canadian Public Health Association (CPHA) implemented a programme: Global Tobacco Surveillance System (GTSS). In 1988, GTSS was established to assist countries in conducting tobacco surveillance and establishing a monitoring system. This was due to lack of country-specific global data [15, 16, 17]. GATS was launched in 2007 for the adult population, nine years after the establishment of GTSS.

GATS is the global standard for systematically monitoring adult tobacco use (smoking and smokeless) and tracking key tobacco control indicators [14, 18, 19, 20]. The GATS Poland implementation process started in May 2008, utilizing standard protocol mechanisms and measures that are consistent and valid for cross-country comparisons [14]. GATS bridges the information gap necessary for policy makers, tobacco control experts, and the community as a whole, to create and modify interventions in different policy areas regarding tobacco control. GATS provides vital information on key indicators of tobacco control based on socio-demographic characteristics. The use of GATS results in the various countries that have been tested will assist in formulating, monitoring and implementing subsequent GATS surveys in those countries, would be useful in evaluating the effectiveness of existing or modified tobacco control policies [14, 18, 19, 20]. In 2008-2010, 14 countries participated in the first phase of GATS implementation: Bangladesh, Brazil, China, Egypt, India, Mexico, Philippines, Poland, Russian Federation, Thailand, Turkey, Ukraine, Uruguay and Vietnam. Six countries participated in the second phase: Argentina, Indonesia, Malaysia, Panama and Thailand. Malaysia released its results on 12 June 2012 (see: Centre for Disease and Contol [CDC] website). These showed that there were 4.7 million people who currently smoked tobacco, accounting for 23.1% of the total population of Malaysia. GATS was a global project designed to monitor adult tobacco use worldwide and supported by experts from the WHO and CDC. [14].

GATS in Poland – implementation process and methodology. GATS is a nationally representative household survey that emerged in 2007 as a component of the GTSS [16]. GATS meets standard protocol measures that allow country-by-country comparison on a global scale. The survey has been seen as a part of the Bloomberg Global Initiative to Reduce Tobacco Use by the Bloomberg Philanthropies, who support the survey in a bid to fill the gap for measuring adult tobacco use globally. A number of agencies were involved in the implementation of GATS Poland. The Polish Ministry of Health, which was the leading national coordinating agency

nominated three different agencies: Maria Sklodowska-Curie Cancer Centre and Institute of Oncology (CCI), the Medical University of Warsaw (MUW), and Pentor Research International (PRI). The WHO Country Office in Poland and the CDC also participated. These agencies were involved in the training of personnel and staff or the pretest and fieldwork, statistical analysis of data, and technical assistance, among other things. The agencies are also responsible for the series of manuals created to maximize the efficiency of the data collected from GATS. These manuals provide the standard protocol for the interview questionnaires, sample weights, fieldwork implementation, data management, analysis, reporting and release of information. They provide systematic guidance on the design and implementation of the survey.

In Poland, the Ministry of Health revised and approved the questionnaires and also appointed two committees – the GATS Poland Scientific Committee and the GATS Poland Steering Committee – who handled the scientific and technical coordination of the study [14].

GATS was designed to produce estimates that met the following precision requirements: estimates computed at the national level, by urban/rural classification, by gender, and by the cross of gender and urban/rural inhabitants should have a 95% margin of error of three percentage points or less for tobacco use rates of 40%. Sample sizes should be sufficiently large to accommodate the statistical power requirements for tests to detect differences between survey rounds with independently chosen samples. Assuming a design effect of 2.00 for estimates computed at the national level, by urban/rural classification, by gender, and by the cross of gender and urban/rural, the minimum sample sizes needed to accommodate these precision requirements were 2,000 respondents in each of the four groups, defined by the cross of urban/rural and gender [20].

The following anticipated non-response rates at the household and individual level were considered: household eligibility rate 90, household response rate 90, household screening rate 95, person eligibility rate 98, urban person-level response rates 70 for male and 80% for female, and rural person-level response rates 75 for male and 85% for female. The estimated overall response rate within strata was 73.5% for rural men, 68.8% for urban men, 83.3% for rural women, and 78.4% for urban women. The overall response rate based on the above assumptions for sample size computation of GATS Poland was 60%.

Data retrieved was transferred to the National Data Coordinating Center at MUW through the Internet, using secure channels. Using an aggregation module in GSS and SPSS, the aggregated data was transferred to as analyzable raw data for further analysis and reporting. Statistical analysis was carried out by the initial process of creating sample weights for each respondent. Sampling weights were required to ensure the representativeness of the sample at the stratum and national level. The final weights were used to produce population estimates and their confidence intervals. All the statistical analysis, including the production of sample weights and population estimates, were carried out using the sample module of SPSS 17 [18, 21].

Finally, GATS covered the 16 provinces in Poland, which represented 99.4% of the total population. The survey population selection process was based on a multi-stage stratified geographically-clustered sample of non-institutionalized population, males and females, aged 15 years and over. People living in institutions, military bases and group homes were excluded from the survey, as well as those who claimed they were visiting Poland. The updated sample frame of 2007 was for the GATS Poland design and was retrieved from the Central Statistical Office [18, 19]. The GATS Poland sample design provides transparent cross-sectional estimates for the country through varying characteristics, including gender and urbanization.

The GATS Poland sample was selected in three stages, where statistical regions were treated as Primary Sampling Units (PSUs). In the first stage of sample selection a total of 200 urban PSU and 200 rural PSU were selected, with probability proportionate to size according the GATS sample selection requirements. In the second stage of sample selection, 36 households (18 males and 16 females) were selected from each urban PSU, and 34 households were selected from each rural PSU using simple random sampling without replacement from the TERYT. A total of 6,800 households were selected (3,600 males and 3,200 females) from rural PSUs with 7,200 households (3,800 male and 3,400 female) drawn from urban PSUs, resulting in a total sample of 14,000 non-institutionalized households from all 16 provinces for GATS Poland. One individual (eligible man or woman) from each of the participating households was randomly selected. The overall participation rate was 65.1%, higher in rural areas (69.1%) than urban areas (65.1%). Of the 14,000 households selected, 8,948 households and 7,840 sampled persons completed the interviews successfully. The household response rate was 69.2%.

Smoking behaviors in the Polish adult population included smoking status and demographic and behavioural patterns of smoking. According to GATS Poland, smoking status was divided into two parts: current and non-smokers. Current tobacco smokers included current daily and current occasional smokers, former daily and never daily smokers. The non-smoker group included former daily smokers, never daily, former occasional smokers, and never smokers.

In the she study sample of adults aged 15 and over, the genders were represented almost equally: 47.7% males and 52.3% females. According to a recent Polish demographics profile, found through the Central Statistical Office of Poland, adults aged 15 and over are comprised of approximately 41% males 45% females. 44.2% of the study sample was between 15-39 years of age, while those 40 years and over were 55.9% of the sample. The current median age in Poland is 38.5 years.

The majority of the respondents lived in urban areas (62%), while respondents from the rural areas were amounted to about 38%. Recent demographic profiles show that 61% of the Polish population live in urban areas. 55.2% of the study population had secondary school education and higher, while 44.8% had primary and vocational education. The regions were almost equally represented with the south having the highest (22.4%), and the Southwest having the lowest population (9.8%). According to Kaleta et.al, smoking prevalence varied among age groups, similar to other studies, and was more prevalent in men [18, 19].

Questionnaire design. The GATS questionnaire consisted of a household and an individual questionnaire and allowed the retrieval of a broad range of data on tobacco consumption and related issues. The household questionnaire covered questions concerning all adult residents in order to randomly

select an eligible respondent to complete the individual questionnaire. The individual questionnaire consisted of nine sections, including background characteristics of respondents, information about tobacco smoking, smokeless tobacco use, cessation, secondhand smoke, knowledge about health effects of both smoking and smokeless tobacco, and other important aspects related to tobacco use [21].

The GATS questionnaire was adjusted to fit the national context. A double translation was undertaken to ensure reliability. It was translated into Polish and translated back again into English to minimize errors. Country-specific adaptations were necessary for cultural and scientific reasons. The major adjustment was changing the proposed definition of a household member to the one specified by the Central Statistical Office. Most of the adjusted questions concerned answer categories such as level of education, list of tobacco products, etc. Changes were made to both the content of some questions and the questionnaire skip patterns in order to ensure the integrity of the GATS study with previous tobacco studies in Poland. A pretest was conducted between 26 January – 1 February 2009 among 200 residents to validate and improve the questionnaire, as well as assess the technical aspects of the survey and the IT equipment.

In order to maintain uniform survey procedures and follow standard protocols established by GATS, three manuals were developed:

1) GATS Field Interviewer Manual – consisted of instructions for interviewers regarding interviewing techniques, field procedures, methods of asking questions and the use of handheld devices for data collection.
2) GATS Field Supervisor Manual – contained a detailed description of supervisors' roles and responsibilities, as well as information on data aggregation and transfer procedures.
3) GATS Question by Question Specifications Manual – provided question-by-question instructions to the field interviewers for administering the GATS household and individual questionnaires using the handheld computers. This also had information on range checks, response options, and purpose and instructions for each survey question.

Almost 200 interviewers were trained in completion of the questionnaires and were equipped with handheld computers to collect data on household and individual electronically. Training was based on standard GATS manuals and procedures, including class presentation, mock interviews, field practices and tests. Field supervisors were responsible for the overall operation of the field team and maintaining the time schedule of field data collection. In addition, pollsters were also responsible for transmitting the data to the national data coordinating centre via the Internet using established secure channels. IT personnel were responsible for providing technical support with respect to concerns raised during fieldwork and troubleshooting any issues with handheld devices. Field-level data were aggregated on a daily basis and analyzed twice a week using microcomputers to identify certain types of data collection errors, skip patterns and consistency checks. Field-level feedback forms were analyzed and the information provided back to the interviewers and supervisors to improve performance [21].

Letters of introduction stating the purpose of the study were sent to the sampled addresses from the Minister of Health. This was to ensure the safety of the interviewers and to achieve effective fieldwork. Face-to-face interviews were carried out to complete the questionnaires, and repeated inspections were carried out on selected samples from some interviewers.

Based on the data, an individual was randomly selected to complete the individual questionnaire. The questionnaires were based on the GATS Core Questionnaire with Optional Questions designed by the GTSS for countries implementing GATS (GATS Poland). The Cancer Centre and Institute of the Medical University of Warsaw, representatives the from Ministry of Health, CDC, Johns Hopkins, Bloomberg School of Public Health, and the WHO Poland Country Office, contributed to the modification and adaptation of the questionnaire to fit the Polish population. The modified questionnaire was ultimately approved by the GATS Poland Coordinating Committee supervised by Polish Ministry of Health and the global GATS Questionnaire Review Committee.

Study limitations and strengths. A number of strengths of the presented study can be observed. Summarized, self-reported smoking proved the accuracy of results, especially in the case of interviewer- administered questionnaires in various studies [22, 23, 24, 25]. Generally, the questionnaires are known to be cheap, suitable for large representative populations, can be easily collected, and widely used for epidemiological studies globally. In addition, a household response rate of 69.2% and an overall response rate of 60% improved the representativeness of the study results.

The aim of GATS is to monitor the use of tobacco (smoke and smokeless) by the adult population in a systematic manner, and also to track the main tobacco control indicators in a sample Polish population that is nationally representative. GATS also has an objective to track the implementation of the Framework Convention on Tobacco Control (FCTC) – recommended policies outlined in the MPOWER package [26, 27, 28]. This method of survey is specific in showing the present tobacco epidemic and response of the tobacco control policies. GATS is an improvement on the collection of data that will be useful for policy interventions and control of tobacco smoking. The validity and representativeness across provinces and countries distinguish the survey from prior efforts conducted to control tobacco smoking in Poland. Previous Polish surveys or programmes conducted to assist in implementing effective tobacco control policies have been variably different from the GATS programme. There had always been the lack of a defined role of coordination in tobacco surveillance in Poland. Varying groups carry out surveys in relative isolation, and do not share or discuss data or methodologies. This resulted in difficulty in using or accessing data for planning by government institutions. Some of the surveys were based on small samples which would produce increased variability and reduce representativeness. For example, a number of previous surveys were conducted for the population aged 18 years and over, which would be difficult to implement in a population aged 15-19. There has been a crucial need to provide a nationally coordinated plan for data collection, use, access and dissemination with the involvement of various institutions and defined roles, which Poland lacked for a long time. In general, different researches use different sampling methods, different questions and answers, different study designs, and focus on selected groups, such as urban populations.

Unlike other studies, GATS maintains the highest standards of tobacco surveillance and comparison with other countries. GATS also revealed that policies implemented as a result of previous surveys in order to reduce smoking have been ineffective. In addition, GATS shows the slight knowledge of the Polish adult population regarding smoking in terms of a habit and the health consequences of smoking. These differences in results and standards would help improve current policies and create new, effective policy interventions. Comprehensive tobacco control policies based on sound research have also been shown to be effective in reducing tobacco use in both developed and developing countries, bringing about unprecedented health benefits without harming economies.

For middle-income and developing countries, lack of information, competing priorities and limited resources on the part of the policy makers and donor agencies contribute to the cap on financial resources available to researchers in tobacco control [29]. Therefore, a programme like GATS would help identify the most important vital needs, with supporting information needed to tackle the constraints present in these countries. There needs to be more focus on the sustenance and implementation of GATS. The survey has filled many loopholes that were present in the previous surveys carried out towards tobacco control. However, subsequent GATS surveys can bring about modifications and opportunities for improvement in the future. The standardization and representativeness of the results will provide specific information in the implementation of nationally effective policies.

GATS has improved Poland's ability to produce innovative tobacco control programmes, and implementation of the GATS increased the country's capacity to develop and implement similar projects in the future. GATS has contributed significantly to the development of human resources in the area of tobacco surveillance [13,30, 31]. During the implementation of the project, a large team of people was trained. The training increased the effectiveness and quality of the study. Coordinators, IT personnel and field interviewers were able to communicate directly, and had an effective system of data transmission. This improved the reliability of the study and quality of the data management. Moreover, organizational and innovative IT solutions were tested. In addition, Poland has received a significant amount of handheld computers that can be used in future studies, and not only those related to tobacco issues. The simplicity and applicability of the methods with little cost makes it a reliable tool.

The success of the GATS project in Poland can be attributed to the quality of the study researchers, the extended support and flawless coordination by the WHO and the CDC, among other organizations. This experience should serve as an inspiration and an introduction for the establishment of a Polish tobacco surveillance system, based on high quality, standard methods.

Study limitations. Some limitations to the presented study must be noted. Bias could exist in the results because of the self-reporting aspect by the questionnaires: some adults could have decided to write how much they know or remembered, or based on how they would like to be perceived, thereby making it possible for the data collected to be underestimated

Another limitation was in the lack of certain questions in the questionnaire which could have been relevant for in-depth analysis, such as questions on net household income, marital status, and other questions of socioeconomic and demographic character.

Regardless of the limitations, GATS Poland was a successful survey, and the results obtained are probably the best and most recent data available on smoking in Poland. These results will assist policy makers in making better and more effective policies for tobacco control. Much experience was also gained during the process which would be very useful in future surveys.

CONCLUSIONS

Based on the considerable disparity in smoking prevalence and intensity in Poland, an in-depth analysis of the cause of this diversity is vital. Consequently, the implementation of adequate preventive measures that will be equally available to all demographic and socio-economic groups must be a prime concern.

There is also the need for standardized data evaluation which could help analyze and improve policies and programmes. This is needed to meet the needs of policy makers and others working on tobacco control programmes. Association of data could also be improved, connecting information on tobacco use with socio-demographic characteristics, amongst others. Current indicators can be assessed for improvement and incorporation into a detailed surveillance plan for tobacco policies, including health warnings and tobacco industry activities. The surveillance plan could include the definition of the specific policy measures, designation of staff responsible for collecting each measure, creation of protocols for collecting data on each measure, the synthesizing of data into targeted reports for use by policy-makers at national and regional (provincial) levels, and widespread dissemination of these reports.

Therefore, applying a social inequality analysis is one of the most important issues for national databases and statistics [32, 33]. There has also been the need for a central body to translate these available data from surveillance and monitoring into action, by extracting important points useful in planning and implementation of policies, and also produce a future estimate of trends. There is the need for a new arrangement of surveillance/monitoring data in order for it to be effectively used by policy-makers and tobacco control programmes.

Although the Polish government has been financially involved in tobacco surveillance, there is still a lack of steady and extended dedicated funding for such surveillance in Poland. Instead, spillovers from funds and grants from other surveillance programsme have been responsible for funding the tobacco surveillance programme. There is also the need to integrate some international surveys, such as the Global Youth Tobacco Survey (GYTS) as well as GATS into any ongoing nationally funded surveillance system, and sustain them. The need for collective information on tobacco epidemic related issues is urgent, and will result in effective measures and policy for tobacco control in Poland.

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