Stimulating the demand for death registration in rural Bangladesh: a randomized evaluation

Md. Mahabubur Rahman[1*]

Md. Tazvir Amin[1]

M. Moinuddin Haider[1]

Nurul Alam[1]

Stephane Helleringer[2]

[1]Health System and Population Studies Division, International Centre for Diarrhoeal Disease Research,

Bangladesh

[2]Division of Social Science, Program in Social Research and Public Policy, New York University - Abu Dhabi

[*]Corresponding author: Md. Mahabubur Rahman

Email: mrahman4@isrt.ac.bd

ABSTRACT

In many low-income and lower-middle-income countries, civil registration systems remain incomplete. To fill this data gap, demographers have primarily developed alternative data sources such as surveys and censuses, but these are collected infrequently and they are affected by multiple sources of errors. They also contain less information about the deceased than is typically collected on a death certificate. We thus investigated whether it might be possible to stimulate the demand for death registration among recently bereaved families in a lower-middle-income setting. In Bangladesh, we conducted a randomized trial of a package of interventions designed to raise awareness, and encourage the completion of death registration. During a two-month follow-up period, these interventions did not increase the likelihood of initiating death registration, even though they improved knowledge of registration procedures among households in the treatment group. Future research should develop strategies to ensure that bereaved families perceive death registration as beneficial.

INTRODUCTION

Most countries around the world have set up administrative systems that continuously record events such as births, deaths, and marriages. The documents and certificates produced through this process of civil registration help individuals obtain a legal identity, and they provide the basis for establishing basic rights, such as education or inheritance (Cappa et al. 2014). The records generated also provide periodic counts of events that occur in an administrative jurisdiction. In high-income countries, and some upper-middle-income countries, these vital statistics constitute the main source of data that demographers use to monitor annual trends in key indicators of population dynamics, such as the total fertility rate or life expectancy. In some countries, surveillance systems are in place that report such statistics on shorter time scales (e.g., weekly or monthly), to rapidly detect potential excess mortality caused by epidemics, disasters, and other health crises (Dorrington et al. 2021; Michelozzi et al. 2020).

Unfortunately, in many low-income or lower-middle-income countries (LLMICs), civil registration systems are too incomplete to generate reliable vital statistics (Mikkelsen et al. 2015). UNICEF thus estimates that only 70% of the births are registered in South Asian countries, and only 40% in Eastern and Southern African countries. The proportion of children under age 5 who have a birth certificate has however improved in many LLMICs in recent years (Bhatia et al. 2019). The registration of deaths remains persistently more limited. In Nigeria, for example, only 1 in 10 deaths were registered in 2017 (Makinde et al. 2020). In the capital city of Guinea-Bissau, only 1 in 20 infant deaths are typically registered (Fisker et al. 2019). In India, in a large number of districts, the completeness of death registration is well below 40% (Saikia et al. 2023). The COVID-19 pandemic might have further reduced the coverage of death registration in many LLMICs (AbouZahr et al. 2021).

To fill the data gaps created by incomplete civil registration and vital statistics (CRVS) systems, sample registration schemes (SRS) have been set up in a few countries (Carshon-Marsh et al. 2022; Macicame et al. 2023; Rao and Gupta 2020). They actively monitor demographic events in randomly selected communities, but they are costly (Jiwani et al. 2023) and might fail to record significant numbers of events (Kante et al. 2023). Demographers have thus also devised unconventional methods to measure mortality rates from periodic surveys or censuses (Hill et al. 2005). These inquiries generate mortality data by asking informants to report deaths that have occurred among members of their household, their extended family, or their broader social networks (Feehan et al. 2017; Hill et al. 2006; Timaeus 1991).

Surveys and censuses are however only conducted every few years and only yield estimates for relatively long reference periods. They also provide much more limited information on the characteristics, circumstances, and causes of deaths, than is typically recorded on a death certificate. Improving the civil registration of deaths is thus essential to help better design, target and evaluate health interventions (Phillips et al. 2015).

Since 2015, reaching 80% completeness of death registration is among the targets set by the United Nations to monitor progress towards the sustainable development goals (SDGs). Several large-scale initiatives have been launched to increase the availability and quality of registration services (Suthar et al. 2019), for example by updating the laws that regulate civil registration, fostering the adoption of international registration standards, strengthening the organizations in charge of recording events and/or adopting more practical tools to determine causes of deaths (de Savigny et al. 2017; Niang et al. 2023). Interventions that mobilize health workers and/or volunteers to register deaths in local communities have also been tested in various settings (Gadabu et al. 2014; Helleringer et al. 2018; Prata et al. 2012; Tahsina et al. 2022; Uddin et al. 2019).

Few interventions have sought to stimulate the demand for death registration emanating from relatives of recently deceased individuals (Suthar et al. 2019), even though several studies have highlighted the existence of barriers that prevent families from initiating registration procedures. In Uganda, for example, social norms might discourage the registration of deaths (Habaasa 2022). In the Philippines, families frequently cite high transportation costs and lack of valid identification cards as reasons for not complying with death registration requirements (Celeste and Caelian 2021). In a broad array of LLMICs, when asked why death was not registered, relatives primarily state that they do not know about the need to register deaths, or that they do not think that death registration is important (Fisker et al. 2019; Haider et al. 2021; Prata et al. 2012).

In this paper, we report our assessment of a package of interventions designed to raise awareness and encourage the initiation, of death registration procedures among the families of recently deceased adults. We evaluated its effectiveness in increasing the completeness of death registration during a randomized controlled trial in the Matlab area of Bangladesh.

DATA AND METHODS

Death registration in Bangladesh

Bangladesh is located in South Asia. It is a lower-middle-income country of approximately 165 million inhabitants according to the latest census. It is densely populated, with more than 1,200 inhabitants per square kilometer. Every year, it is estimated that approximately 0.9 million deaths occur in the country (United Nations Population Division 2022). Since death registration is incomplete in Bangladesh, this figure is not based on death records compiled by civil registration. Rather, it is derived from statistical models informed by multiple data sources, including decennial censuses, periodic surveys (Arifeen et al. 2014), and a nationally representative sample registration system that was launched in 1980 (Mozumder et al. 1990).

The CRVS system in Bangladesh is organized by the Birth and Death Registration Act of 2004, which was promulgated in replacement of the birth, death, and marriage registration system established by the colonial government of British India in 1886. Since 2004, the Government of Bangladesh (GoB) has revised the act multiple times, with the most recent amendment occurring in 2018.

The current legal framework sets several requirements for death registration in Bangladesh. Deaths must be registered within 45 days of occurrence. If registration is initiated within that timeframe, it is free of charge; otherwise, a limited late registration fee might be assessed. Death registration is primarily the responsibility of family members, but others might occasionally serve as registrants and informants. Several documents are required to register a death, including the national identity card of the deceased and/or other certificates establishing particulars of the death (e.g., a medical certificate from a health provider). Deaths can be registered at union councils in rural areas, in local offices of the office of the registrar general in city corporations, and in city councils in suburban areas. The GoB has also established an online registration system. The completeness of death registration, however, remains very low (Uddin et al. 2019).

The GoB has recently piloted an active notification system for births and deaths in 2 sub-districts of the country (Adair et al. 2020; Uddin et al. 2019). This system relies on health workers to detect deaths having occurred in local communities and assist families in filling out required paperwork. It has resulted in significant increases in the number of deaths that were registered in the areas where it was implemented (Uddin et al. 2019), but it has not been scaled up nationwide.

Outside of these two pilot areas, a recent study in the Matlab area, which is situated approximately 55 kilometers south of the capital Dhaka, found that only 17% of deaths at ages 15 and older were registered (Haider et al. 2021). In that area, there were large gender differences in registration rates. The main reasons that family members cited for registering a death were related to the need to secure inheritance, pensions, or other forms of social support. Lack of awareness of the need for death registration, and limited perceived benefits associated with death registration, were the main reasons cited for not registering a death.

Study setting

Our trial also took place in the Matlab area of Bangladesh, where a health and demographic surveillance system (HDSS) has been in operation since the 1960s. Following an initial census, data collectors have been visiting every household of the area periodically to record vital events including births, deaths, and marriages (Alam et al. 2017). Close to 90% of the population residing in Matlab HDSS are Muslims, and the rest are Hindus. Men primarily engage in agriculture, fishing, and small-scale retail, whereas women predominantly work in the household. Migration is common, particularly among men, who seek work opportunities in cities or abroad. As a result, female-headed households represent more than 1/3 of all households in the HDSS area. Remittances also constitute an important part of revenue for local households (Alam and Barkat-e-Khuda 2011; Barham et al. 2023).

Intervention design

Based on prior attempts to stimulate demand for civil registration (Mony et al. 2011), as well as other health products such as vaccination (Gibson et al. 2017), we combined pamphlets, home-based counseling visits, and reminders sent by mobile phone in a package of interventions. To do so, we reviewed the most recent amendment of the Birth and Death Registration Act that was published in The Bangladesh Gazette [SRO No. 79-Act/2018]. Using this legal framework, we drafted a preliminary pamphlet containing key information about the procedures to follow to register a death, as well as information about the registration offices serving residents of the Matlab HDSS area. We also developed a script to help facilitate exchanges with family members about the need to register deaths. Finally, we designed text messages to remind family members of the importance of registering deaths and to be delivered by Short Messaging Service (SMS).

To ensure the local relevance of intervention tools, we worked with the administrative officers who are in charge of death registration in the Matlab HDSS area. We elicited their feedback on drafts of all intervention tools during individual consultations and group discussions. Concurrently, we sought comments from selected male and female community members. Then, we recruited three counselors and one supervisor. Following training, they piloted all intervention instruments in a few households where one or several regular members had recently died. During that pilot, counselors encouraged participants to ask questions and make comments on study procedures. Following the pilot, we refined all intervention tools based on feedback received.

The intervention package was delivered through a household visit during which a counselor discussed the importance and procedures of death registration with interested household members. The counselor also made one or more copies of the pamphlet available to household members. He/she encouraged those present to share pamphlets with members who did not attend the counseling session, and/or to discuss the issue of death registration with other household members. The counselor also asked household participants if they could provide one or more mobile phone numbers, where SMS reminders about the importance of death registration could be sent following the visit. Such reminders were sent weekly at first, then every other week, during the intervention.

Trial design

We conducted a two-arm randomized controlled trial of this intervention package. We used the records of recent deaths compiled by the Matlab HDSS to identify potential participants. Specifically, we selected all households in which a death had occurred among regular members aged 15 and older in recent months. We then randomly allocated these households in a 1:1 ratio to receive either the intervention package ("treatment group") or no intervention ("control group"). The randomization process was stratified by time since the death in months and locality. All randomization procedures were carried out on lists extracted from the HDSS, using random numbers generated in Stata 18.

We started rolling out the intervention package among households in the treatment group during the first week of the month of *Ramadan* (March 2023). This roll-out lasted 5 weeks in total. Using a handheld tablet, counselors involved in the delivery of the intervention package collected basic information about their visits with households in the treatment group. The data used to assess the outcomes of the trial was then obtained during a household survey, conducted at least 2 months after the delivery of the intervention ("end-line survey"). These survey data were collected by a separate team of interviewers who had not been involved in the delivery of the intervention package to households in the treatment group. Interviewers conducting the end-line survey were blind to the assignment of study households to the treatment or control groups.

Outcomes

The primary trial outcome was defined as the proportion of deaths for which registration procedures had been initiated, i.e., that a relative or another person had submitted an application form either online or at the local union council. Other outcomes of the trial included indicators of awareness of the need to register deaths, and knowledge of death registration procedures, among relatives of the deceased. Finally, we also elicited intentions to register a death among relatives who reported that they had not initiated death registration procedures.

Sample size determination

We assumed that, if registration procedures had not already been initiated prior to the start of the month of *Ramadan*, they would be initiated for 10% of the deaths in the control group during the 2 months following the roll-out of the intervention. We hypothesized that receiving the intervention package might increase that proportion by 8 percentage points. To detect such an effect with 80% power, $\alpha = 0.05$, and a 1:1 allocation ratio, we required 232 deaths in each study group.

Among the events recorded by the HDSS in recent months, there are some deaths for which registration procedures were initiated prior to the start of the intervention. We aimed to exclude these deaths from our assessment of study outcomes, because demand for registration was sufficient among relatives of those deceased individuals, even without our intervention. However, their registration status could only be assessed at the time of the end-line survey, because the HDSS ascertains registration status within a few days/weeks of the death, at the time when verbal autopsies are conducted to determine the cause(s) of death (Alam et al. 2014). Conservatively, we assumed that approximately 1/3 of the deaths recorded by the HDSS would have been registered prior to the start of our intervention. Finally, based on prior household studies in the Matlab area (Haider et al. 2021), we assumed that 3% of households would either refuse or not be available to participate in the end-line survey.

In total, to achieve the necessary sample size, we thus required $\frac{232}{(1-0.35)\times(1-0.03)} = 368$ deaths in each study group (736 deaths in total). Since the Matlab HDSS had recorded 777 deaths among individuals aged 15 years or above in the previous 8 months, we included all the deaths that had occurred in that timeframe in our randomization procedures.

Data sources

The data used in this trial come from multiple sources. We used information collected by the HDSS to identify households with recent deaths, to conduct procedures of stratified randomization, and to assess the selectivity of the sample of included deaths. We used data collected by intervention counselors after each visit with households in the treatment group to describe the conduct of the intervention.

To measure study outcomes, we used information reported during the end-line survey. We elicited data about the characteristics of the informant and the deceased, and we asked informants if they had ever heard about the need to register deaths. Then we assessed whether the death of their relative had been registered. If so, we asked the informant if he/she had been the person who carried out registration procedures. If a different person had done so, we inquired about this person and asked whether we could contact him or her for an interview about the process of death registration. For all deaths reported as registered, we asked the person who carried out procedures if the process of registration had been initiated before the beginning of the month of *Ramadan,* i.e., the celebration that coincided with the start of the roll-out of our intervention package. We also asked to view the death certificate that was obtained at the end of the registration process. When this was possible, interviewers recorded the date when the certificate was issued. Finally, using questions previously used in other studies (Duff et al. 2016; Fisker et al. 2019; Haider et al. 2021), we asked respondents to state the reasons for registering the death.

If the death had not been registered, we asked if procedures of death registration had been initiated and if so, whether this had occurred before the beginning of the month of *Ramadan.* We also ascertained the informant's knowledge of the place(s) where deaths can be registered, the timeframe within which deaths must be registered, and the documents required to carry out death registration (e.g., identity cards). Finally, we asked those who did not initiate any registration procedures if they intended to register the death in the future.

Statistical analyses

First, we described the constitution of the study sample, and the characteristics of deaths according to their trial inclusion status. Deaths for which no registration procedures had been initiated before *Ramadan* were "included" in the trial, whereas other deaths were classified as "excluded". Second, using data collected by counselors at the end of each household visit, we described the conduct of the intervention for the included deaths. We calculated the proportion of targeted households that were reached by counselors, and among those households, we calculated the proportions of visits a) that involved the head of household, b) in which multiple pamphlets were distributed and c) in which household members opted to receive SMS reminders about the need to register deaths.

Third, we reported the effects of the intervention on the completeness of death registration, as measured by the proportion of included deaths for which death registration procedures were initiated in the 2-month period following the roll-out of the intervention. Fourth, among deaths for which registration procedures were initiated during the trial, we assessed whether a death certificate was issued, as well as the reasons for registering the death stated by informants. Fifth, among the deaths for which no procedures had been initiated, we investigated differences between study groups in the level of awareness of death registration, knowledge related to death registration procedures and requirements, and stated intentions to register deaths in the near future.

All analyses were conducted on an intent-to-treat basis, with households analyzed with their assigned study group. We used χ^2 tests to detect differences in categorical outcomes of interest between study groups. Because of large gender differences in registration rates and behaviors in this area of Bangladesh (Haider et al. 2021), we first report all analyses for the overall sample of deaths, and then separately by gender of the deceased.

RESULTS

Descriptive statistics

In total, 777 deaths were randomized, with 390 deaths allocated to the control group and 387 deaths allocated to the intervention group (figure 1). Non-participation in the end-line survey was higher than expected (66/777 = 8.5%), but it was similar in both study groups (8.9% vs 8.0%). Among deaths for whom data were collected during the end-line survey, 279 out of 355 (78.6%) were included in the assessment of trial outcomes in the control group. In the intervention group, this was the case for 269 out of 356 deaths (75.6%). In both groups, the main reason for exclusion was the reported initiation of registration procedures prior to the start of the intervention.

[FIGURE 1 ABOUT HERE]

The likelihood of inclusion in the trial was associated with several characteristics of the deceased. Female deaths were more likely to be included (69 vs. 86%, p<0.001), as were the deaths that had occurred at younger and older ages according to HDSS records (e.g., 63% among 25-44 years old vs. 81% among 65-84 years old, $p<0.001$). The likelihood of inclusion was also lowest among deaths of more highly educated individuals (e.g., 53% among those with higher education vs. 86% among those with no schooling). Finally, inclusion depended on the relationship between the deceased and the household informant. Specifically, inclusion in the trial was least likely when the informant was the spouse of the deceased individual (67%).

[TABLE 1 ABOUT HERE]

Conduct of the intervention

We reached household members of 260 of the 269 deaths allocated to the intervention group and included in the assessment of trial outcomes (96.7%, figure 2A). The coverage of the intervention was slightly lower among male deaths (127/135) than among female deaths (133/134, $p = 0.04$). The head of household was present in approximately 2/3 of the counseling sessions (figure 2B), whereas participants requested more than one pamphlet in roughly half of the counseling sessions (figure 2C). Most households opted to receive SMS reminders about the importance of death registration (figure 2D).

[FIGURE 2 ABOUT HERE]

Effects of the intervention

During the 2 months following the roll-out of the intervention, death registration procedures were initiated for 9.3% of the deaths in the control group (95% Confidence interval =

5.9% to 12.7%) and 10.4% of the deaths in the treatment group (95% CI = 6.8% to 14.1%, figure 3). In both study groups, initiation of registration procedures was less frequent in the case of female deaths than in the case of male deaths. For example, in the control group, registration procedures were initiated for 6.0% of female deaths (95% CI = 2.2% to 9.7%) and 13.3% of male deaths (95% CI = 7.4% to 19.2%).

[FIGURE 3 ABOUT HERE]

Fifty-four informants reported initiating registration procedures during the trial, but only 16 of them (29.6%) also reported having completed these procedures and obtained the death certificate by the time of the end-line survey. Among those, 6 were members of households in the control group vs. 10 in the treatment group. Twelve out of the 16 informants who had obtained the death certificate stated that the death had been registered to secure inheritance or to obtain some form of benefit or payment from the GoB or another institution (e.g., a bank). Other reasons cited included compliance with the law and the need to remember the deceased household member.

Among those who did not initiate registration procedures, awareness of death registration was higher if the household had been exposed to the package of interventions. In the control group, only 25.7% of informants in study households reported having heard about the need to register deaths (95% CI = 20.3% to 31.1%, figure 4) vs. 52.3% in the treatment group (95% CI = 46.0 to 58.6%).

[FIGURE 4 ABOUT HERE]

More respondents in households assigned to the treatment group answered correctly questions about registration procedures than in the control group (figure 5). Whereas 13.4% of respondents in the control group knew which documents are needed to register a death (95% CI = 9.2% to 17.6%), this was the case for 25.3% of respondents in the treatment group (95% CI = 19.8% to 30.8%). Similarly, 40.7% (95% CI = 34.7% to 46.8%) of respondents in the control group knew where to register a death vs. 54.8% (95% CI = 48.5% to 61.1%) in the treatment group. The effects of the intervention on these two components of the registration process were larger in households where a female death had recently occurred (figure 5). Knowledge of the legal delay allowed to register a death remained low in all households. In the treatment group, only 7.1% (95% CI = 3.8% to 10.3%) of respondents correctly stated that families had up to 45 days to register a death after its occurrence. In the control group, 3.2% of respondents (95% CI = 1.0% to 5.3%) correctly answered this question.

[FIGURE 5 ABOUT HERE]

Among informants in the treatment group who stated that no death registration procedures had been initiated, 52.7% (127/241, figure 6) reported that they intended to register the death at some point in the future, 17.4% (42/241) reported that they did not intend to do so, and 29.9% (72/241) reported being unsure about their intention to register the death. In the control group, these figures were 43.5% (110/253), 21.3% (54/253) and 35.2% (89/253), respectively (p = 0.12).

[FIGURE 6 ABOUT HERE]

DISCUSSION

In this trial in the Matlab area of Bangladesh, we tested a package of interventions designed to encourage the initiation and completion of death registration. We found that this package did not stimulate the demand for registration among families of recently deceased individuals. In both study groups, fewer than 10% of households in this population initiated such procedures over the 2 months of the trial. This null effect occurred, even though the package of interventions we delivered was successful in addressing two important barriers to death registration, which were identified in a prior study conducted in the Matlab HDSS area (Haider et al. 2021). Specifically, it raised awareness of death registration, as the proportion of household informants who reported having heard about the importance of death registration more than doubled in the treatment group. It also increased knowledge of registration procedures, as the proportion of informants who correctly stated where to register a death, and which documents were needed to register a death, increased markedly in the treatment group.

Our results improve on prior evaluations of interventions related to the civil registration of deaths and other vital events because they were obtained from a randomized trial. Other trials were based on comparisons of a small number of purposefully selected intervention and control areas (Mony et al. 2011), or pre-post study designs (Martelli et al. 2019), and were thus at risk of omitted variable bias. Our work also adds to our understanding of interventions aimed at stimulating the demand for death registration emanating from households and families. Prior studies that have investigated such demand-side interventions have indeed been conducted in contexts where large teams of community health workers, lay workers and/or volunteers were also deployed concurrently to actively record vital events (Adair et al. 2020; Helleringer et al. 2018; Mony et al. 2011). As a result, these studies did not document the independent effect of demand-side interventions on levels of death registration. Mobilizing health workers and volunteers towards the registration of deaths requires high levels of supervision and/or resources, and it might be difficult to scale up such active registration schemes beyond a few selected areas. Our evaluation of demand-side interventions is thus more realistic, and might better reflect the service conditions within which such interventions might be deployed in Bangladesh and elsewhere.

Our study has several limitations. First, there might have been contamination of the control group, for example, if members of intervention households shared pamphlets with individuals in control households, or if they had conversations with them about the need to register deaths. As a result, our trial might underestimate the true effects of the package of interventions on the likelihood of initiating registration procedures. Second, because we relied on lists of events compiled by an HDSS to recruit trial participants, our package of interventions was delivered to households several months after the occurrence of a death. The effects of the intervention package that we were able to observe might have been more limited than if the package had been delivered shortly after deaths. Future studies might thus investigate whether similar packages of demand-side interventions might be more successful when delivered closer to the time of the death, for example at a time when families conduct burials or cremations. Third, and partly related to our recruitment strategy, the deaths that were included in our trial were a selective subset of the deaths that occur in the Matlab area and that are recorded by the HDSS. In particular, deaths among population groups where registration rates are typically lower (e.g., women, less educated) were over-represented in our trial. The effects of the package of interventions might differ in other population groups where baseline registration rates are higher. While we found that intervention effects generally did not differ between female and male deaths, we could not conduct more detailed sub-group analyses due to a limited sample size.

Despite these limitations, our study has important implications. It suggests that reaching registration targets set by the Government of Bangladesh and/or the United Nations Sustainable Development Goals (i.e., 80% of deaths registered) will require additional strategies and investments. Several studies have thus emphasized the need to jointly improve the supply and availability of registration services, for example by adopting new technologies, streamlining administrative processes, revising legal frameworks, or recruiting and mobilizing community-based health workers and volunteers (Suthar et al. 2019). Our work also points to the need to increase incentives and benefits attached to death registration in this area. Among the few deaths for which registration was completed during the trial, most registrants cited the need to secure inheritance or to obtain pensions and services as the main reasons for registering the death. In Bangladesh, these benefits only accrue to a small percentage of the population, primarily those who are employed in the formal sector. Others in the population, for example, those working in the informal sector, might only perceive limited benefits to death registration. Future implementation research should explore the development of new strategies to ensure that families perceive death registration as beneficial.

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Table 1: Characteristics of deaths, by inclusion status

Characteristics	Overall	Excluded[1]	Included[1]	p-value[2]
Sex				<0.001
Male	381	118 (31%)	263 (69%)	
Female	330	45 (14%)	285 (86%)	
Age group				<0.001
<25 years old	15	2 (13%)	13 (87%)	
25-44 years old	30	11 (37%)	19 (63%)	
45-64 years old	185	67 (36%)	118 (64%)	
65-84 years old	390	74 (19%)	316 (81%)	
85 years and older	91	9 (10%)	82 (90%)	
Time since death				0.050
0-2 months	186	34 (18%)	152 (82%)	
3-5 months	334	90 (27%)	244 (73%)	
6-8 months	191	39 (20%)	152 (80%)	
Educational level				<0.001
None	324	45 (14%)	279 (86%)	
Primary	181	47 (26%)	134 (74%)	
Secondary	148	48 (32%)	100 (68%)	
Higher	36	17 (47%)	19 (53%)	
Unknown	22	6	16	
Relation to informant				<0.001
Parent	162	49 (30%)	113 (70%)	
Inlaw	301	47 (16%)	254 (84%)	
Grandparent	31	1 (3%)	30 (97%)	
Spouse	159	53 (33%)	106 (67%)	
Other	58	13 (22%)	45 (78%)	

[1] Numbers in parentheses are row percentages

[2] Pearson's Chi-squared test; Fisher's exact test

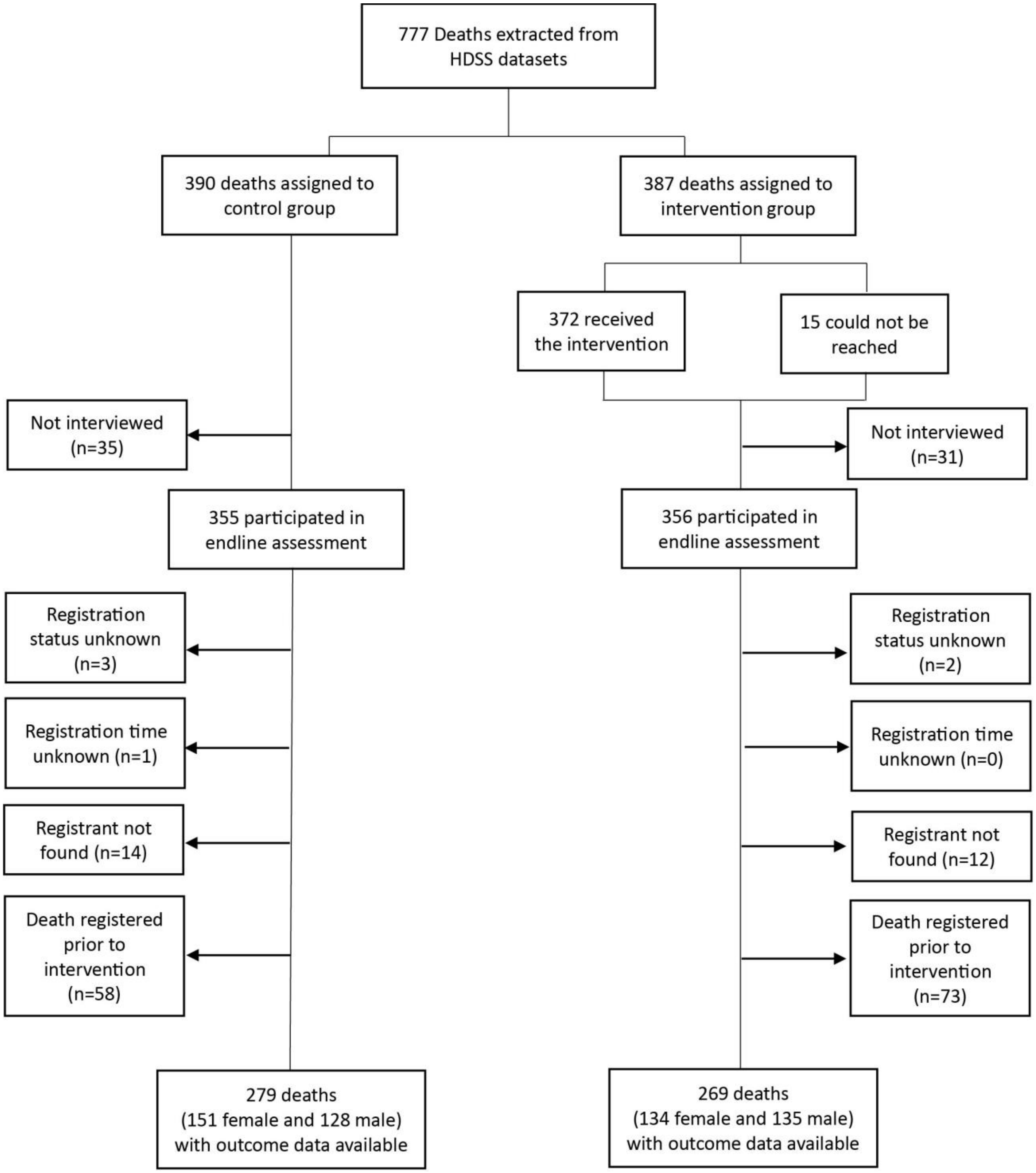

Figure 1: Flow chart of study participation and inclusion.

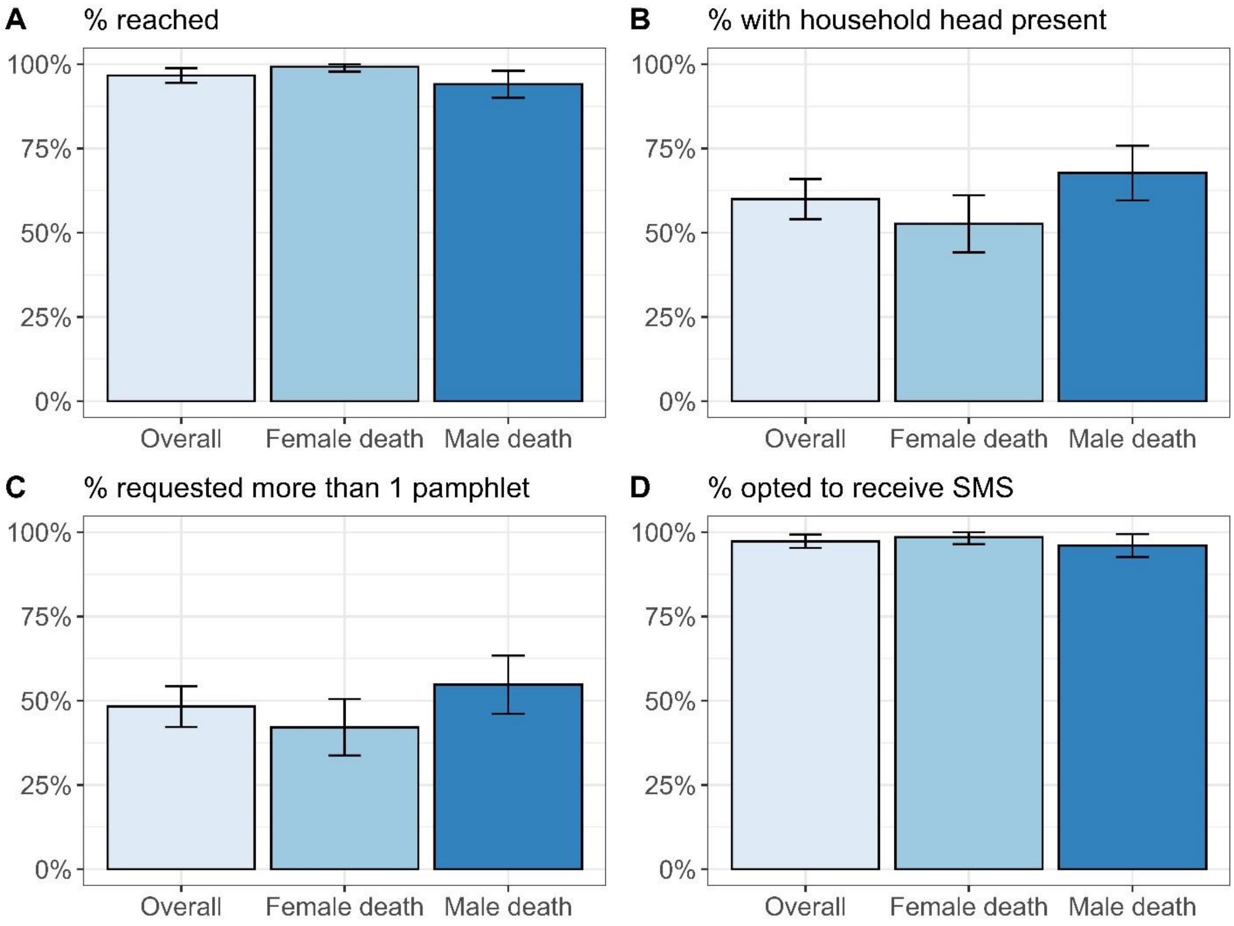

Figure 2: delivery of the intervention among targeted households, by gender of the deceased

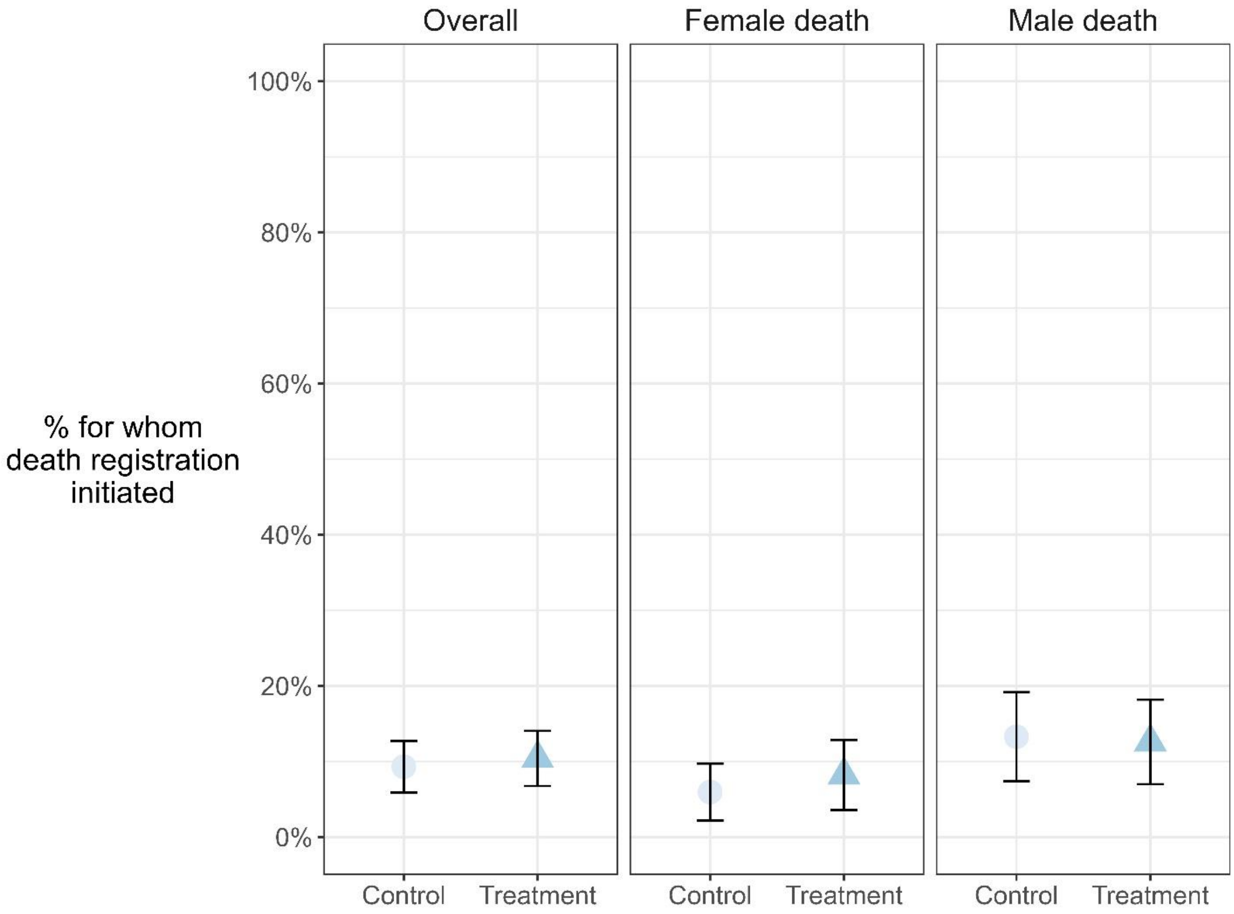

Figure 3: effect of the intervention on initiation of death registration procedures, by gender of the deceased

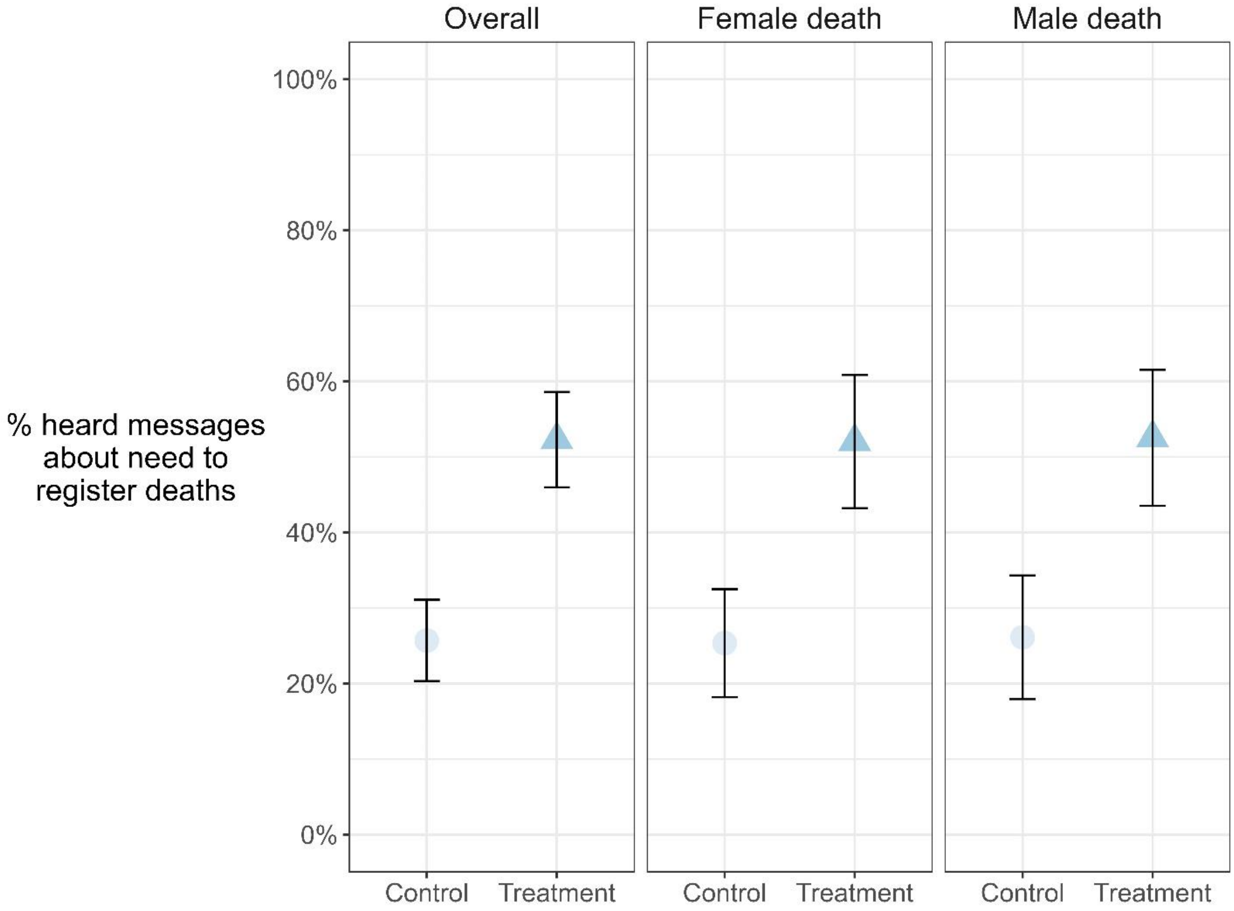

Figure 4: effect of the intervention on receipt of messages about death registration among those who did not initiate registration procedures, by gender of the deceased

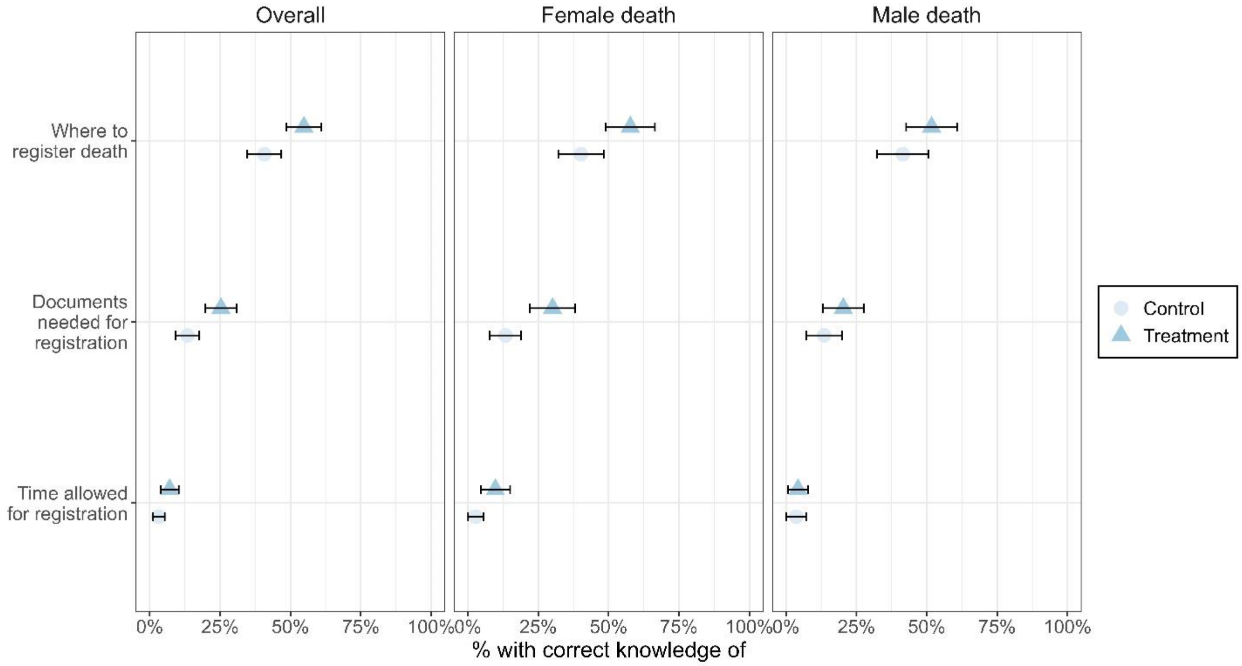

Figure 5: effect of the intervention on knowledge of death registration procedures among those who did not initiate registration procedures, by gender of the deceased

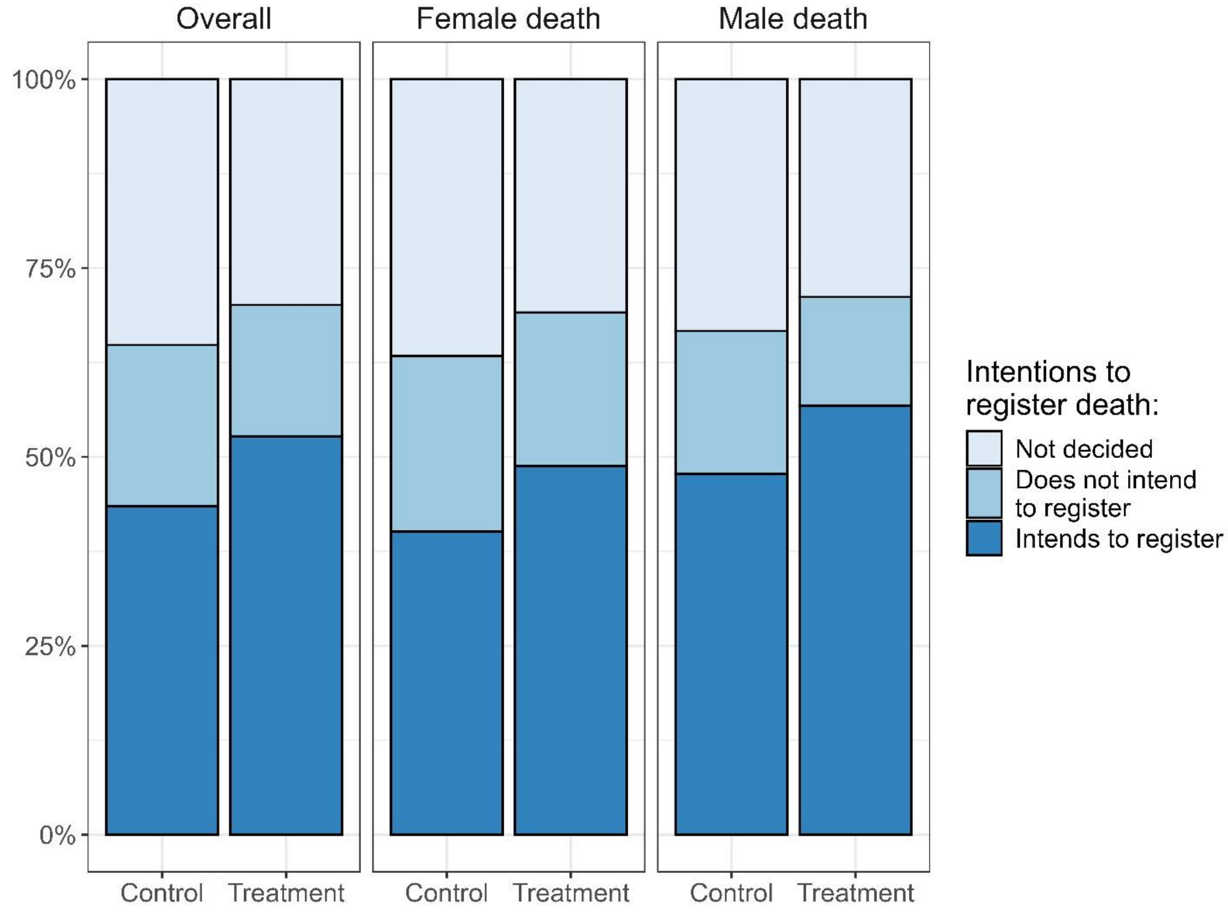

Figure 6: effect of the intervention on stated intentions to register a death, by gender of the deceased