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Adult mortality in sub-saharan Africa, Zambia: Where do adults die?

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ABSTRACT

Place of death remains an issue of growing interest and debate among scholars as an indicator of quality of end-of-life care in developed countries. In sub-Saharan Africa, however, variations in place of death may suggest inequalities in access to and the utilization of health care services that should be addressed by public health interventions. Limited research exists on factors associated with place of death in sub-Saharan Africa. The study examines factors associated with the place of death among Zambian adults aged 15–59 years using the 2010–2012 sample vital registration with verbal autopsy survey (SAVVY) data, descriptive statistics and multivariate logistic regression analysis. Results show that more than half of the adult deaths occurred in a health facility and two-fifths died at home. Higher educational attainment, urban versus rural residence, and being of female gender were significant predictors of the place of death. Improvement in educational attainment and investment in rural health facilities and the health care system as a whole may improve access and utilization of health services among adults.

Introduction

Globally, place of death has continued to generate a lot of interest and debate as a key performance indicator of quality of end-of-life care (Black et al., 2016; Cohen et al., 2015; Dasch, Blum, Gude, & Bausewein, 2015; Pollock, 2015). Place of death is where a deceased person spent the final hours of their life (Earle et al., 2003). The most common places of death are: home, hospital, hospice, nursing home and other place (Cohen et al., 2015; Dasch et al., 2015). In end-of-life care a death at home is considered a quality marker of a good death (Black et al., 2016; Gomes, Calanzani, & Higginson, 2011). On the contrary, others argue that the place of death is not the most important priority but managing the experience of dying for patients and families (Munday, Petrova, & Dale, 2009; Pollock, 2015). Most people prefer to die at home, however, majority of the deaths occur in a health facility and not in the preferred place of death (Black et al., 2016; De Roo et al., 2014; Escobar Pinzon et al., 2011; Gomes, Calanzani, Gysels, Hall, and Higginson, 2013; Gomes et al., 2011). The preference of a home death is supported by the notion that an individual can die peacefully in a dignified manner in the presence of the family or close relations (Gomes et al., 2011; Gomes & Higginson, 2006; Kinoshita et al., 2014; McNamara & Rosenwax, 2007). In addition, the cost of hospitalization is minimized (Pollock, 2015). On the other hand, a

health facility death is perceived as undesirable, costly and associated with poor quality of care (Kinoshita et al., 2014; Pollock, 2015). There are variations, however, in preference of place of death and the evidence presented by studies is mixed (Lackan, Eschbach, Stimpson, Freeman, & Goodwin, 2009; Pollock, 2015).

While in developed countries, a home death is considered a good death, however, in sub-Saharan African countries this may have a different implication in that a person who dies at home could have failed to access and utilize health care services. Conversely, an individual who dies in a health facility may be presumed to have accessed and utilized health care services (Kiwanuka et al., 2008).

Studying factors associated with the place of death is one way of understanding inequalities in access to and the utilization of health services by populations of different backgrounds. Combined with morbidity and mortality data, understanding place of death may assist health planners, decision makers and public health policy in resource allocation to improve access to and the utilization of health services in hospitals and other health facilities in a country (Gao, Ho, Verne, Gordon, & Higginson, 2014; Hong et al., 2011; McNamara & Rosenwax, 2007).

Studies have revealed that the place of death is associated with, and influenced by, a number of different types of factors: first, individual level factors such as demographic factors, age and sex (Black et al.,

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2016; Dasch et al., 2015; Jayaraman & Joseph, 2013); sociodemographic: marital status (Cardenas-Turanzas, Carrillo, Tovalin-Ahumada, & Elting, 2007; Cohen et al., 2015; Jayaraman & Joseph, 2013), ethnicity (Coupland, Madden, Jack, Moller, & Davies, 2011; Lackan et al., 2009), religion (Anteneh, Araya, & Misganaw, 2013); socioeconomic factors: education (Cardenas-Turanzas et al., 2007; Cohen et al., 2015); second, factors associated with the illness, that is, the duration of illness and causes of death (Black et al., 2016; Cohen et al., 2015); and third, environmental or ecological factors such as residence (Gao et al., 2014; Goodridge, Lawson, Rennie, & Marciniuk, 2010; Houttekier et al., 2009; Lavergne et al., 2015); social support (Cohen et al., 2010; Dasch et al., 2015; Kinoshita et al., 2014) and the type of health care services available (Cardenas-Turanzas, Torres-Vigil, Tovalin-Ahumada, & Nates, 2011; Costa, 2014; Kinoshita et al., 2014; Pollock, 2015). Some studies have found variations in the place of death among adults by age and sex; women and older people were more likely to die at home (Gomes et al., 2011). Conversely, other studies found the opposite (Lin & Lin, 2007). The type of health condition may also dictate the place of death in terms of dying at home or in a health facility. Some health conditions can only be managed at a health facility and not at home (Costa, 2014; Gomes & Higginson, 2006; Howell et al., 2015).

Previous studies on place of death have used death certificates or population based data to examine associations with predictor factors, in the United States of America (Grunier et al., 2007); in Canada (Goodridge et al., 2010; Jayaraman & Joseph, 2013); in Mexico (Cardenas-Turanzas et al., 2007); in Australia (Currow, Burns, & Abernethy, 2008; McNamara & Rosenwax, 2007); in Europe (Dasch et al., 2015; Reich, Signorell, & Busato, 2013); in Asia (Hong et al., 2011; Lin & Lin, 2007; Yamasaki et al., 2008; Yun, Lim, Choi, & Rhee, 2006); and in sub-Saharan Africa (Anteneh et al., 2013; Gysels, Pell, Straus, & Pool, 2011; Harding et al., 2013).

In sub-Saharan Africa, knowledge on factors associated with place of death among adults remains limited due to little research. Part of the reason is the lack of fully developed and complete vital registration systems that collect detailed information on deaths, the causes of death and the place of death. In Zambia, censuses and demographic and health surveys are the only major sources of mortality data. They are, however, limited with respect to the scope and detail of mortality data collected, they do not collect information on place of death. A verbal autopsy survey undertaken from 2010 to 2012 in Zambia collected detailed mortality information including on place of death which is useful for examining factors associated with place of death in a sub-Saharan African context. Furthermore, health care access and utilization in Zambia is inequitable and dependent on development assistance for health to deal with the burden of diseases. Inequality in health care access and utilization has mainly been attributed to high poverty levels among the population, long distances to health facilities in rural areas, poor health infrastructure, stigma of certain diseases, inadequately health providers (nurses and doctors) relative to the population, lack of medical equipment, and stock outs of essential medical drugs (Hjortsberg, 2003; Ministry of Health [Zambia], 2011). These and other factors make health care access and utilization problematic for the population. Therefore, a study on Zambia becomes an important context for understanding the factors associated with the place of death in sub-Saharan Africa.

The study adds to the literature on place of death by focusing on a sub-Saharan African country, Zambia, where adult mortality is high and has been largely attributed to HIV/AIDS. Zambia's National Health Policy recognizes the large unmet need of and necessity to upscale palliative care services for life limiting illnesses such as HIV/AIDS and other chronic illnesses affecting adults (Ministry of Health [Zambia], 2012). The Ministry of Health, therefore, introduced palliative care programmes as well as capacity building initiatives to respond to the need. Government palliative care services are inadequate, and private hospices, Non-governmental organizations and community

based organizations complement in offering palliative care services. An umbrella body, the Palliative Care Association of Zambia, coordinates the other organizations.

The study focuses on the age group 15–59 years which consists of the young and middle aged adults who are in the reproductive ages as well as the most productive segment of the population. These constitute approximately 50 per cent of Zambia's estimated population of 15.5 million in 2015 (Central Statistical Office (CSO), 2013). Studying deceased adults in the mentioned age group may provide an insight into understanding if any relationship exists between place of death, and access to and the utilization of health services by extrapolation. Understanding this relationship is relevant in designing targeted interventions aimed at reducing adult mortality.

Furthermore, previous studies on the place of death conducted elsewhere have been restricted to examining factors associated with specific health conditions in end-of-life care, for example, cancer (Cohen et al., 2015; Cooper, 2014), malignancy (Howell et al., 2015), chronic respiratory diseases (Munday et al., 2009), diabetes and hypertension (Reich et al., 2013; Slobbe, Arah, de Bruin, & Westert, 2008), and have mainly focused on palliative care in developed countries (Black et al., 2016; Dasch et al., 2015; De Roo et al., 2014; Gomes et al., 2011; Goodridge et al., 2010; Grunier et al., 2007; Houttekier, Cohen, Pepersack, & Deliëns, 2014).

The study investigates the factors that influence where adults aged 15–59 died during a two-year period (2010–2012) in Zambia. Factors of interest in this study are age, gender (sex), marital status, type of residence (urban/rural), education level, occupation, and cause of death of the deceased.

We sought to answer the research question: what factors determine where adults aged 15–59 die and how are they associated with place of death in Zambia? Our objective was, therefore, to examine the factors associated with the place of death among deceased adults aged 15–59 years in Zambia.

The study demonstrates that analyzing factors associated with place of death enhances our understanding of where adults in the reproductive and productive age group die in sub-Saharan Africa. This information may be useful in targeting and improving access to and utilization of health services prior to death.

Theoretical framework

The social ecological theory is based on the premise that there are interrelationships between an individual and their environment. An individual's interaction with the environment (e.g. family relations, community structures, religion, societal customs, economy) influence personal outcomes like behavior, health, mortality, etc. (Bronfenbrenner, 1979). The theory enables us to understand why there are variations in individual behavioural or health outcomes like mortality across different community environments. Place of death is one of the factors that is influenced by individual-level and community-level circumstances with respect to mortality.

The social ecological model, adapted from the social ecological theory (Bronfenbrenner, 1979), is the most frequently used to examine factors associated with individual and health outcomes. The model is adapted to suit the behavioural or health outcome and population segment being studied as it relates to the environment. The most common adaptations of the model at individual level are personal factors that influence directly individual outcomes (age, sex, education level, socioeconomic status, employment); at social environment level are the relationships (family, peers), cultural values and norms, socioeconomic status of the community, institutions and organisations, access to social support, influence of health and other professionals, and society overall in which the individual interacts; at physical environment level is the natural and built environments; and at policy level is legislation and policies (health, education, environmental policies). These levels allow the design of appropriate strategies and

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