REVIEW

Socioeconomic Impact of Cancer in Member Countries of the Association of Southeast Asian Nations (ASEAN): the ACTION Study Protocol

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Abstract

Cancer can be a major cause of poverty. This may be due either to the costs of treating and managing the illness as well as its impact upon people's ability to work. This is a concern that particularly affects countries that lack comprehensive social health insurance systems and other types of social safety nets. The ACTION study is a longitudinal cohort study of 10,000 hospital patients with a first time diagnosis of cancer. It aims to assess the impact of cancer on the economic circumstances of patients and their households, patients' quality of life, costs of treatment and survival. Patients will be followed throughout the first year after their cancer diagnosis, with interviews conducted at baseline (after diagnosis), three and 12 months. A cross-section of public and private hospitals as well as cancer centers across eight member countries of the Association of Southeast Asian Nations (ASEAN) will invite patients to participate. The primary outcome is incidence of financial catastrophe following treatment for cancer, defined as out-of-pocket health care expenditure at 12 months exceeding 30% of household income. Secondary outcomes include illness induced poverty, quality of life, psychological distress, economic hardship, survival and disease status. The findings can raise awareness of the extent of the cancer problem in South East Asia and its breadth in terms of its implications for households and the communities in which cancer patients live, identify priorities for further research and catalyze political action to put in place effective cancer control policies.

Keywords: Cancer - South-East Asia - costs - ACTION study

Introduction

Cancer has been cited as the leading cause of mortality globally, accounting for 13% (or 7.4 million) of all deaths annually with 70% of these occurring in low and middle income countries (WHO, 2010). It is projected that mortality from cancer will increase significantly over the coming years with ~13 million deaths per year worldwide expected by 2030. The trend is even more striking in Asia where the number of deaths per year in 2002 of 3.5 million is expected to increase to 8.1 million by 2020 (Lancet, 2010).

As the availability of medical technologies and treatments expands across regions, the economic burden of cancer treatments, not only to health systems but to individuals and their households, will inevitably become more pronounced. These impacts will be felt most strongly in socioeconomically disadvantaged groups particularly (although not exclusively) those in low-and middle-income countries where social safety nets, such as universal health insurance, are less likely to be present. A consequence of this is that such illness, particularly through the costs associated with its treatment and its impact on people's ability to work, can be a major cause of poverty. The ACTION (Asean CosTs In ONcology) study will examine such economic impact of cancer on households in the Association of Southeast Asian Nations (ASEAN) region. The ASEAN is a geopolitical and economic organization of ten independent countries located in Southeast Asia: Brunei, Cambodia, Indonesia,

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Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. This region contains more than half a billion people, almost 9% of the world population, spread over highly diverse countries, from economic powerhouses like Singapore to poorer economies such as Laos, Cambodia and Myanmar.

The ACTION study will assess the incidence of financial catastrophe and economic hardship associated with cancer. In addition it will examine the impact of cancer on quality of life, and the variations in the way in which patients within and across ASEAN countries are managed. Findings can raise awareness of the extent of the cancer problem, identify priorities for further research and catalyze political action to put in place effective cancer control health care policies.

Methodology/Design

Overview

The ACTION study is a longitudinal study of 10,000 hospital patients with a first time diagnosis of cancer. Patients will be followed throughout the first year after their cancer diagnosis. The primary aim is to assess the impact of cancer on household income and quality of life.

Study population

Men and women aged 18 years and older will be eligible to participate in this study if they fulfill the following criteria: - A first time cancer diagnosis received in hospital in the last 6 weeks; - Aware of their new cancer diagnosis; - Conscious and with sufficient cognitive capacity to give consent and complete an interview; - Willing to participate in the baseline and two follow-up interviews.

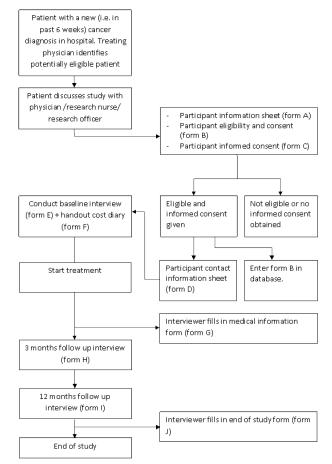Men and women will be excluded if they are participating in a clinical trial.

Sites

A cross-section of public and private hospitals as well as cancer centers across 8 ASEAN countries (Cambodia, Laos, Indonesia, Malaysia, Myanmar, Philippines, Thailand and Viet Nam) will participate.

Recruitment and consent

At each site, consecutive patients receiving a new diagnosis of cancer, fulfilling the inclusion criteria, will be approached to participate in the study. The treating physician will identify eligible patients and provides the patient with the patient information sheet and patient informed consent form. The research officer will then contact the patient and seek his or her consent for participation. This would entail participation in the baseline interview and two follow-up interviews (at approximately 3 and 12 months after the baseline interview) and consent to examine their individual patient files (see Figure 1).

A screening log will be completed by the research officer at each participating site, with details of all patients approached to participate. Age, sex, type of cancer and area code of home town (optional) will be collected from non-responders.

Figure 1. Interview Flowchart

Sample size

The initial target for patient recruitment is between 1000 and 2500 per country, with a maximum of 10,000 patients in total. Countries will recruit a sample of consecutive patients diagnosed with cancer. A sample of 10,000 patients allows us to reliably estimate (within a maximum of $\pm$ 1% error) the prevalence of financial catastrophe, illness induced poverty, clinically relevant decrease in quality of life, depression and anxiety, across the region.

Similarly, for the country-specific analyses, a sample of at least 1000 patients per country allows us to estimate the prevalence of financial catastrophe and all secondary outcome measures with acceptable errors (i.e. a maximum of $\pm$ 3% error).

Primary outcome

Incidence of financial catastrophe following treatment for cancer: Financial catastrophe is defined as out-of-pocket direct health care expenditure at 12 months exceeding 30% of household income as assessed over the 12 months of follow-up.

Secondary outcomes

- Illness induced poverty: This will be assessed by a change reported in household income which brings a household from initially above the prevailing poverty line (country specific) at baseline to below that line at 12 months.
- Quality of life (QoL) (generic): This will be assessed on the basis of change in health utility over a 12 months

period, as measured by the EQ-5D.

- Quality of life (QoL) (cancer specific): This will be assessed by a change in quality of life over a 12 months period, as assessed by the EORTC QLQ-C30.

- Psychological distress: The presence of psychological distress (anxiety and depression) at baseline, 3 and 12 months will be assessed using the HADS.

- Hospital costs: These are the costs of hospitalization and hospital treatment incurred by patients in the 12 months after primary diagnosis. These costs will be assessed by examining the patient's medical file at 3 and 12 months, as well as information provided by the patient in the follow-up interviews.

- Non-hospital health care costs: These are the health care costs which are incurred in the 12 months after primary diagnosis outside of hospital by patients. These costs will be assessed during the interviews. The patient is given a cost diary that can assist in answering the health care utilization questions.

- Out-of-pocket costs: These represent the hospital and non-hospital health care costs which are directly incurred by patients at point of delivery and not reimbursed by insurance. These costs will be assessed during the interviews. The patient is given a cost diary that can assist in estimating out-of-pocket expenses.

- Indirect costs: This is a measure of the change in household income in the 12 months of the study, as assessed in the suite of questionnaires.

- Economic hardship: Assessed as the inability to make necessary household payments such as housing costs, energy, food, and health care costs, as assessed in the suite of questionnaires.

- Disease status: Response to treatment (i.e. complete response, partial response; stable disease, progressive disease) is assessed at 12 months.

- Survival status: Vital status of the patient will be collected at both follow-up assessments. When a patient has died the cause of death will be determined, if possible.

Questionnaires

A suite of questionnaires will be interviewer-administered at baseline and both follow-up visits. All questions have been translated into local languages. Table 1 provides the domains of the questionnaires and the source from which the questions are drawn, and when they will be administered.

Household economic hardship is to be determined by a series of questions about failure to make household payments and whether there was help provided by any organization or individual to meet these payments. Similar questions have been successfully used in several studies investigating economic hardship (Heeley et al., 2009; Wei et al., 2010; Essue et al., 2011; Hackett et al., 2011).

Health care utilization and out-of-pocket costs will be assessed using a questionnaire developed within the study. Treatment costs will be assessed by abstracting data from consented participant's medical files.

Quality of life is to be assessed by the EORTC QLQ-C30 from the European Organisation from Research and Treatment of Cancer and the EQ-5D by the EuroQol group. The EORTC QLQ-C30 is a self-administered questionnaire specifically developed to assess the quality

Table 1. Questionnaire Domains

Domain	Items	Source	Respondent	B[1]	3[2]	12[2]
Socio-demographic	Age, sex, education, insurance status, marital status, occupation	National Household Surveys (NHS)	Participant	X		
Medical information	Cancer site, tumour stage/grade, treatment plan, co morbidities	Developed within study	Research officer		X	
Disease status	Response to treatment	Medical records	Research officer	X		X
Vital status	Death	Named alternate respondent, death certificate or medical records	Research officer		X	X
Quality of life	Global health, physical functioning, emotional functioning, utility	EORTC QLQ-C30 Aaronson (1993) EQ-5D (+ VAS) EuroQoL group	Participant	X	X	X
Mental health	Anxiety and depression	HAD Scale Zigmond (1983)	Participant	X	X	X
Socioeconomic	Economic hardship, household income	NHS, US Census, Heeley et al (2009), Hackett (2010)	Participant	X		X
Out-of-pocket costs initial hospitalization	Out of pocket costs not reimbursed by insurance, government etc	Developed within study	Participant		X	
Health care utilization and out-of-pocket costs	Hospital visits (excluding initial hospitalization), non-hospital based care, alternative medicines, etc	Wei et al (2010), Heeley et al (2009) Patient cost diary	Participant			X
Non-health out of pocket costs	Accommodation (nursing home), assistance (paid)	Developed within study	Participant			X
Hospital costs	Treatment, follow-up visits	Developed within study	Research officer			X

[1]Baseline; [2]Months

of life of cancer patients. The questionnaire consists of 30 items. After transformation, the EORTC QLQ-C30 has several multi-item functional subscales (e.g. physical, emotional functioning), multi-symptom scales (e.g. fatigue, pain), a global health subscale, and single items to assess symptoms (e.g. sleep disturbance). Scores on the functional and global health scales range from 0 to 100, where a higher scale score represents a higher level of functioning (Aaronson et al., 1993).

The EuroQol (EQ-5D) is a short self-reported generic health-related quality of life instrument that consists of two parts: a self-classifier and a Visual Analogue Scale (VAS) (EuroQoL Group 1990). The self-classifier comprises five items relating to problems in the following domains: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each domain has three levels, namely, no problems, some problems and severe problems. Combinations of these categories define a total of 243 health states. An EQ-5D health state can be converted to a single summary index by applying a formula that essentially attaches weights to each of the levels in each dimension. Index scores generally range between 0 (death) and 1 (full health) (Tsuchiya et al., 2002; Tongsiri and Cairns, 2011).

The Hospital Anxiety and Depression Scale (HADS) is to be used to collect information on psychological distress and more specifically the presence of depression and anxiety. The HADS is a self-report instrument designed for use with medically ill patients. Scores of 8 (possible range 0-21) or more on the depression or anxiety subscales are classified as 'depressed' or 'anxious', respectively (Zigmond and Snaith 1983).

Reporting of study outcomes and deaths

Information about the occurrence of all study outcomes as defined above, as well as study withdrawal and death, will be sought at each of the scheduled visits and captured on the participant's case record form. Cause of death will be determined by the research nurse or physician.

Statistical analysis

Initial descriptive analyses will be produced with outcomes reported for each country. Analyses will be undertaken to investigate associations between demographic, socioeconomic and cancer specific factors and each of the key outcomes. Country-specific and pooled analyses will be undertaken.

The analyses will allow us to provide evidence in the ASEAN countries of:
- the impact of different cancer types on quality of life, household economic and social outcomes across countries
- the influence of insurance status, hospital type, region and socioeconomic status on these outcomes
- an analysis of the variations in costs and treatment for cancer across hospitals and countries
- an analysis of non hospital direct costs, non-health care costs, indirect costs and out-of-pocket costs incurred by patients with cancer

Data collection and data entry

Data will be collected through conducting structured interviews by a trained interviewer at a place of the participant's convenience. The interviews are to be face to face (or, where necessary, by telephone); the interviewer will read out all the questions and notes the participants' answers on the paper forms. The first interview will be held at the hospital, after the participant has given informed consent to participate in the study, and before start of treatment. In addition, the participant is provided with a cost diary that is kept for the duration of the study, assisting in capturing health service use and out of pocket costs. The interviewer may be an investigator, nurse, or other health care professional.

A follow up interview will be carried out at 3 and 12 months after the baseline interview. To minimize loss to follow-up and optimize the validity of responses, the 3 and 12 months interviews will be held face to face at either: 1) the participant's home, 2) in the clinic during a follow-up visit; or 3) at a location convenient to the participant. If a face to face interview is not feasible, a telephone interview will be conducted. If, due to disease progression, a patient is unable to undergo the interview, another member of the household, identified by the participant at baseline, may do the interview on their behalf. In this case, the quality of life questions will be left out of the assessment.

Site staff will attend a two-day training prior to the start of the study. This training will cover the following topics: aim and rationale of the ACTION study, general research methods, participant recruitment, and data collection and entry. The training will enable individuals to recruit study participants, employ the research tools to conduct interviews and to manage the data collection and data storage processes in their country. The overall goal is to capture reliable, unbiased data, which truly represents the overall population.

Site staff are required to enter participants' responses onto case report forms (CRFs) and then enter the data into a secure centralized web based database. Data will be entered once, with several automated quality checks incorporated in the database system.

Ethics

This study will be conducted in accordance with all relevant local, national and international regulations. Each of the participating sites reviewed a copy of the research protocol and provided written approval and agreement to participate in this study. This study has also been approved by the University of Sydney's Human Research Ethics Committee.

Discussion

Each year, more than 700,000 new cases of cancer occur in the countries of ASEAN (Ferlay et al., 2010) and this number is expected to increase. Cancer has a severe impact on individuals and communities. Not only does it lead to disability and death, its treatment costs and associated loss of income can quickly undermine family finances. Consequently, globally, as well as for the ASEAN region, cancer has negative implications for poverty reduction and economic development. Policy and funding priorities in each of these countries must

plan to strengthen their health systems to cope with projected increases in cancer prevention, treatment and management needs (Farmer et al., 2010). Information on the socioeconomic impact of cancer can be an important advocacy tool for health policy. The ACTION study will provide novel and valuable information about the impact of cancer on quality of life and the economic circumstances of patients and their households.

Acknowledgements

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