

Reporting system on mortality statistics in Lao People's Democratic Republic

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ABSTRACT

The system to collect information on mortality statistics in Lao PDR is not well established, accurate and timely death information is therefore not available. This article reports the system and process to make the mortality statistical data of Lao PDR. The country has a paper-based resident registration system, using a death notification document, a death certificate, and a family census book. The death notification document is important as it provides the cause of death, which is issued from a health facility and the village office. In the event of a death occurring at home, the family representative needs to report to the village office verbally to obtain a death notification document. On the other hand, if the death occurred in a medical facility, a death notification document from a health facility is provided. The family representative should bring the death notification document to the district Home Affairs office to register the death and obtain a death certificate. After that, the family representative needs to bring the death certificate to the district Public Security office for an amendment in the family census book. ICD-10 is under development regarding death notification from health facilities under the Ministry of Health. However, it is unclear how death notification from village offices can adopt ICD-10 as the majority of deaths occur outside health facilities. A comprehensive and integrated mortality reporting system is necessary in order to create a holistic health policy and welfare for the country.

Keywords: mortality report system, mortality statistics, ICD-10, Lao PDR

Abbreviations:

Lao PDR: Lao People's Democratic Republic

CRVS: civil registration and vital statistics

ICD-10: International Classification of Diseases 10th revision

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INTRODUCTION

Although vital statistics (birth, death, marriage, and divorce) are essential information in any country. The system and accuracy of reporting substantially differ among countries in the world. Since a reporting system with a higher accuracy needs a larger budget and resources, the establishment of an accurate system is not easy, especially in low-income countries. Although the estimation on vital statistics in the world has been reported in many data books,¹⁻³ some of the corresponding data do not actually exist in several low-income countries. In addition, the process of collecting and processing vital data in those countries is not well described.

Among the statistics, mortality statistics are especially important for disease control and health promotion as they are essential information to the development of any country. The government can set priorities on the policies, based on the disease frequency according to sex, age, and location derived from mortality statistics.

Lao's People Democratic Republic (Lao PDR) had a population of 6.54 million with 6.3 deaths per 1,000 population according to the government's estimation.⁴ The country was classified into urban areas with 32.4% of the population and rural areas with 67.6%.⁴ Lao PDR has 18 provinces, 148 districts, and 8,573 villages, where there are one medical school in Vientiane (University of Health Sciences) and three colleges of health sciences at the provincial level (Luang Prabang, Savannakhet, and Champasack). The estimated number for medical doctors, nurses, and midwives per 1,000 population were 0.24, 0.82, and 0.09, in 2010, respectively.⁵

Since the infrastructure is under development, the mortality statistic data of Lao PDR was estimated roughly based on limited sources. The data on the cause of death are very limited and often unavailable because medical professionals are not involved in most of the deaths. The cause of deaths reported by researchers might not reflect the actual picture of death due to the limitations of the studies,⁶ such as the patient data management of the hospital and the accuracy of disease diagnosis, as well as the hospital specialization.⁶ Since the details of actual data collection on mortality have not been documented, this article aims to describe the system and the actual process where mortality data is collected in Lao PDR. Although officers from the Lao government are included in the authors, this is a research paper based on the findings obtained by the authors, it is not an official report of the government of Lao PDR.

MATERIALS AND METHODS

Reporting system on the vital statistics

In Lao PDR, Law on the Protection of the Rights and Interests of Children 05/NA in 2007,⁷ Law on Family Registration 03/PSA 21/PO in 1991,⁸ and Law on Family Registration 03/PSA12/NA in 2009⁹ declared the process of the registration and reporting of any births and deaths. Although these laws made a framework for collecting vital statistical data, the practice may depend on the actual situation of each area.

Sources available for the cause of death and mortality reporting system

The available information on the cause of death was collected from published papers, and death registration procedures were collected from project reports by international development agencies in the Lao PDR, who are working towards civil registration and vital statistics (CRVS), as well as Ministry of Health reports in English and/or in Lao language. Published papers were surveyed with PubMed.

Ethical issues

This study is not based on the information of individuals/patients, but rather on the system/process. The summary was based on preexisting data.

RESULTS

Family census book

Family registration and issued identification cards were first endorsed in 1991 after the Law on Family Registration was legislated, which was then revised in 2018. Under this law, every individual who lives or stays in the Lao PDR is obligated to register in a family census book (Peum Sum Ma No Kua). A family census book is a paper-based resident registration system, where all of the events of birth, death, marriage, and divorce are recorded. To date, the Ministry of Public Security remains in charge of the family census book management. It governs citizens by issuing/adding/amending/deleting information in the book, and it is held by the head/representative of the household. The family census book is extremely important because its contents become fundamental for the country as well as for certifying the legal status of family members in the household. The family census book can be used as evidence in many legal activities, such as school enrollment and property inheritance.

In case the book is lost, the representative of the household must report to the village office and request for a new book to be re-issued by the Ministry of Public Security, where all the data is recorded.

Recorded items in the family census book

The unit of record in the family census book is the household. Although the book is a so-called 'family census book,' it is not limited to one family. All members and families who live in the same house must be registered in one family census book for that household. The items recorded for each family are: family census book number, name of the head of the household, house address, date of family census registration, list of household members that are registered in the book, sex, date of birth, family relation, ID card number, race, nationality, tribe, occupation, workplace, migrated from, moving-in date, moving-out date, new address, and remarks. In addition, the back of the family census book has a few blank pages for amendments in the event of any changes which happened or were reported by the household.

Ministries handling CRVS

To understand the vital statistics, it is essential to understand the governance history and root of CRVS. After the Indochina War and the civil war, Lao PDR declared its independence on December 2, 1975 by the Lao Revolutionary Party. From 1975–1990, the whole national governance was reviewed, the regulations were revised, and the number of ministries was also reduced and re-organized.¹⁰ In 1991, the very first National Constitution of the Lao People's Democratic Republic was approved and many legislations were endorsed, such as the Family Registration Act.¹⁰ Under the Family Registration Act 1991, it was clearly mentioned that CRVS should be managed and handled by the Ministry of Home Affairs.⁸ In practice, the Ministry of Public Security has been in charge of CRVS since 1991, due to the discrepancy of the documents: 1) despite the fact that CRVS should be the Ministry of Home Affairs responsibility, there is also an incompatible statement written in the Family Registration Act that CRVS should be in place to ensure national security and public order, which overlaps with the role of the Ministry of Public Security^{8,9}; 2) although there is evidence which showed that the Ministry of Home

Table 1 Coordination Committee on Citizen Management (CCCM) according to No.71/PM. Dated 26 July 2013

Ministry members	Roles and responsibility
Ministry of Home Affairs (MoHA)	<ul style="list-style-type: none"> - Administer the residence registration system - Establish rules for the operation of the registration system and procedures of all CRVS system including, registration of marriage and divorce, registration for issuing ID card, registration for family census book, etc. - Take the chair of CCCM.
Ministry of Public Security (MoPS)	<ul style="list-style-type: none"> - Administer the issuance of ID cards, and family census book - Immigration management - Collect population information - Responsible for the management of the registration in legal document after the MoHA.
Ministry of Health (MoH)	<ul style="list-style-type: none"> - Responsible for providing birth/death notification to citizen - Notify MoHA of information related to birth and death and conduct public related activities to promote CRVS system.
Ministry of Education and Sports (MoES)	<ul style="list-style-type: none"> - Recommends registration of birth certificates upon the school enrollment in order to activate the registration.
Ministry of Planning and Investment (MoP)	<ul style="list-style-type: none"> - Particularly, the National Statistics Bureau (NSB), will be responsible for handling population statistics around population vital information.
Ministry of Foreign Affairs (MoFA)	<ul style="list-style-type: none"> - Responsible for issuing and managing documents, such as, passports and ID cards for overseas residents. - Responsible for identifying the vital statistics by supporting the CRVS system.
Ministry of Justice (MoJ)	<ul style="list-style-type: none"> - Conducts legislative measures and adoption procedures for smooth operation of CRVS system.

CRVS: civil registration and vital statistics

ID card: identification card

Affairs existed in 1991,¹⁰ the information regarding its organizational composition was lacking. Later the Ministry of Home Affairs’ constitution was officially promulgated in 2011,¹¹ however, most of CRVS works remain under the Ministry of Public Security.

In recognition of the multisectoral nature of the system, CRVS affairs require collaboration and support from related line ministries, therefore the Civil Management Inter-Ministerial Coordination Committee (CMCC) was established in 2013, with the Ministry of Home Affairs taking the chair. The line ministries related to CRVS is listed in Table 1. The CMCC was established to enhance coordination among line ministries and oversee citizen vital registration.

Death registration

In the event that death occurs in a health facility, healthcare providers are obliged to issue a death notification document to the deceased person’s family, stating the limited medical information, including the cause of death and treatment administered at the facility. Then, a household representative brings the death notification document issued by the healthcare facility to notify the village office and the District Home Affairs Office.

On the other hand, if the death happens outside a healthcare facility, such as in the home, a household representative needs to report the death to the village leader to obtain a death notification document from the village office. Since the village offices are the smallest local

Mortality reporting system in Lao PDR

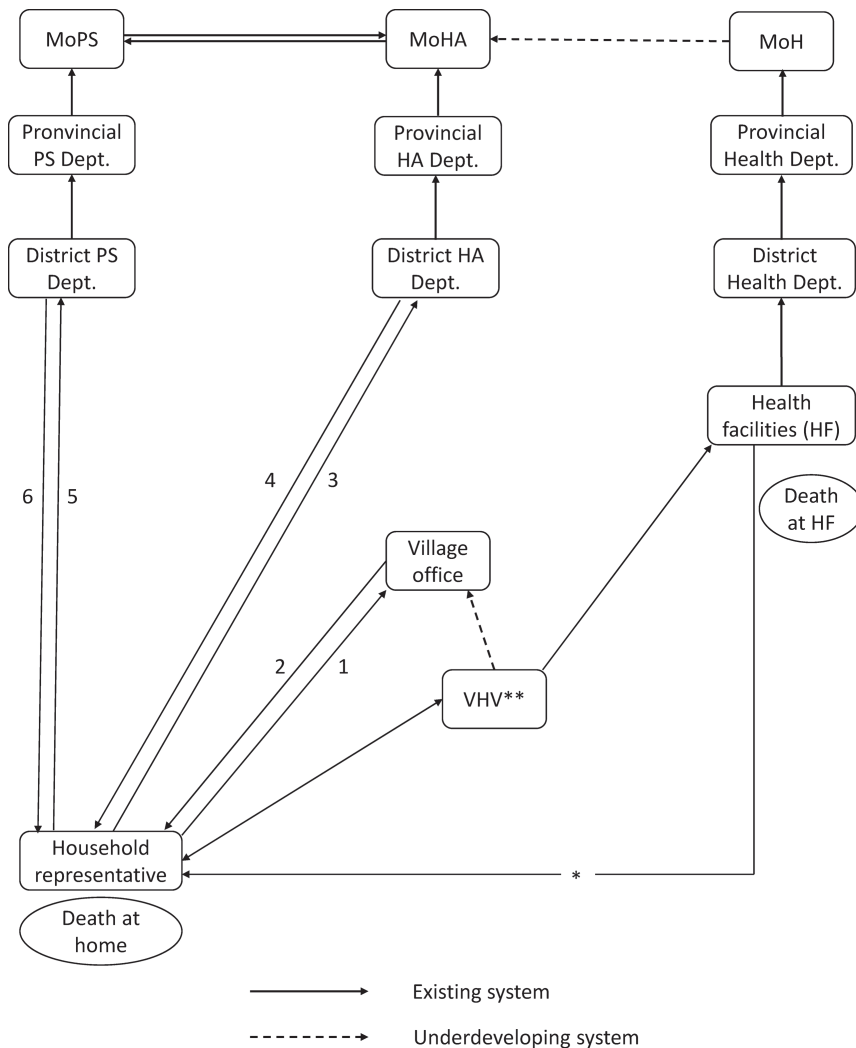


Fig. 1 Flow chart of death registration

- 1) The household representative reports the death to Village Office;
- 2) Village Office issues death notification;
- * If death occurs at a health facility, death notification is provided by the health facility.
- 3) Household representative brings the death notification and family census book to the District Home Affairs office;
- 4) Death is registered and the death certificate is provided to the household representative;
- 5) Household representative brings death certificate and family census book to the District Public Security office;
- 6) Death is registered at Ministry of Public Security database and amended in the family census book.

**A Village Health Volunteer, collects information regarding mother and child deaths at a home/community and verbally reports it to a health facility. In addition, a Village Health Volunteer also helps to verbally inform the Village Office of a death when it is not reported by the head/representative of the household.

MoPS: Ministry of Public Security
 MoHA: Ministry of Home Affairs
 MoH: Ministry of Health
 PS: Public Security
 HA: Home Affairs
 VO: Village Office
 VHV: Village Health Volunteer

governmental unit, they can confirm the reality of the reported death which occurred in the village easily. Then the household representative brings the death notification document to notify the District Home Affairs Office.

After the District Home Affairs Office obtains the death notification document, death information will be recorded in the home affairs database on citizen statistics. After obtaining a death notification document, the District Home Affairs Office is responsible for registering the death and issuing a death certificate to the household representative. Then the household representative brings the death certificate to notify the District Public Security Office. After receiving the death certificate, the District Public Security Office is in charge of amending the family census book, whose records are used for the welfare services of the government as shown in Fig. 1.

In Lao PDR, a village health volunteer is known as a community health worker according to the World Health Organization's definition.¹² The village health volunteers are not medical professionals but local people from the community who are trained to provide some form of healthcare service to the community.¹² In the CRVS system, a village health volunteer plays a role in notifying deaths in the community, especially maternal deaths at home, and verbally reports to the health facility to further report to the Mother and Child Health Center, in order to send a team of doctors to the community to investigate the cause of maternal death (verbal autopsy) and subsequently monitor the progress towards the Sustainable Development Goals of the country. In addition, a village health volunteer can also verbally report the death to the village office in case the village office is not informed by the family/representative of the household.

Death notification and death certification

Cause of death is recorded on the death notification document only when issued by a health facility after medical investigation, despite the fact that there is no ICD standard applied. On the other hand, the explicit cause of death is not mentioned in the death notification document issued by the village office, instead, it describes the cause of death according to three main categories, such as 'due to accident,' 'due to senility,' and 'due to illness.' A death notification document is mainly for the purpose of notifying and obtaining a death certificate in order to have the family census book amended, not for health statistics purposes. Information recorded on death notification document is crucial data for the national vital statistics. In 2020, the Ministry of Health started to put ICD-10 into practice and it has revised its death notification document for health facilities, and ICD-10 based causes of death reported by health facilities will be used and recorded for health statistics.

National Health Information System

The Division of Statistics in the Ministry of Health was inaugurated in 2001 to implement the Health Management Information System. This system aims to assess and monitor Lao people's health in addition to the CRVS system, which culminated with the ministerial decree that approved the establishment of a new health information system in 2004. The main objectives of the health information system are to allow the Ministry of Health to monitor and evaluate issues concerning health in order to improve the health status of the country and assure that the health service is accessible to all people in the Lao PDR. There are five goals that contribute to health information development, accompanied with a total of 14 specific objectives that aim at improving coverage and use of vital registration including cause of death.¹³ With vigorous effort, the Ministry of Health finally introduced the District Health Information System 2 (DHIS2) to health facilities nationwide in 2013 and cause of death was also included in the software.

According to recent Ministry of Health's national health statistics reports retrieved from DHIS2, cause of death for the general population was not recorded nor reported to the Ministry of

Health by healthcare facilities.¹⁴ Thus, information on cause of death is very limited. According to the 2018 national health statistics report, there were 48,978 deaths recorded throughout the country, where 90% of deaths happened outside health facilities and cause of death was not reported to the health sector. Among 4,906 deaths (10%) that were recorded by the health system, approximately two-thirds of them were deaths inside health facilities. The mortality report by the Ministry of Health was primarily focused on maternal and child health where 119 (2%) accounted maternal deaths, 2,695 (61%) was for children under five mortality, and the rest 1,822 (37%) were unmentioned deaths in the report.¹⁴ Since August 2020, the Ministry of Health has started including ICD-10 on the death notification document from healthcare facilities under World Health Organization (WHO) support, and healthcare facilities throughout the country are still undergoing training to put this new death notification documentation system into practice.

DISCUSSION

As can be seen from the convoluted process of reporting death, the overlapping authorities and lack of information sharing between ministries and an immature, newly established ICD-10 compliant system, Civil Registration and Vital Statistics is still under development and the Ministry of Health is facing some key challenges in obtaining and/or retrieving cause of deaths information. In addition, reporting systems by each related ministry had different data layouts, and most importantly, the reporting systems were not synchronized. Lao PDR is a country that did not have national cause of death data available until 2020.¹⁵ Timely and accurate registration information is crucial for a country to execute and monitor the achievements of its strategy towards national development goals as well as sustainable development goals. Some key challenges need to be addressed and facilitated by the government.

The first challenge is the complex, time consuming, and cumbersome nature of the registration process. As previously mentioned, there are many documents that are essentially performing the same role of recording birth and death registration, such as the notification, certification and the family census book. For example when a birth occurs, a birth notification document is obtained from the village leader if the birth occurs at home, or from a healthcare provider if the birth occurs at a health facility. By law, the household head needs to bring the birth notification document to the District Home Affairs Office to obtain a birth certificate. After the issuance of the birth certificate, the head/representative of the household needs to bring the birth certificate to the District Public Security Office, to register the newborn in the family census book. Technically, any newborns must be registered within 30 days after birth. However, late birth registration later than 30 days still occurs. Moreover, there is a chaotic registration process if examined retrospectively. This is reflected in the national survey with 11,720 children who were under five years old conducted in 2017, it is reported that there were 73% of Lao children that could properly register in the family census book. Among those children who were registered in the family census book, only 54.5% reported that they had a birth certificate; and among the children who had birth certificate, only 26.1% could show one.^{11,16} This inconsistency may signify possible ignorance and lack of vigilance in both officers and the general population regarding birth registration. A birth certificate is crucial in the civil registration for the Ministry of Home Affairs, however the unreliable data recorded may have contributed to the miscalculation of child mortality in the country. A birth certificate is crucial for civil registration, however the unreliable data may contribute to the miscalculation of child mortality in the country.¹⁶ Therefore, in the national social indicator survey of the Lao PDR, child mortality was estimated relying on family recollection of birth and death in the family via national survey instead of the civil registry.⁵

The second challenge is the cost of registration, it may refer to any direct (ie, application and registration fees) or indirect cost (ie, transportation) which may pose a challenge for citizens to properly follow the registration process. According to the Family Registration Act, a commission fee is required for registration and for birth/death certification issuance. Furthermore, just the District Home Affairs Office alone requires at least three visits on different days to obtain a death certificate to complete the registration process required: 1) a trip to buy an application for a death certificate and fill in at home; 2) a trip to submit the application with a copy of the family census book, and; 3) a trip to obtain an issued death certificate.¹¹ Hence, this could be a major barrier for people who have a low income and reside in rural areas to access and complete the registration process.

According to the WHO assessment framework, there were three pillars to assess the country's CRVS: 1) the legal basis and resources for registration; 2) the registration process (registration, certification and coding practices); and 3) the data access and usage.¹⁷ To compare the status of CRVS system of Lao PDR to the international standard,¹⁷ the Lao PDR has passed the first pillar having the political will and legal framework to support the CRVS, however, it is struggling in the registration process and data access due to the aforementioned two ministries, and the information between ministries was not synchronized; there were two separate death notification forms for death certification, from the village office and health facility; even though the Ministry of Health had made effort to advocate the use of ICD-10 in death notification for death in health facilities, it was not clearly defined how the Ministry of Health would carry out ICD-10 training for healthcare workers. In addition, there was limited evidence which defined whether or not the medical professional should be involved or how the village people should be trained for death certification for death at home cases. Therefore, a strong and effective CRVS has not been well established.^{11,18} It is imperative for CRVS related ministries to have clearly defined roles and responsibilities to avoid overlapping interests.

To our knowledge, causes of death have yet to be established in death statistics by the national statistics bureau,¹¹ hence, due to the fact of unstable vital registration, statistics on birth and death registration were not reported to the United Nations Statistics Division (UNSD).¹⁵ Accordingly, the UNSD obtained Lao vital statistics from the national census.¹⁹ Information on causes of death in Lao PDR is limited. One paper regarding the main causes of death among Lao people were injury, cardiovascular diseases, and renal diseases.⁶ However, the result of cause of death from one tertiary general hospital could not reflect the whole country, as hospital's specialization and resource availability in that hospital might be the bias to interpret its result.⁶ Further research is needed to identify a cost-effective way to collect death information in a community, in order to support the health statistics of the country.

This paper has summarized the death registration processes in the Lao PDR. Although quantitative description on the CRVS system and the cause of death in Lao PDR was limited, explicit explanation of the registration and data collection is useful to understand the Lao system. The limitations of this article are as follows. First, the information outside the Ministry of Health was primarily obtained through the Internet. Data and facts not uploaded or files without appropriate keywords could not be identified. Second, the official interpretation of the law may vary among different ministries. Finally, the gap between legislation and implementation could not be examined since the practice on CRVS was not surveyed. Further surveys on the practice on CRVS is necessary to understand the complexity of the system.

In conclusion, limited national death statistics exist and comprehensive death notification from health facilities are under development by the Ministry of Health. A comprehensive and integrated mortality reporting system is necessary in order to create a holistic health policy and welfare for the country.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest regarding the publication of this study.

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