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Cases Study

Bridging the Gap in Post-Mortem Identity Verification of the Deceased in Sri Lanka: Insights from an Audit of Medico-Legal Cases.

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ABSTRACT:

Background: Verification of the identity of the deceased in a medico-legal death investigation involves comparing the claimed identity with the deceased's valid identification documents. Although widely adopted in developed countries, its scope and implementation vary significantly at the local level. Lapses in identity verification during medico-legal death investigations can lead to fraudulent activities, including impersonation and identity theft for insurance claims. This study aims to assess the availability and application of valid identification documents among deceased individuals and their next of kin during MLDI in a rural medico-legal unit in Matale, Sri Lanka.

Methods: This study retrospectively surveyed 298 post-mortem files of the deceased from January 2022 to December 2022 to describe and compare the availability of valid identification documents of the deceased and the next of kin of the deceased.

Results: The national identity cards of the deceased were available in 81% of the cases. Of those deceased without national identity cards, alternative documents—a passport, a driver's licence, a marriage certificate, and a birth certificate—were available in 99% of cases. The national identity cards were available to 97% of the next of kin of the deceased.

Conclusions: The findings offer important insights into the types and availability levels of valid identification documents, demonstrating the practical feasibility of implementing standard operating procedures at the local level within a medico-legal unit. Despite its limitations, the study provides valuable empirical evidence with significant implications for improving identity verification practices in medico-legal death investigations.

Keywords: Death verification; medico-legal death investigation; identity fraud; insurance fraud; national identity card; driver's licence; birth certificate; inquest; forensic identification; standard operating procedures.

INTRODUCTION

The identification of the deceased is an important part of the Medico-Legal Death Investigation (MLDI) [1]. Non-decomposed, non-disfigured, and non-dismembered bodies are usually identified by visual identification, in which the deceased is identified solely based on appearance by the Next of Kin (NOK) of the deceased in the MLDI [2]. The verification of the identity of the deceased is a process that compares the claimed identity with Valid Identification Documents (VID).

Visual identification of the deceased is prone to error, with various reports of misidentification in the literature [3,4,5,6,7]. While such errors are considered rare, some studies suggest they may be underreported [8]. Failing to follow proper verification of the identity of the deceased can cause legal issues, including fraudulent activities such as impersonation and identity theft for insurance claims [9,10,11,12]. Incorrectly recording a deceased's name on the death certificate may lead to delays in obtaining insurance benefits due to the complicated process of amending a death certificate.

In developed countries, Standard Operating Procedures (SOP) mandate the use of VID that includes an image of the deceased for verification purposes. The use of such a document plays a dual role: it ensures the accuracy of the deceased's name on the death certificate and provides a visual reference to confirm identity.

In contrast, developing countries often struggle with inconsistent identity verification due to informal practices, the lack of SOPs, and limited coverage of VIDs among the population. It is estimated that by the end of 2022, nearly 850 million people globally did not possess a VID, with the majority residing in Sub-Saharan Africa and South Asia [13,21].

The law on inquest procedure does not define the process of verification of the identity of the deceased [14]. Locally, there is no defined SOP on the verification of the identity of the deceased in the MLDI. However, in Sri Lanka, there is a robust National Identity Card (NIC) system [15] and birth registration [16], with high NIC ownership of 95% among adults [13,15], and a birth registration rate of 98.8% [18]. Despite the high prevalence of NICs, these systems are often underutilized in MLDI. This underuse may be due to procedural gaps and a lack of integration between identification systems and legal processes. Moreover, a common misconception among

stakeholders involved in MLDI is that VIDs are frequently absent among the deceased, as many of the deceased individuals who end up at MLDI are old. This belief contributes to a reluctance to enforce formal verification of the identity of the deceased and to concerns that such steps may delay the MLDI process. Furthermore, the author has come across cases where discrepancies arose between the name of the deceased stated in the inquirer's order and the name on the VID. In such instances, the author requested the attending police officer in the MLDI to correct the name in the official order for the autopsy based on the VID.

To address this gap, a SOP was introduced in 2019 at the Medico-Legal Unit (MLU) of the District General Hospital, Matale. This SOP mandates the use of a VID—such as a NIC, Driver's License (DL), Passport (PP), Birth Certificate (BC), Marriage Certificate (MC), or the BC of the deceased's child—for verifying the identity of the deceased during the MLDI. Despite this local initiative, no studies have examined the actual availability of VID among the deceased in the context of MLDI in Sri Lanka. This study aims to fill that gap by evaluating VID availability.

OBJECTIVE

This study aimed to assess the availability and application of VIDs among deceased individuals and their next of kin during MLDI in a rural medico-legal unit in Matale, Sri Lanka, and to evaluate their associations with sociodemographic characteristics.

The Standard Operating Procedure for Verification Of The Identity Of The Deceased

Recognizing legal identity as a fundamental right, the SOP outlines a systematic approach for verifying the identity of the deceased, including provisions for cases in which the NIC is not available. A photo-based VID—such as an NIC, DL, or PP—is accepted as the primary means of identity verification.

In the absence of a photo VID, the secondary means of verification includes the deceased's BC or MC. If neither is available, the tertiary level of verification involves the BC of the deceased's child, as the names of the parents are printed on the document. In cases involving early neonatal deaths where a BC is not available, the NIC or BC of the deceased's mother is accepted. For children under 15 years of age, the BC is considered a valid document for identity verification.

At the quaternary level, when none of the above documents are available, a letter from the Grama Niladhari (GN)—the state officer at the village level—stating the name of the deceased as recorded in the local voter registry is accepted. As a final measure, if all the aforementioned documents are unavailable, a written affidavit signed under oath—typically in the presence of a lawyer or a Justice of the Peace—is accepted for identity verification.

MATERIALS AND METHODS

Study Design and Sample

Post-mortem files of 298 autopsies were retrospectively analyzed. These autopsies were conducted by the author and selected from a total of 586 autopsies performed at the MLU of the District General Hospital, Matale, Sri Lanka, between January 1, 2022, and December 31, 2022. The sample was selected by convenience sampling, including all autopsies performed by the author during the study period. Sudden natural deaths, as well as unnatural and suspicious deaths occurring within the hospital's jurisdiction, are referred to the MLU of Matale for MLDI.

Study Setting

The MLU of Matale serves a defined population with specific regional and communal characteristics, representing approximately half of the total population of the Matale District. The District General Hospital Matale is the only tertiary care facility in the district, with approximately 700 inpatient beds serving a district population of around 0.5 million. Socioeconomic conditions within the district show slight variability, with a notable proportion of slum dwellers residing more than 5 km away from the estate sector. The designated study period corresponds to the post-implementation phase of the SOP for identity verification.

Exclusion Criteria

Cases were excluded if they involved skeletonized remains referred for forensic anthropological examination, unidentified individuals, instances where visual identification was not possible due to advanced decomposition, or where essential data were missing. Of the 305 post-mortem examinations performed by the author during the study period, seven cases met the exclusion criteria. Thus, the final analysis was conducted on 298 cases.

Data Collection

Information on the deceased and NOK was obtained from the post-mortem records, which were original hard copies preserved at the Medico-Legal Unit. Data were collected, including socio-demographic details such as age at death, sex, ethnicity, place of residence, place of death, investigating authority, police division of the deceased, availability of the VID of the deceased, and the NIC of the NOK of the deceased. Information on the VID of the deceased and NOK was updated according to the new SOP, which incorporated these details into the post-mortem records. The following were considered as VID:

The NIC, issued by the Department for Registration of Persons, established under the Registration of Persons Act No. 32 of 1968 in Sri Lanka [19]. PP, issued by the Department of Immigration and Emigration of Sri Lanka; DL, issued by the Department of Motor Traffic of Sri Lanka; BC and MC, issued by the Registrar General's Department of Sri Lanka. Hard copies or images of the VID were classified as available.

Based on the place of residence, as indicated in the post-mortem report, the cohort was divided into two groups: those living within city limits and those living outside city limits. This classification was based on referencing the addresses of the deceased using Google Maps. The city limit, also known as the Matale Municipal Council Area, currently represents 7.4% of the total population of the Matale District [20]. This subgroup is comparatively urbanized.

For the analysis, age was categorized into three subgroups based on relevant societal and functional milestones. Individuals under 15 years were grouped separately, as they are not eligible to possess a NIC. The second category includes individuals aged 16 to 55 years, representing the working-age population, who are most likely to actively use their VIDs. The final group consists of individuals over 55 years, reflecting the typical retirement age, during which the frequency of VID use may decline.

The data collectors were medical officers who were trained in data collection and data entry. During the initial phase of data collection, data were cross-checked to evaluate consistency. This procedure was continued until errors in data collection were consistently low (i.e., below 0.02%). Subsequently, data completeness and accuracy in data collection and data entry were monitored by an external independent data monitor who randomly reviewed 5% of forms and 5% of entered cases.

Missing cases or errors in data collection/entry were corrected in real time. Data were also externally monitored for completeness, and internal consistency errors in data collection/entry were corrected in real time. The data were recorded on a data capture sheet and then entered into Microsoft Excel. Data were anonymized and irreversibly de-identified. No personal data were collected.

Ethical approval was granted by the Ethics Review Committee of Lady Ridgeway Hospital, Colombo, Sri Lanka (Approval code: LRH/DA/29/2022). Institutional clearance for the study was also obtained from the head of the institution.

Statistical Analysis

IBM SPSS version 24.0 (IBM Corp.) was used for comparative statistical analysis, significance testing, and chi-squared (χ^2) tests for comparisons between groups of ordinal variables. A p-value of ≤ 0.05 was considered statistically significant for all tests.

RESULTS

General Demographic Characteristics

A total of 586 autopsies were conducted at the Medico-Legal Unit. Of these, 298 autopsies—representing 50% of the total—were performed by the author. Table 1 presents the distribution of these cases by age group, sex, police division, ethnicity, place of residence, investigating authority, and circumstances of death.

Males accounted for the majority of deaths (73%). The mean age of the deceased was 58.4 years, with a standard deviation of 21.14 years. The predominant ethnic group was Sinhalese, representing 74% of the study sample. Nine percent of the deceased resided within the city limits, and 75% of deaths occurred in the hospital. Most investigations (95%) were conducted by the Inquirer into Sudden Deaths (ISD), a role functionally similar to that of a coroner. Additionally, 56% of the cases were investigated by police divisions located outside the Matale police area.

Table 1. General Demographic Characteristics of Cases (n = 298)

Demographic Variable	Category	n (%)
Sex	Male	219 (73%)
	Female	79 (27%)
Age Group	<16 years	17 (05%)
	17–55 years	90 (30%)
	>55 years	191 (65%)
Police Division	Matale	132 (44%)
	Rattota	54 (18%)
	Mahawela	34 (12%)
	Yatawatta	14 (05%)
	Kande Nuwara	19 (06%)
	Other police areas	45 (15%)
Ethnicity	Sinhalese	221 (74%)
	Tamil	61 (21%)
	Muslim	16 (05%)
Place of Residence	City limits	28 (09%)
	Outside city limits	270 (91%)
Place of Death	In-hospital (Matale)	224 (75%)
	Outside hospital (Matale)	74 (25%)

Table 2 presents the availability of various forms of VIDs of the deceased. The NIC was available in 81% of the cases. Among the remaining 19% of deceased individuals without NICs, alternative documents—such as the PP, DL, MC, BC of the child of the deceased, and the deceased's own BC—were available in 99% of those cases, as detailed in Table 2.

Table 2. Breakdown of the Availability of Valid Identity Documents of the Deceased (n =298)

Characteristic	Category	n (%)
NIC of Deceased	Available	240 (81%)
	Not available	58 (19%)
Alternatives to NIC	Passport (PP)	3 (1%)
	Driver's License (DL)	4 (1%)
	Birth Certificate (BC)	16 (5%)
	Marriage Certificate (MC)	3 (1%)
	BC of Child of Deceased	12 (4%)
	Letter from GS	2 (1%)
	Parent's ID	14 (5%)
	None	4 (1%)
Total VID Availability		294 (99%)

Table **3** presents the availability of the NIC of the NOK of the deceased. NICs were available in 97% of the NOKs.

Table 3. Breakdown of the Availability of National Identity Cards of the Next of Kin of the Deceased (n =596)

Characteristic	Category	n (%)
NIC of Next of Kin	Available	581 (97%)
	Not available	15 (3%)
Total		596 (100%)

Table **4** presents the distribution of NIC availability among the deceased, stratified by sex, ethnicity, place of residence, investigating authority, and age group. The analysis indicated that—except for the age of the deceased—variables such as sex, ethnicity, place of residence, and investigating authority were not significantly associated with NIC availability. A statistically significant association was observed only for age ($p < 0.05$).

Table 4. Distribution of National Identity Card (NIC) Availability Among the Deceased by Sociodemographic and Investigation Characteristics*(*Statistically significant at p < 0.05)*

Characteristics		NIC available	NIC not available	Total	Pearson chi-square
Sex	Male	179 (82%)	40 (18%)	219	0.384
	Female	61 (77%)	18 (23%)	79	
	Total	240	58	298	
Ethnicity	Sinhala	184(83%)	37 (17%)	210	0.068
	Tamil	46 (75%)	15 (25%)	61	
	Muslim	10 (62%)	06 (38%)	16	
	Total	240	58	298	
Place of residence	City limit	24 (85%)	04 (15%)	28	0.467
	Out of city limits	216 (80%)	54 (20%)	270	
	Total	240	58	298	
Investigating Authority	Coroner (ISD)	226 (80%)	57 (20%)	283	0.199
	Magistrate	14 (93%)	01 (07%)	15	
	Total	240	58	298	
Age in years	<16	00 (0%)	17 (100%)	17	0.000*
	17-55	79 (88%)	11 (12%)	90	
	>55	161(84%)	30 (16%)	191	
	Total	240	58	298	

DISCUSSION

This study aimed to assess the availability of VIDs of the deceased and NOK of the deceased, and the association of VID availability with sex, ethnicity, place of residence, investigating authority, and age of the deceased at MLDI. The post-mortem records of 298 deceased were analysed for the availability of the VIDs. Findings indicated that VIDs are commonly available among the deceased (99%) and the NOK of the deceased (97%). In cases where the NIC was unavailable, alternative forms of VIDs of the deceased, such as the DL, PP, BC, and the MC, were available [17]. Only 1% of cases lacked any form of VID of the deceased. Compared to other countries in the region—Afghanistan (84%), Bangladesh (86.6%), Nepal (88%), and Pakistan (88.3%)—Sri Lanka demonstrates a relatively robust National Identity Card (NIC) system, with an identity coverage rate of 95%, surpassed only by India (96.8%) [13]. The above findings illustrate the robust NIC system in comparison to the region.

The present study found a high availability (97%) of NIC among the NOK of the deceased. This pattern is consistent with findings from national-level studies on NIC ownership among the general population in Sri Lanka [13].

Notably, the NIC was available in 81% (n = 240) of the deceased cases examined in this study. A citizen of Sri Lanka becomes eligible to obtain a NIC at the age of 15 [19]. Since the study sample included some deceased individuals who were under 15 years of age at the time of death, the NIC availability was reassessed among those aged 15 and above. Among this group, the NIC was available in 240 out of 282 cases (85%). The findings indicate a modest gap in NIC availability among the deceased when compared to the NOK and the broader national NIC ownership statistics.

Several factors may account for this discrepancy. One explanation is that the NIC, as a personal document, may be difficult for the NOK to retrieve, especially in instances of sudden or unexpected death. Additionally, more than 65% of the deceased in this study were over the age of 55, and many of their NOK were adult children who may have been residing in separate households. This separation may further hinder access to personal identification documents such as VIDs.

In this study, no form of valid identification was available in 1% of the deceased. This absence may be attributed to a range of social, logistical, and procedural barriers that hinder access to NICs and birth registration. Individuals who are homeless, living on the streets, or disconnected from their families—often due to factors such as psychiatric illness, chronic alcoholism, substance abuse, extreme poverty, illiteracy, internal displacement, migration, marginalisation, natural disasters, and situations where individuals flee their homes—can be significantly impeded in the acquisition, retention, or retrieval of VIDs.

This study population is majority male (73%). However, a statistically significant variation in NIC availability by sex was not observed. This distribution is consistent with other studies, which revealed that gender gaps in VIDs coverage in middle- and high-income countries tend to be much smaller [21].

The Tamil ethnic group accounted for 21% of the cases. According to the Department of Census and Statistics, approximately half of the Tamil population in Matale resides in estates characterized by low socioeconomic conditions [22]. Nevertheless, no significant association was found between NIC availability and ethnicity. These findings are consistent with national-level data on NIC coverage [13]. However, limited representation of certain subgroups, such as Muslims, may restrict the generalizability of subgroup analyses. Further prospective studies with larger and more diverse samples are warranted.

A significant association was observed between the age of the deceased and NIC availability. This is expected, as individuals under 15 are not eligible to obtain an NIC. Moreover, the importance of maintaining VIDs may decrease with age.

The majority (91%) of deceased individuals in this study resided outside city limits. The study was conducted in the rural district of Matale, in contrast to more urbanized districts such as Colombo. No statistically significant association was found between NIC availability and place of residence. While many studies from low-income countries report lower VID ownership in rural areas, Sri Lanka's high literacy rate compared to other countries in the region may explain the relatively high NIC availability even in rural districts. However, the limited representation of urban residents may constrain the generalizability of residence-based subgroup analyses.

LIMITATIONS

This study was conducted in a single medico-legal unit within one district of Sri Lanka. All post-mortem reports were sourced from a single database, and all autopsies were performed by one forensic pathologist.

These factors limit the generalizability of the findings to other medico-legal units or to the country as a whole. The proportions of different ethnic groups vary significantly across districts, often influenced by socioeconomic and geographic factors. In this study, approximately 20% of the population identified as Tamil, given that Matale is located near the estate sectors. This variation in ethnic and socioeconomic composition should be considered when interpreting the results.

Although the findings are consistent with national-level studies on NIC coverage, a nationally representative, comparative survey is needed to assess the broader applicability of these results and to inform the nationwide implementation of the SOP.

The retrospective design of the study imposes further limitations. For example, the non-availability of NICs may have been influenced by the sudden nature of death and the personal nature of the document, which could have prevented NOK from retrieving it. However, this possibility could not be verified within the scope of this study.

Additionally, the absence of VIDs among some deceased individuals may reflect deeper structural and social barriers. Some individuals may never have possessed a VID due to lack of documentation or may have temporarily lost it. Again, due to the retrospective nature of the study, these causes could not be verified.

The causes of VID non-availability were not specifically investigated. They may include homelessness, mental illness, chronic substance use, poverty, illiteracy, internal displacement, marginalization, or belonging to vulnerable populations. Other contributing factors may include events such as civil unrest, conflict, and natural disasters. Due to the retrospective design, it was not possible to explore these factors systematically.

Another limitation is the lack of empirical data on the effectiveness of the SOP in preventing fraudulent activities, such as impersonation and insurance fraud. This weakens the evidence base for enforcing mandatory identity verification in MLDI. Further research is needed to evaluate the SOP's effectiveness in addressing these concerns. In addition, studies are warranted to identify effective and low-burden methods to improve identity verification of the deceased.

Moreover, innovative technologies could assist the MLU in verifying VID authenticity—for instance, through access to the Department for Registration of Persons' national database by the police department or authorized personnel.

Lastly, comparative studies involving SOP users and non-users are necessary to evaluate the SOP's effectiveness in reducing name-related errors on death certificates and to examine the consequences of requiring VID for MLDI, particularly in cases traditionally managed through informal mechanisms.

IMPLEMENTATION OF THE SOP

The officers in charge of police stations in Matale were informed in advance about the need for a VID to verify the identity of the deceased, as the police are typically the first point of contact for the NOK in the context of MLDI. Initially, inquirers issued orders for autopsy without verifying the deceased's identity, leaving the responsibility to the staff of the MLU to explain the VID requirement to the NOK. Many NOK perceived this request as an unnecessary burden, believing that the identity of the deceased had already been confirmed. This misunderstanding initially reduced cooperation between NOK and MLU staff.

In cases where the name of the deceased on the official post-mortem order differed from that on the VID, MLU staff engaged directly with both the police and the NOK to emphasize the importance and benefits of proper identity verification. These efforts helped improve communication and cooperation. In some instances, NOK were unaware of the VID requirement until they arrived at the morgue. Rather than returning home to retrieve the necessary documents, social media proved to be a valuable tool: family members at the deceased's residence were able to send images of the VID electronically to the NOK at the morgue, thereby minimizing delays in the verification process.

In Sri Lanka, BCs are digitized, which further helped reduce delays. Newer BCs could be obtained instantly at any District Secretariat office on weekdays. In this study setting, the Secretariat office was located less than one kilometre from the morgue, enabling timely access by the NOK. These procedural adjustments enhanced collaboration among the NOK, police, and MLU staff, resulting in improved communication and greater patience and cooperation from NOK.

Although the adoption of the new SOP initially required time and sensitization among stakeholders—particularly police officers and inquirers—eventually, inquirers began issuing post-mortem orders only after reviewing the VID of the deceased.

CONCLUSIONS AND RECOMMENDATIONS

This study represents the first documented instance in Sri Lanka where a SOP was implemented to verify the identity of the deceased, introducing a novel and structured approach to MLDI. The findings provide important insights into the types and levels of VID availability, demonstrating the practical feasibility of SOP implementation at the local level within a MLU.

Despite its limitations, the study offers valuable empirical evidence with significant implications for enhancing identity verification practices in MLDI. Notably, the findings revealed a higher-than-expected rate of NIC availability among both deceased individuals and their NOK in a rural district. Given that the death certificate serves as the sole legal proof of death, the integration of VID-based verification is essential to ensure accurate identification—contrasting with current informal practices still prevalent in some settings.

The results underscore the need for policy-level consideration of VID verification in MLDI, as well as broader adoption of standardized procedures to strengthen the integrity and legal validity of death certification processes in Sri Lanka.

DECLARATIONS:

Ethical approval: Ethical approval was granted by the Ethics Review Committee of Lady Ridgeway Hospital, Colombo, Sri Lanka (Approval code: LRH/DA/29/2022). The study was conducted in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki). Institutional clearance was also obtained from the head of the institution.

Consent for publication: As the study did not involve interviews and no identifiable data were included, consent for publication was not applicable.

Confidentiality: Confidentiality was strictly maintained throughout the study. Data were anonymized and irreversibly de-identified. No personal data were collected. The collected data were securely stored by the principal investigator. Digital files were kept on a password-protected computer, and physical documents were stored in a locked cupboard. No data were shared with third parties.

Finding: None

Conflicts of interest statement : The author declares that there are no competing interests.

Data availability: The data supporting the findings of this study are not publicly available due to sensitivity concerns but may be obtained from the corresponding author upon reasonable request.

Author contributions:

- **Conceptualization, Study Design, and Execution**: AHDSCP
- **Data Acquisition**: AHDSCP
- **Data Analysis**: AHDSCP, SAG, RS, SM
- **Manuscript Preparation**: AHDSCP, SAG, RS
- **Manuscript Review**: AHDSCP, SAG, RS
- **Supervision and Mentorship**: AHDSCP, SAG

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