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A Five Years Retrospective Review of Brought in Dead Patients in Emergency Unit of Saham Polyclinic, North Batinah Governorate

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A B S T R A C T

Objective: A primary health care (PHC) has an essential role to play in preparing and responding to any emergency situation. However, there is a lack of proper assessment of brought in dead patients (BID) particularly data relevant to cause of death in primary care institutions. This study assessed the characteristics of Brought in Dead (BID) cases presenting in Saham Polyclinic in North Batinah, Oman. ***Methods:*** A retrospective record review with analysis of cases from January 2015 to December 2019 was conducted in Saham Polyclinic. Clinical and laboratory parameters extracted from the computerized databases using a predesigned questionnaire. Descriptive statistics were used to summarize the demographic data. Chi-square test was used to investigate relationships at 5% significance level. SPSS software (version 22) was used for statistical analysis. ***Results:*** Out of 402 cases analyzed, the majority were males (64%) and Omanis (84%). Hypertension was found in 32% of brought in dead patients, representing the most common comorbidity, followed by Diabetes (18.4%) and Dyslipidemia (11.9%). Moreover, 24.8% of brought in deaths showed a history of cardiac disease. Road traffic accident (RTA) was the main reported cause of deaths accounting for 12.2% of deaths. However, the majority (78.1%) of deaths were brought with unspecified cause of deaths. Elderly (70-89 years) was the common age group of brought in dead representing 31.7%. ***Conclusions:*** This is a retrospective study done in Oman analyzing 5 years of data brought-in dead. Although, the majority of deaths were among elderly, young deaths are a concern particularly due to RTA. In light with the global situation, identifying the main cause of deaths among BID is a critical concern.

Keywords: *Brought-in-Dead; BID; Cause of Deaths; Emergency Unit; Saham Polyclinic; North Batinah; Oman.*

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INTRODUCTION

Background

The emergency medical care is designed to perceive the critical health needs and thus plays a core role in improving the community health status. Sufficient delivery of emergency care, to meet the community demand for services, requires proper planning, effective use of resources, proper structural models, staff training, financial support and sufficient documentation[1-3].

At emergency departments, patients presented with acute trauma and illness will receive the required emergency care and services delivered by the available medical professionals unless they were brought in dead (BID)[4]. Dead on arrival or BID is referred to a patient brought to the emergency department, examined and announced to be already deceased before admission[5]. Death is confirmed once patient shows no pulse as well as no response to stimulation and cardiopulmonary resuscitation (CPR)[6,7]. Brought in deaths (BIDs) are prevalent within referral or tertiary hospitals compared to primary and secondary care centers that need proper assessment [8].

There is limited literature on brought-in-deaths (BIDs) worldwide in general and in the Sultanate of Oman in particular. According to the MOH annual health report, deaths on arrival and clinical deaths before admission in MOH institutions were 3206 in 2019. The majority of them (79%) were considered natural deaths while 21% were due to external causes, particularly road traffic accident, RTA [9]. It is crucial for health system policy to have a complete profile of information about leading cause of deaths to evaluate the public health status and to prioritize health related problems[10].

In North Batinah Governorate, no similar study was conducted to filter BIDs seen in the emergency departments of polyclinics and related challenges being faced. This study is a retrospective analytic study from the Emergency unit at

Saham polyclinic in North Batinah Governorate. Saham polyclinic is a primary care setting that includes secondary services. The aim was to assess the characteristics of Brought in Dead patients presenting in Saham polyclinic setting in North Batinah, Oman.

METHODS

A retrospective record review was conducted to identify the characteristics of all brought-in-deaths (BID) between 2015 and 2019 in Saham polyclinic. Demographic and clinical parameters were extracted from the computerized databases, Al'shifa, using a predesigned questionnaire. The research was approved, ethically and scientifically, by the Research Ethical Review and Approval Committee in NBG (RERAC 13-2019). Access permission to retrieve data from the electronic medical records was obtained from the Director of Primary Health Care, Directorate General of Health Services, and Saham Hospital administration. Data was collected without direct contact with patients so informed consent was not required. Data was collected anonymously without revealing patient identity. Descriptive and inferential statistics were used as suitable to summarize study variables and to test differences (chi-square test with a 5% significance level). SPSS software, version 22, was used for the statistical analysis.

RESULTS

During the study period, a total of 402 brought deaths presented at the emergency unit in Saham polyclinic, **[Table 1]**. The majority were males accounting for 64% of cases compared to 36% for females. The majority of brought deaths were belong to elderly age group (>=60) accounting for 49% followed by adult age group with 40%. Omani deaths accounted for 84% of the brought deaths while the remaining 16% of deaths were among Non-Omanis.

Table 1: Characteristics of brought-in-deaths in Saham Polyclinic.

Characteristics		Frequency (n=402)	Percent (%)
Gender	Female	145	36%
	Male	257	64%
Age	<20 Years	44	11%
	20-59 Years	159	40%
	>=60 Years	199	49%
Nationality	Non-Omani	63	16%
	Omani	339	84%
Hypertension	Yes	130	32%
	No	176	44%
	Unknown	96	24%
Diabetes	Yes	74	18%
	No	231	57%
	Unknown	97	24%
Dyslipidemia	Yes	48	12%
	No	203	50%
	Unknown	151	38%
H/O Cardiac	Yes	61	15%
	No	133	33%
	Unknown	208	52%
Place of death	Home	302	75%
	Road (RTA)	55	14%
	Other	45	11%
Cause of death	External-RTA	56	14%
	External-Other	20	5%
	Neutral	326	81%

Figure 1 represents the distribution of age groups by gender. The proportion of female deaths was more common (48%) in elderly age group (>=60) while the proportion of male deaths was more common (79%) in adult age group (20-59) and the difference was statistically significant ($p<0.05$).

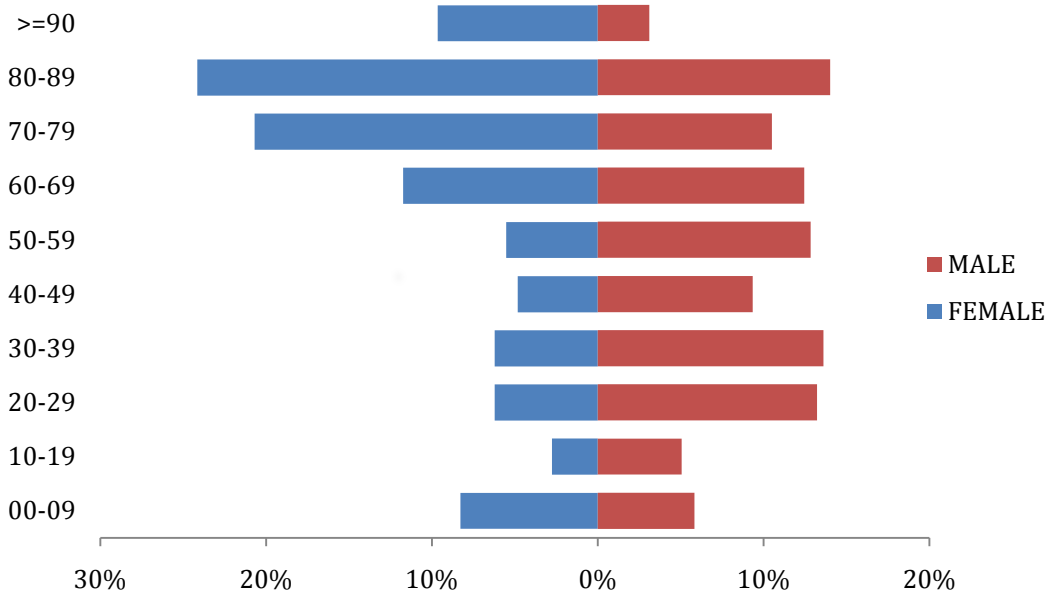

Figure 1: The distribution of age groups by gender of brought-in-deaths in Saham Polyclinic.

Figure 2 represents the distribution of age groups by nationality. The proportion of non- Omani deaths was more common (36%) in young age group (20-59) while the proportion of Omani deaths was more common (97%) in elderly age group (>=60) and the difference was statistically significant ($p<0.05$).

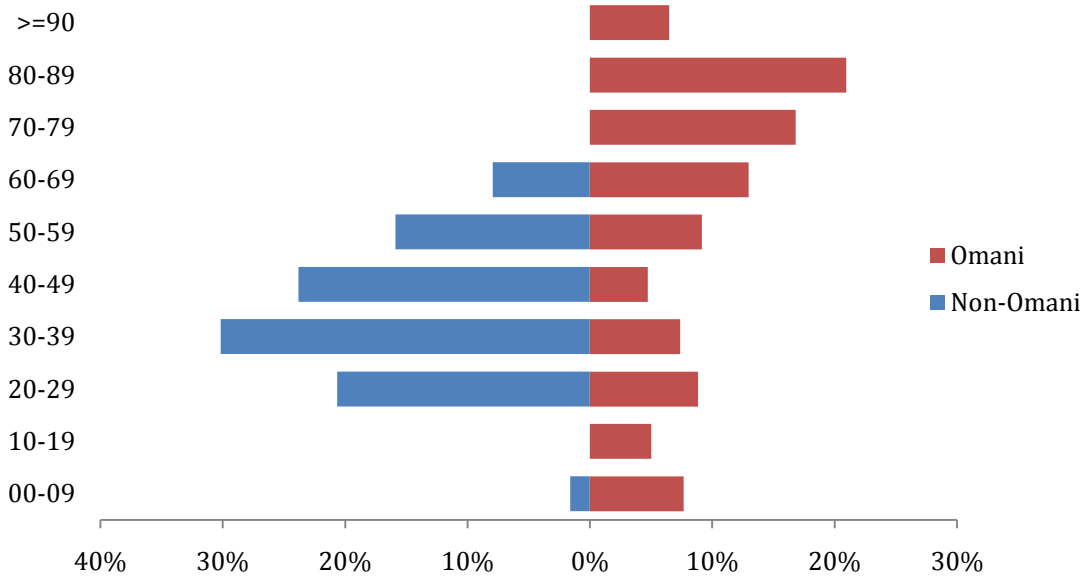

Figure 2: The distribution of age groups by nationality of brought-in-deaths in Saham polyclinic.

In the risk factors assessment, 32% had hypertension, 18% were diabetic, 12% had dyslipidemia and 15% had a history of cardiac disease. However, in many of the records the assessment was not clear/unknown that is in 24% of hypertension and 24% of diabetes, 38% of dyslipidemia and 52% of cardiac history [**Table 1]**. Therefore, in the coming analysis those records will be excluded. **Figure 3** shows the prevalence of risk factors by age groups where all risk factors presented significantly (p<0.05) in elderly age group above 60 years particularly hypertension (60%). The history of cardiac disease was present in all ages and especially among 5% of young aged less than 20 years.

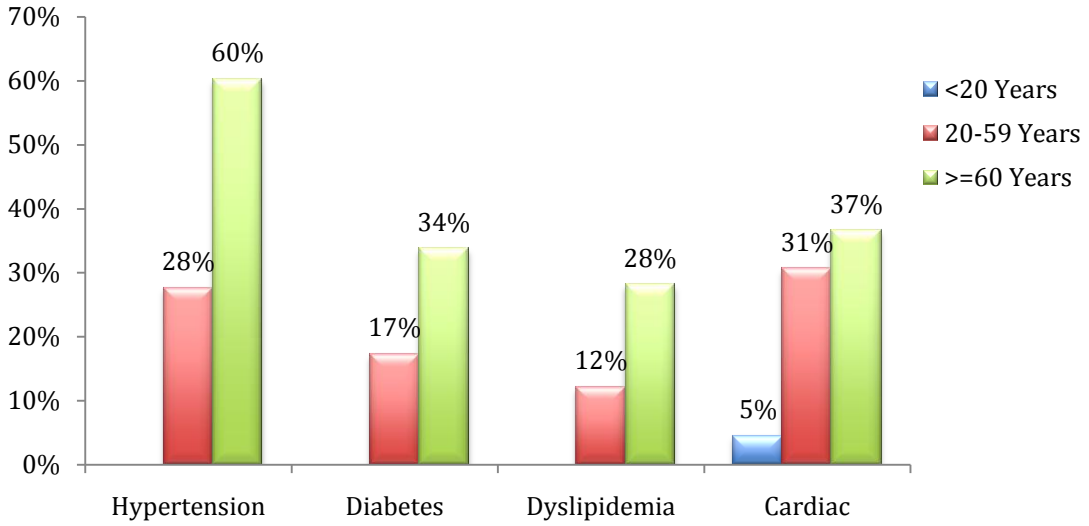

Figure 3: Risk factors by age groups of brought deaths in Saham Polyclinic.

The prevalence of risk factors was more among females (only significant in hypertension) except the history of cardiac disease which was more among males (**Figure 4)**. Hypertension, diabetes and dyslipidemia were common risk factors among Omanis (**Figure 5)**, whilst the history of cardiac disease was very common among non-Omanis (50%) in comparison to Omanis (31%).

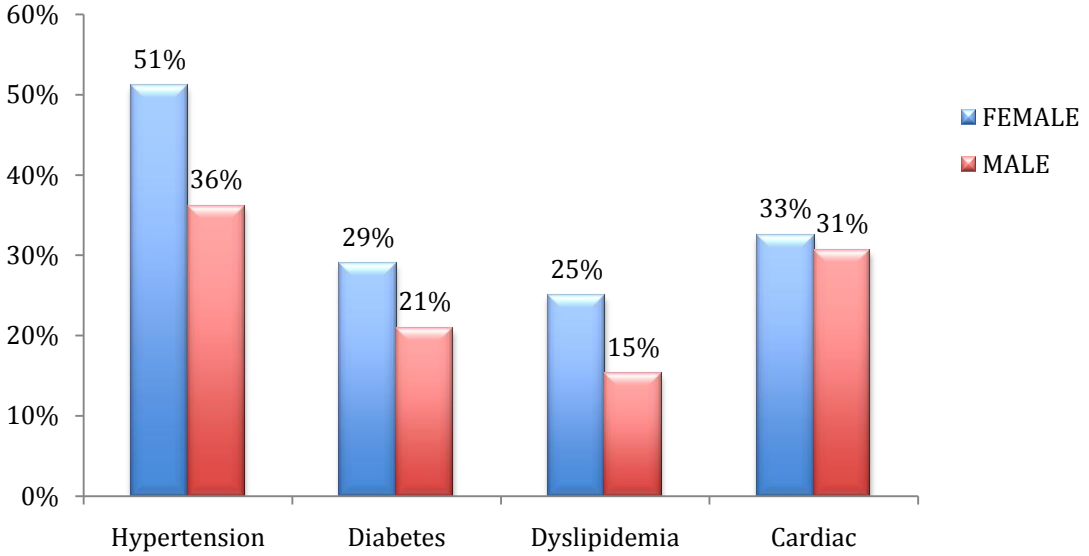

Figure 4: Risk factors by gender of brought deaths in Saham Polyclinic.

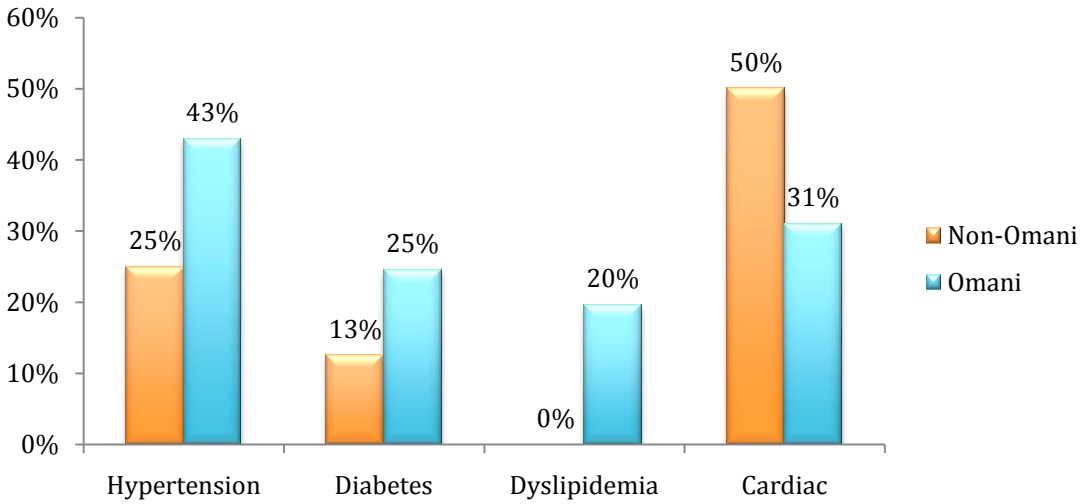

Figure 5: Risk factors by nationality of brought deaths in Saham Polyclinic.

The majority of deaths occurred at homes representing 75% (n=302) of deaths followed by 14% occurred at roads (RTA) while the remaining 11% occurred at other places mainly while transportation [**Table 1]**. There was a significant difference between age and place of deaths *(P<0.05)*. Home deaths were more common among elderly (86%) and young (70%) while road deaths were more common among adults (26%) and young (23%), **Figure 6**.

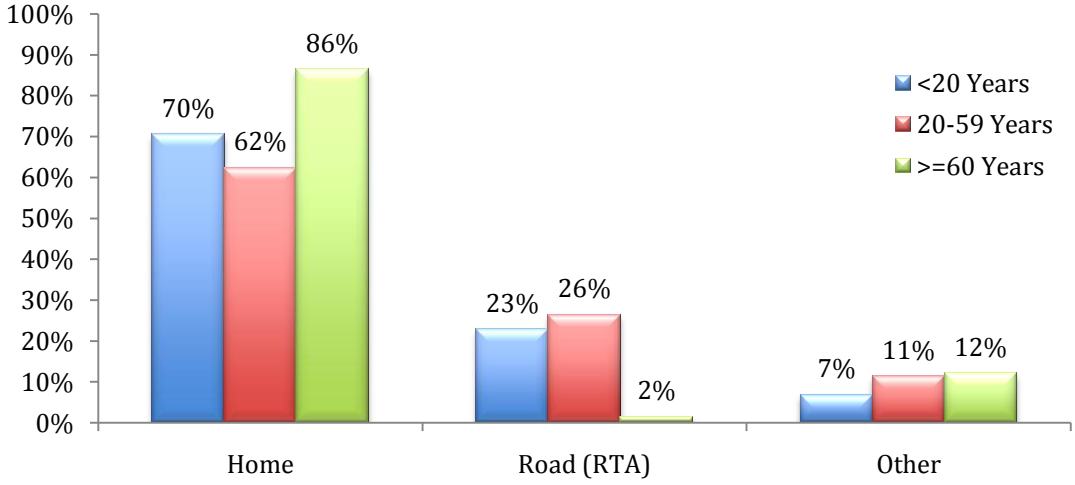

Figure 6: Place of deaths by age groups of brought deaths in Saham Polyclinic.

There was a significant difference between gender and place of deaths *(P<0.05)*. Home deaths were more common among females (86% vs. 70%) while road deaths were more common among males (26%, vs. 5%), **Figure 7**.

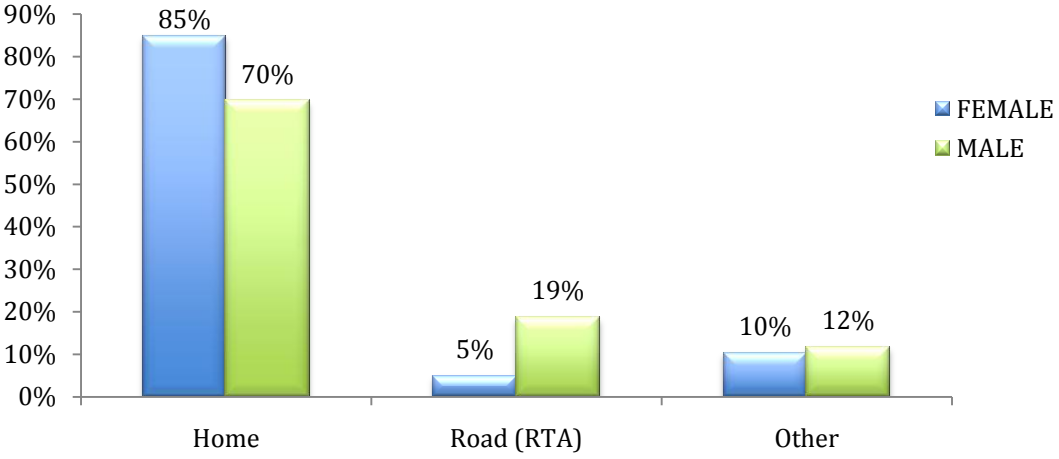

Figure 7: Place of deaths by gender of brought deaths in Saham Polyclinic.

By nationality, home deaths were more common among Omanis (79%) than non-Omanis (54%) while road deaths (RTA) were more common among non-Omanis (30%) than in Omanis (11%), **Figure 8,** and the difference was statistically significant (P<0.05).

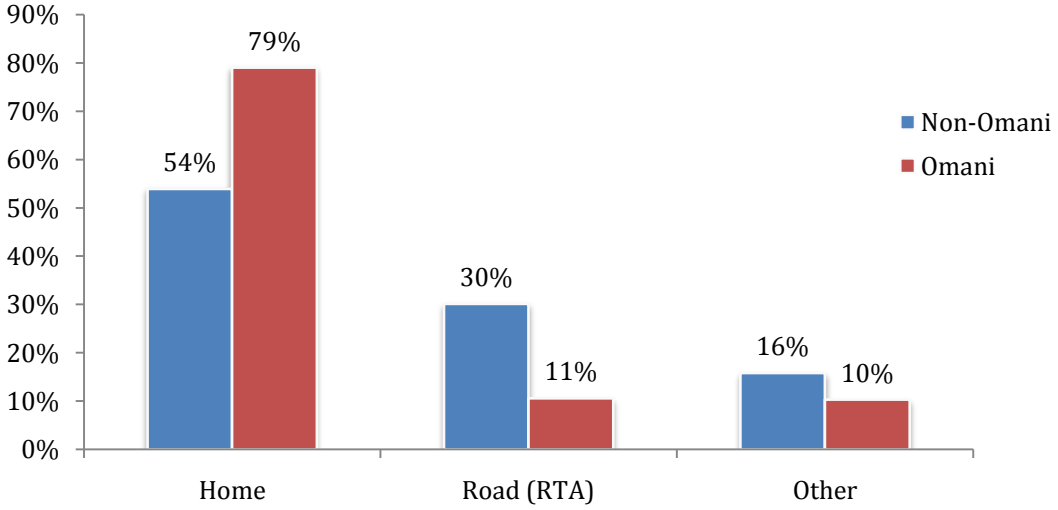

Figure 8: Place of deaths by nationality of brought deaths in Saham Polyclinic.

The causes of deaths were identified either as neutral causes or external causes. The majority of cases were occurred due to neutral causes with 81% while remaining 19% were due to external causes (14% RTA and 5% other), [**Table 2]**. By age groups (*P<0.05*), the proportion of RTA deaths was higher in adults aged 20-59 years accounting for 27%, other external causes were common in young aged less than 20 years accounting for 11%, while neutral causes were common in elderly aged 60 years and above accounting for 97%. By sex (*P<0.05*), external causes were common among males (19% RTA and 7% other) while neutral causes were common among females (93%). By nationality (*P<0.05*), external causes were common among non-Omanis (30% RTA, 10% other) while neutral causes were common among Omanis (85%).

Table 2: Causes of brought-in-deaths by age, sex and nationality in Saham Polyclinic.

Characteristics		Cause of Death						
		External-RTA		External-Other		Neutral		Total
		No.	%	No.	%	No.	%	
Age*	<20 Years	10	23%	5	11%	29	66%	44
	20-59 Years	43	27%	13	8%	103	65%	159
	>=60 Years	3	2%	2	1%	194	97%	199
	Total	56	14%	20	5%	326	81%	402
Sex*	FEMALE	7	5%	3	2%	135	93%	145
	MALE	49	19%	17	7%	191	74%	257
	Total	56	14%	20	5%	326	81%	402
Nationality*	Non-Omani	19	30%	6	10%	38	60%	63
	Omani	37	11%	14	4%	288	85%	339
	Total	56	14%	20	5%	326	81%	402

**Significant at 0.05*

DISCUSSION

Primary health care is the core of health system as well as the entry point in the process of delivering health services to patients. Consequently, it has an essential impact on the community health status and well-being and even the

utilization of health services [11,12]. There is a dearth in studies describing the characteristics of people being brought in dead (BID) in a health facility in Oman. Most of BID studies found in literature were conducted at hospital-based level rather than primary level. Therefore, this study tried to explore the characteristics of BID cases at a primary level in Saham Polyclinic. It is considered to be a primary care institution with secondary services (Emergency unit). Brought in deaths (BIDs), or deaths on arrival, to emergency department are patients whom diagnosed to be clinically dead on arrival to receive the proper medical intervention[13]. Providing a complete profile of BIDs in terms of demographic and clinical characteristics is essential for prevention as well as for evaluation of health status.

The present study was conducted with the aim of analyzing the pattern of brought-in-deaths (BIDs). Results showed that the majority of BIDs were males, Omanis and significant numbers of them were without specified underlying causes. Nearly half of the BIDs were aged 60 years and above, however, significant number of young deaths was also reported. Padmini has reported a comparable result regarding young deaths brought in to hospital[14].

The main risk factors reported in our study were RTA, hypertension, diabetes mellitus, dyslipidemia and cardiac disease. Therefore, 81% of BIDs were considered natural deaths as non-communicable diseases (NCDs) were the causes of deaths where the remaining 19% were due to external causes particularly RTA. This is in line with the top 4 deaths of all causes in Oman (in 2019) as well as risk factors drive the most deaths presented in the Global Burden of Disease.[15] It has been estimated that 68% of deaths in Oman are due to NCDs [16]. Similarly, Adegoke et al. reported non-communicable diseases (NCDs) to be the underlying causes of BIDs accounting for 85.4%.[17] Even among admitted patients, NCDs, such as cardiovascular diseases and breast cancer, followed by RTA were among the main underlying causes of death[17,18].

In the present study, there was a male predominance, mainly among undetermined causes. Khursheed et al. published a study from Pakistan revealing that male BIDs were predominant especially among external causes including RTA, burn and fall[19]. Many of the BIDs presented without clear clinical conditions. Consequently, this provided difficulty to specify cause of death, especially among young deaths[20]. Undetermined cause of death was a series obstacle facing the analysis of BIDs as highlighted in the current study, particularly among young age groups. Several previous studies reported a considerable amount of BID cases without specifying the underlying cause of death[14,21,22]. Yokobori et al. provided similar findings both using death notification and smart verbal autopsy. They suggested the need to standardized procedures to overcome lack of knowledge among healthcare staff in recording cause of deaths[23]. A complete death profile, particularly causes and places of deaths, is essential to diagnose the level of health system capacity as well as health services utilization by population[8,23]. In current research sitting, medical record technicians (coders) is one of the solution to overcome undetermined cause of death at primary level since currently they are available at level of regional hospital only.

Results provided in the study had limitations that need to be considered. There were underreporting information regarding the medical history, particularly young deaths, and underlying cause of deaths. Since there were no medical records found, it was difficult to collect in-depth information about the medical history of young BIDs. One of the issue is that the current screening program for NCDs at primary level is targeting those aged 40 years and above.

CONCLUSIONS

This is the first retrospective study done in a polyclinic in Oman analyzing 5 years of data. The problem of BID is of public health importance and requires urgent attention. Although, the majority of BID cases were elderly in age, significant deaths among young people were also reported which has given us insight about young deaths without unspecified cause. Determination of underlying cause of death is emphasized to guide the prioritization of health related issues. In addition, early screening for risk factors, particularly NCDs, in young people is highly recommended for early intervention and prevention of sudden cardiac death. Documentation in the electronic files should be appropriately reported, thus data can be retrieved easily for improving health care system. Linkage between MOH institutions are of importance for the ease of retrieving patients' medical information. Further future research is required to assess death profiles, especially among young ages, in primary health care particularly polyclinics

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