

Original Article

## Suicidal Attempts And Deaths (Behavior) In Kolkata Metro; A Record Based Descriptive Study.

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**Abstract: Background:** The undesirable and undoubtedly the saddest shortcoming of Kolkata Metro Railways, a unique transport system is that, it is being frequently used as place for suicide. Present study attempted to develop a profile of characteristics of the suicidal behavior and make recommendations with the help of such profile, for construction of strategies to prevent or at least to reduce such detrimental act in Kolkata Metro Rail in future. **Materials and Methods:** The record of last five years (from 2010 to 2014) of suicidal deaths and attempts in Kolkata metro were collected. **Results:** Among total 94 cases 68.1% were male. Majority (29.0%), of the cases belonged to 20 to 30 years age group. 60.7% of victims died at spot or at hospital and rests were rescued. Maximum number of cases occurred in station Kalighat and Sovabazar-sutanuti. **Discussion and Conclusion:** This study gave valuable insights into distribution and behavior pattern of people committing or attempting suicide in Kolkata Some of the findings were strikingly similar to the findings of other studies, whereas some were different.

**Keywords:** Suicide, Suicidal attempts in Kolkata Metro Rail

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Kolkata Metro Railways is the first underground Metro railway in India (Light Rail Transit Association, 2015). Soon after Independence in 1947, the transport problem of Kolkata drew the attention of city planners and it was soon realized that something had to be done and quickly in order to cope with the situation. To solve the problems the idea of building an Underground Railway for Kolkata came out and the foundation stone of the project was laid on 29 December 1972 and the construction work started in 1973-74. First service began on October 24, 1984 and the full stretch had been completed and operational by February 1995 (Metro Railways, Kolkata, 2015).

Presently it extends from Noapara near Netaji Subhas Chandra Bose Air Port, Kolkata to Kavi Subhash station near Patuli, the busy North-South axis of Kolkata over a length of 27.223 kilometers and 270 services are being run on normal weekdays from 6:45 am to 10:45 pm to carry about 543,000 of passengers on an average per day with peak volume touching 690,000 on certain days. But apart from the above mentioned good things the undesirable and undoubtedly the saddest shortcoming of this unique transport system is that, it is being frequently used as place for suicide (Roychowdhury U.B. et al, 2009). There have been many cases where people jumped in front of the running trains while the trains were entering the platforms in their suicidal attempt. Kolkata Metro Rail coaches collect electricity from the 'Third Rail' which runs all along the railway track and which

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becomes 'live' only when a train approaches the station. Though it lies farthest from the passengers waiting on the platform, the 'third rail' has increased manifold the opportunity of committing suicide by electrocution apart from mechanical injuries. This is proved by the fact that even in cases where brakes of the trains were applied effectively, the victims died due to electrocution. Along with it, during postmortem examination, many of them showed evidence of electrocution in addition to the mechanical injuries caused by the trains.

There are approximately 135 subway systems (in India which is synonymous with the word "Metro Railways") that exist in the metropolitan areas of countries worldwide (Gershon R.R.M. et al., 2005). Metro rails operate at a high speed and frequency within urban areas and occupy pathways that are independent from other forms of traffic. (About UrbanRail.Net, 2015). That's why they provide a unique environment within which suicidal behavior occurs.

Although absolute number and proportion of metro railway suicide attempts and deaths may not be particularly high in comparison to total number of suicide for a particular country or region and specific time period (In India the percentage share of the means adopted in committing suicides by 'Coming under running vehicles/train' and 'Self-electrocution' both taken together for the year 2010, 2011 and 2012 were 4.0, 4.1 and 3.8 respectively (Ratnayake R. et al., 2007) , but such an event in a metro rail system represents a 'public death' which is likely to distress and traumatize the train driver (Suicides in India, retrieved 2015) and may also severely affect the commuters who witness the cruel incident as well as the mutilated body (Tranah T. & Farmer R.D.T., 1994). Surplus to that it also results in loss of valuable time for lot of the commuters/passengers during peak hours caused by the delay in resuming the services, which provides these incidents an economical angel to think about. For these reasons these suicides are perceived as serious public health issues in metropolitan cities around the world. (O'Donnell I. & Farmer R.D.T., 1992, 1994) Henceforth attempts to promote and adopt strategies which may prevent suicides by this method are urgently warranted.

Studies performed globally have yielded remarkably similar findings of characteristics that are suggestive of an association with suicides or attempt in subway system. But studies on Kolkata Metro suicides are extremely rare and only two such is known so far "Suicides in Kolkata metro railway" (Roychowdhury U.B. et al., 2009) and "Eco-psychiatry: suicidal behaviour at Calcutta

metro rail: A prospective study" (Chowdhury A.N. et al., 2000) But again both the above mentioned studies were carried around during the year 2007-08. Since then to till date, Kolkata Metro Railways has undergone many changes (The extension of Line 1 to an elevated corridor from Tollygunge to New Garia was constructed and opened in two phases, Mahanayak Uttam Kumar to Kavi Nazrul in 2009 and Kavi Nazrul to Kavi Subhash in 2010. The latest extension constructed was the 2.59 km elevated corridor from Dum Dum to Noapara on 10 July 2013) which increased the number of stations from 17 in 2008 to 24 till date and henceforth increased the number of commuters as well. Furthermore the completion of the under construction and proposed several other metro projects in Kolkata will only increase the above mentioned tally in near future. So the need of the hour is to do a study on recent trends of suicidal deaths and attempts in Kolkata Metro Railways.

In this background the present study attempted to develop a profile of characteristics of the suicidal behavior and make recommendations with the help of such profile, for construction of strategies to prevent or at least to reduce such detrimental actin Kolkata Metro Rail in future.

## Method

In order to assess the recent trends, the record of last five years (from 2010 to 2014) of suicidal deaths and attempts in Kolkata metro were collected. Proper and required official procedures and formalities were strictly followed while collecting the data from Kolkata Metro officials and consent was taken from the authorities for doing such a study. It was a record based descriptive study. Total enumeration of all the cases (total 94 cases) of suicidal behavior in above mentioned last five years were done. For the purpose of standardization, after extensive review of related and relevant articles, the operational definition of different suicidal behavior in metro rails/subway system was finalized. The term 'Suicide' was defined as a self-harming behavior, with intent, that involves the metro rails and results in death and the term 'Suicidal Attempt' was defined as a self-harming behavior, with intent, that involves the metro rails and does not result in death. (Ratnayake R. et al., 2007) Data was collected regarding year, time and minth of suicide, age and sex of the subject.

Data were entered in Microsoft Excel 10 spreadsheet and analyzed with SPSS software version 16.0 (Statistical Package for the Social Sciences 16.0 for Windows, release 16.0.0. Chicago: SPSS Inc. IL, USA).

## Results

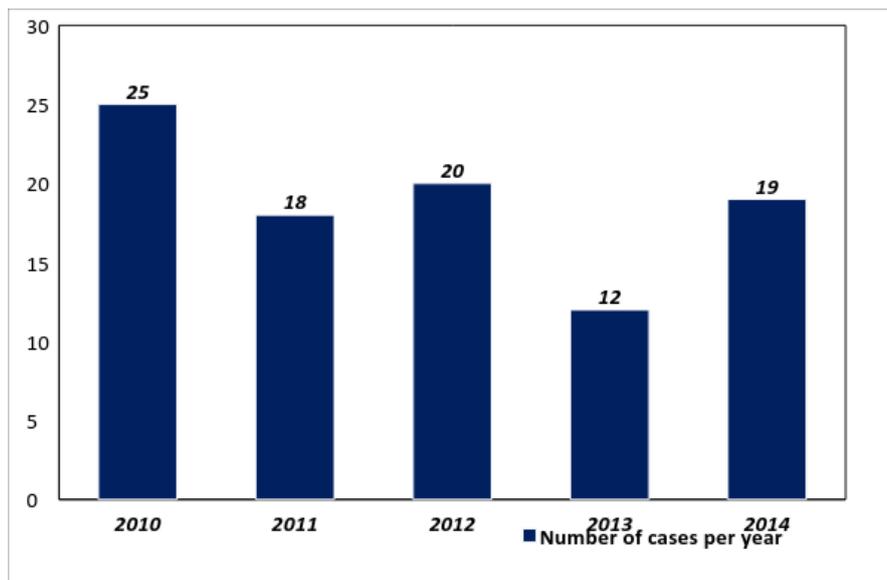
Total 94 cases (both suicidal deaths and attempts taken together) had occurred during the five years study period. Figure 1 shows the suicides according to years, it is evident that the attempts have decreased in number. According to table 1, majority (29.0%, 27 out of 93 as age of a single victim was not available) of the cases belonged to 20 to 30 years age group. 60.7% (57 out of 94) victims died at spot or at hospital and rests (39.3%, 37 out of 94) were rescued. Among male victims 65.6% (42 out of 64) died and 34.4% (22 out of 64) were rescued. Among female victims the proportion of death and rescue were exactly same (50%, 15 out of 30 in each case). Highest proportion (70%, 7 out of 10) of death was found among 30 to 40 years age group and highest proportion (46.2%, 6 out of 13) of rescue was

found among individuals of more than 60 years age. Among all the 94 cases during the above mentioned period (2010 -14) maximum number of cases occurred in station Kalighat and Sovabazar-sutanuti (11 cases in each station).

Figure 2 shows that, maximum number (30 cases) of cases occurred between 4 pm to 8 pm which was followed by 28 cases which occurred between 8 am to 12 pm. Figure 3 suggests that, among the week days highest proportion of cases occurred on Monday (22.3%, 21 out of 94). 29.8% (28 out of 94) cases happened in the second week of the months (figure 4) followed by 26.6% (25 out of 94) cases in third week. Also according to figure 5, the month of May recorded maximum number of cases (13.8%, 13 out of 94). Lowest number of cases were found in the month of February and September (4 case each).

**Figure 1**

Simple bar diagram showing number of cases (both suicidal attempts and death) according to each study year. (N=94)



**Table 1**

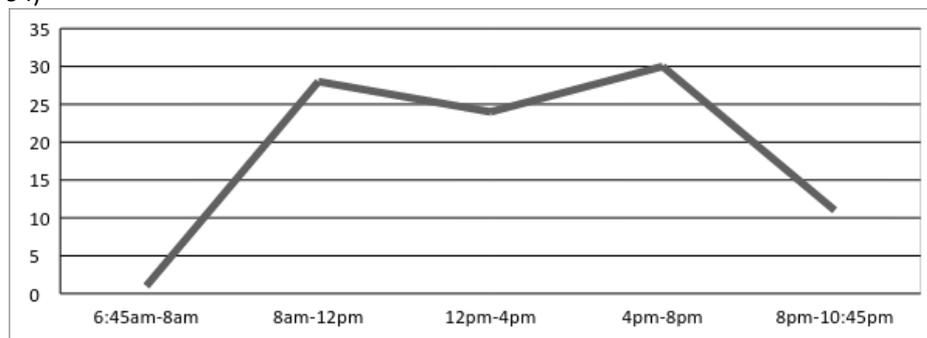
Showing frequency distribution of the cases (both suicidal attempts and death) according to different variables (N=94).

VARIABLES	2010	2011	2012	2013	2014	TOTAL No(%)
<b>SEX</b>						
<b>MALE</b>	18	10	14	6	16	64 (68.1)
<b>FEMALE</b>	7	8	6	6	3	30 (31.9)
<b>AGE GROUP*</b> (IN YEARS)						
<20	3	4	2	4	4	17 (18.3)
20-30	8	8	6	2	3	27 (29.0)
30-40	3	2	2	2	1	10 (10.8)
40-50	4	3	2	2	4	15 (16.2)
50-60	3	0	5	0	3	11 (11.8)
>60	4	1	3	2	3	13 (13.9)
<b>STATUS</b>						
<b>DIED</b>	10	4	8	9	6	37 (39.3)
<b>RESCUED</b>	15	14	12	3	13	57 (60.7)
<b>TOTAL</b>	25	18	20	12	19	94 (100.0)

\* For 1 case in 2014 the age of the individual was not available.

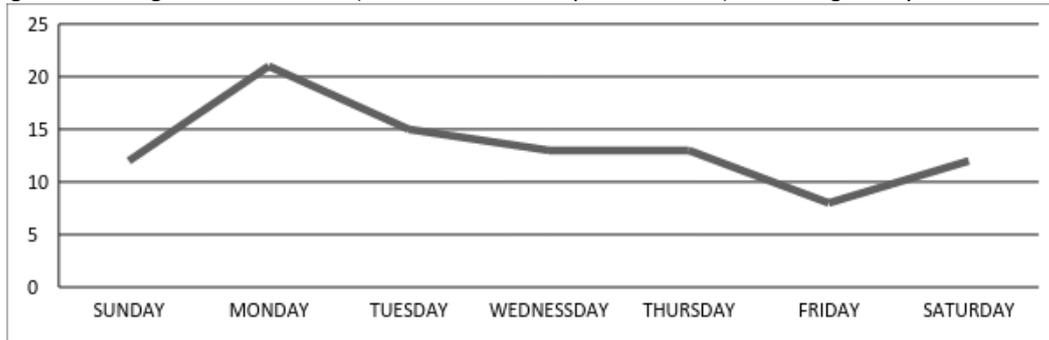
**Figure 2**

Line diagram showing number of cases (both suicidal attempts and death) according to different time interval of a day. (N=94)



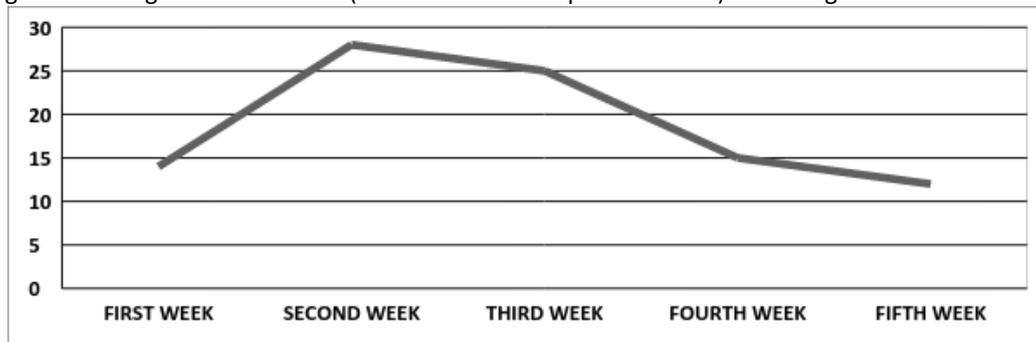
**Figure 3**

Line diagram showing number of cases (both suicidal attempts and death) according to days of a week. (N=94).



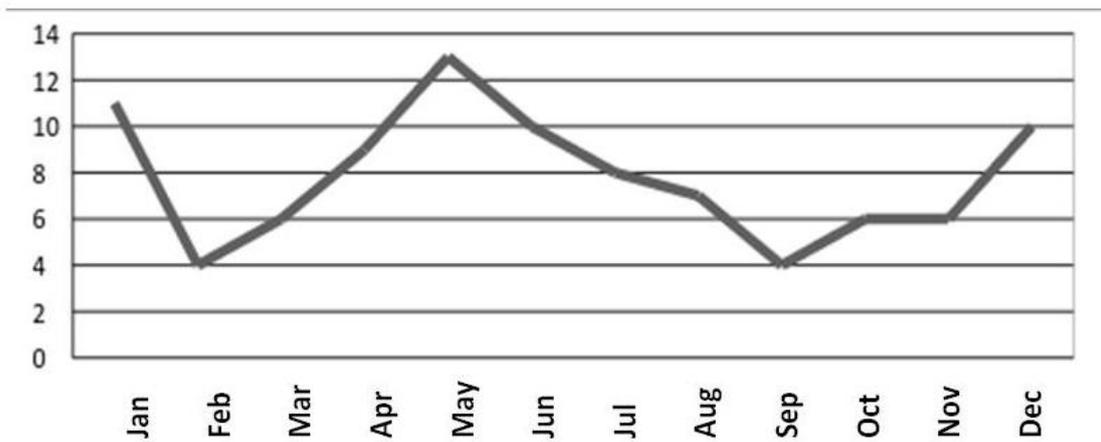
**Figure 4**

Line diagram showing number of cases (both suicidal attempts and death) according to weeks of month. (N=94)



**Figure 5**

Line diagram showing number of cases (both suicidal attempts and death) according to months of a year. (N=94)



**Discussion**

Almost all the underground public transportation systems of the world reported numerous cases of suicidal attempts and deaths. There are some systems where suicides had not yet occurred like the subway system of Singapore which physically limit passengers from accessing to the trains as well as tracks with a system of automatic doors that open only when the train has entered the

station and has stopped. (Gaylord M.S. & Lester D., 1994) The article ‘Suicidal Behaviour on Subway Systems: A Review of the Epidemiology’ by Ruwan Ratnayake, Paul S. Links and Rahel Eynan published in Journal of Urban Health in 2007, used data from subway systems/metro railway system in Boston, Calcutta (Kolkata), Hong Kong, London, Montreal, Munich, New York, Toronto and Vienna. Additionally, one study compiled data from 23 metro systems (Athens, Boston, Budapest, Caracas,

Helsinki, Hong Kong, London, Mexico City, Milan, Munich, Nuremberg, Paris, San Francisco, Sao Paulo, Tokyo, Toronto, Tyne and Wear and Vienna). In addition to that the study "Suicides in Kolkata metro railway" by U.B.Roy Chowdhury et al was done exclusively on Kolkata metro rail. In

general there are some striking similarities between results of these above mentioned studies and the present study whereas, there were few differences also which are given below in tabular form.

Variables	Findings		Remarks
	Present study	Previous studies	
Gender	Among the 94 victims 64 (68.1%) were male and 30 (31.9%) were female. The ratio of male and females victims was 2.1:1.	The finding of an increased number of suicides and suicide attempts by males was relatively consistent across studies, including the study that compiled data from 23 metro systems. The ratio of male and females were in the range of 1.58:1 to 2.5:1. Among the 58 suicide victims, 47(81%) were men and 11(19%) were women.	The gender ratio of present study finding was almost consistent with other studies with male victims dominating in number compared to their female counter part.
Age group	Majority (29%) of the cases were from 20 to 30 years age group. Lowest prevalence (10.8%) was found among 30 to 40 years age group followed by 50-60 years age group (11.8%).	Most studies reported that the majority of victims were in the range of 20 to 30 years of age, but all age groups were usually represented in the statistics. Almost all age groups were represented; ages of the victims ranged from 18 to 59years.Highest incidence(22.4%) was recorded in the age group of 35-40 years and lowest in 50-55 years(5.1%)	The highest prevalence among 20-30 years age group was strikingly similar among most of the studies. Though the lowest prevalence varied between different studies. Another similarity that was identified was the representation of almost all age groups among victims.
Status	60.7% victims died and 39.3%, were rescued.	From 1973–1990, London subway lines that contain stations with pits have higher proportion of survivors (55%) compared to those that do not have pits (34%). During the 20 year observation period, a total of 202 (66%) subjects died and, accordingly, 104(34%) subjects survived the subway suicide attempt. 66.7% victims died and 33.3% were rescued.	Astonishingly the rescue statuses were also comparable among different previous studies and present study.
Station	Maximum number of cases occurred in station Kalighat and Sovabazar-sutanuti (11 cases in each station). Second highest number of cases (10 cases) occurred in station Shyambazar.	Kalighat and Netaji Bhawan appeared to be most vulnerable with 12 and 9 deaths occurring in them respectively followed closely by Rabindra Sarovar(8 deaths).	Though appropriate analysis of station wise frequency differences was impossible because of the low number of total cases (94) in comparison to total number of stations (24),no consistent pattern noted in preference for any particular Metro station for committing suicide. However Kalighat, Sovabazar-sutanuti and

			Shyambazar found to be most vulnerable
Time of day	Maximum number (30 cases) of cases occurred between 4 pm to 8 pm which was followed by 28 cases which occurred between 8 am to 12 pm.	Most suicide incidents tend to occur approximately between 11am and 16pm. One divergent finding was that most suicide incidents occurred outside of these hours on the Calcutta system. 79.3% of suicides occurred during busy hours of the railway service (between 9am and 5pm).	These times appear to coincide with the period between what are considered morning and afternoon rush hours in many cities worldwide. The reporting of suicide during non-daylight hours is rare, possibly because most systems do not operate during much of the night.
Day of Week and Month of Year	Highest proportion of cases occurred on Monday (22.3%). The month of May recorded maximum number of cases (13.8%). Lowest number of cases was found in the month of February and September (4 each).	Some studies reported an increased occurrence of suicide incidents on Mondays while a decreased occurrence of suicide incidents was reported on Sundays. There was extensive variation in the peak months for suicide incidents across studies. Largest number of deaths occurred in Jan. and Feb. (17.2% each) and October had the fewest completed suicides (2 deaths)	Strikingly highest suicidal incidents occurred in <i>Monday</i> and this particular finding was consistent across various studies worldwide. Because of extensive variation of cases among different months no evidence of a pattern related to the month of the year could be produced.

### Limitations

This study gave valuable insights into distribution and behavior pattern of people committing or attempting suicide in Kolkata metro in last five years (2010-14). However as the study was done on secondary data, all the drawbacks of the same were unavoidable. Moreover interviewing of the survived attempters to reveal and analyze reason/s for choosing metro railway as a place of suicide would have provided a clearer picture of the decision-making of suicide attempters to choose the subway as means of suicide, which would have added more information in forming strategies for suicide prevention in metros.

### Conclusion

Thus this study, one of the early ones of its kind, highlight that males, especially young adults are committing more suicides on Metro rail Tracks, mostly on the earlier and later parts of the day. Also there is a mid year surge of these attempts. While many salient points have come up, a detailed study to explore these factors and find out their causes is to be done, for a holistic picture of the events, and to come up with policy level implications.

### Conflict of interest

Declared none.

### Sponsorship

Self sponsored.

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