TESTING THE RELIABILITY OF A NEWLY DESIGNED VERBAL AUTOPSY INSTRUMENT

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Abstract
 It was a validation of the Newly designed Verbal Autopsy Instrument in Neonates. In this Reliability is the foremost test, followed by Accuracy. Retest approach testified the reliability, repeatability and reproducibility of the Instrument. It varied from 99.74% to 98.48%.

Keywords: Verbal Autopsy, Neonates, New tool, Reliability, Repeatability.

Cause specific mortality is a vital   indicator for assessing demographic change and for planning public health interventions[1]. Many developing countries and even some developed countries still lack up-to-date data on the causes of death especially neonatal deaths, because of various factors[2]. In this scenario, verbal autopsy (VA) proves to be one of the reliable methods to compile the 'community or Population diagnoses' of major causes of diseases[3]. Verbal autopsy is an approach to ascertain probable cause of death by interviewing relatives and caretakers of the deceased[4]. The current study was aimed to develop and assess a new verbal autopsy instrument for Neonates which would be simple, reliable, accurate, time efficient and user friendly.

It was a retrospective cohort randomized study conducted in the Metropolitan City of Chennai and the surrounding field areas. It attracted clinical information from the members of the family, otherwise known as the respondents who had a neonatal death during the immediate past one year. The Data was collected from the Institute of Child Health and Hospital for Children, Chennai and then was subjected to the Inclusion - Exclusion Criteria.

The study tool is a newly designed Verbal Autopsy instrument for ascertaining the CoDs of neonates, formatted in a single paper, double-sided layout with eight sections and thirty nine questions. Questionnaire was standardized by arranging the questions from easy to difficult ones, and from casual to more probing ones. The new VA tool was added with the starting and ending time of the cardinal symptoms. This can be the deciding factor in determining the starting point of the problem and the main CoD, especially when there are multiple CoDs. Administering WHO VA tool consumes approximately 35 minutes, whereas the new VA tool interview lasts for 15 minutes only.

After getting necessary permissions from appropriate authorities and after training the staff, field study was done. After a positive telephonic confirmation with the family of the deceased, their houses were visited by the social worker. Written consent was obtained from the respondent and then the study was carried out. The interview was conducted after a mourning period of 4 to 6 weeks after death and within 6 months. From among the chosen 445 subjects for study, 258 subjects were selected for regular study after applying inclusion- exclusion criteria and after obtaining willingness to participate in the study.

Out of 258, only 86 gave consent for second interview and interviews done after one week. Out of 86, in 20 subjects new VA instrument applied for reliability studies and in 66 different instrument applied for agreement studies. At the end 66 subjects were equally divided into two, 33 subjects for Repeatability testing and remaining 33 subjects for Reproducibility testing. Those who were administered New VA tool in the first place will receive WHO VA tool and those who were administered WHO VA tool will be given New VA tool. The second interview will be conducted after one week and within two weeks to avoid recall bias. In Repeatability the same social worker will administer same tool on the same subject and in Reproducibility a different social worker will administer same tool on the same subject.

Reliability of the VA Instrument: The term *reliability* refers to the consistency of a measure. A reliable scale should provide the same results at each point of measurement. This is referred to as a test re-test approach in estimating reliability[5]. The test re-test approach is also commonly used to evaluate the reliability of questionnaires -- especially when the construct being measured is assumed to be stable over time. Thus, the reliability is very much dependent on the quality of measurement of an assessment tool in producing stable and consistent results[6].

The foremost criterion for the reliability of the tool is its efficacy in *repeatability*[7]. The Intra-observer reliability is ascertained by administering the new tool to a selected small sample after a week by the same social worker on the same case after getting their special consent. This is the first simple source of validation. Out of 39 questionnaires, only one Question

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No 2 is mainly open end questionnaire, its about Respondents thoughts on the cause of death of the diseased. Rest 38 are mainly closed end questionnaires. In the study test done in 10 subjects and the overall agreement between the first interview and the second interview was 99.48%. With all questionnaires and 99.74 with closed end questionnaire. The next important source of checking the reliability of the tool is its effectiveness in *reproducibility*. The involvement of two independent health workers and two independent physicians using the same VA tool helps in attaining the inter observer reliability. In the study test done in 10 subjects and the overall agreement between the first interview and the second interview was 98.97%. With all questionnaires and 99.48 with closed end questionnaire.

Repeatability of the New Instrument

S.No	Question	R1		R2		R3		R4		R5		R6		R7		R8		R9		R10	
		I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2
1	Q 1a																				
2	Q 1b																				
3	Q 1c																				
4	Q 1d																				
5	Q 1e																				
6	Q 1f																				
7	Q 1g																				
8	Q 1h																				
9	Q 1i																				
10	Q 1j																				
11	**Q 2**																				
12	Q 3a																				
13	Q 3b																				
14	Q 3c																				
15	Q 3d																				
16	Q 3e																				
17	Q 3f																				
18	Q 3g																				
19	Q 3h																				
20	Q 4a																				
21	Q 4b																				
22	Q 4c																				
23	Q 4d																				
24	Q 5a																				
25	Q 5b																				
26	Q 5c																				
27	Q 5d																				
28	Q 5e																				
29	Q 6a																				
30	Q 6b																				
31	Q 6c																				
32	Q 6d																				
33	Q 6e																				
34	Q 6f																				
35	Q 6g																				

36	Q 6h																				
37	Q 6i																				
38	Q 7a																				
39	Q 7b												■								

Describing the Repeatability Tabular Column: Q is Question, R is Respondent of the Diseased, I1 is First Interview, I2 is Second Interview, Yellow Horizontal Row is the Question on Respondents thoughts on the Death of the Diseased, and Black Box indicates that the second interview response was different from the first

Reproducibility of the New Instrument

S.No	Question	R11		R12		R13		R14		R15		R16		R17		R18		R19		R20	
		I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2	I1	I2
1	Q 1a																				
2	Q 1b																				
3	Q 1c																				
4	Q 1d																				
5	Q 1e																				
6	Q 1f																				
7	Q 1g																				
8	Q 1h																				
9	Q 1i																				
10	Q 1j																				
11	**Q 2**							■								■					
12	Q 3a																				
13	Q 3b																				
14	Q 3c																				
15	Q 3d																				
16	Q 3e																				
17	Q 3f																				
18	Q 3g																				
19	Q 3h																				
20	Q 4a																				
21	Q 4b																				
22	Q 4c																				
23	Q 4d																				
24	Q 5a																				
25	Q 5b																				
26	Q 5c																				
27	Q 5d																				
28	Q 5e														■						
29	Q 6a																				
30	Q 6b																				
31	Q 6c																				
32	Q 6d																				
33	Q 6e																				
34	Q 6f																				
35	Q 6g																				
36	Q 6h																				
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38	Q 7a																	
39	Q 7b			▉														

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