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Research Article

Assigning Cause of Death from Facility based Maternal Death Review and Related Verbal Autopsy: A Case Study of Nepal

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Received: April 28, 2020; **Published:** August 14, 2020

Abstract

Community Verbal autopsy (VA) is a systematic retrospective inquiry of the family members about the circumstances, events, symptoms and signs of illness prior to death to help determine the underlying cause of death and to classify the broad patterns of mortality. It is relatively simple and low-cost alternative to obtain valid estimates of causes of death particularly when still significant number of death occurs in community before accessing to any health facilities.

This study tested reliability of the WHO designed adult VA questionnaire revised for identifying the cause of maternal death in Nepalese settings. The modified VA questionnaire was administered visiting the deceased family members for all the maternal deaths that occurred at health facilities in Rupandehi and Surkhet districts. These districts were purposively selected as facility-based maternal death review system has been implemented in both the districts and both the districts were included in Nepal Maternal Mortality and Morbidity Study 2008-09. In total, nine maternal deaths that occurred during 2013 - 2014 AD were included in the study. Two highly qualified and competent Obstetricians/Gynecologists were involved in assigning the cause of maternal death. One of them derived the cause of each maternal death based on the information collected in the respective VA questionnaire while another independently reviewed all the available medical records and assigned the cause of death.

Considering the cause of death derived from hospital documents and maternal death review forms as the gold standard verbal autopsy final diagnosis was compared.

Reliability of the VA questionnaire was measured using inter-reviewer Kappa statistics which indicate good reliability (kappa = .0.65 with standard error of 0.16). However, there were several questions and sections in the VA questionnaire found irrelevant and needs some changes. Thus, it is concluded that the adopted verbal autopsy questionnaire, with some changes, could be capable of providing reasonable cause specific maternal mortality estimates in Nepal.

Keywords: *Verbal Autopsy (VA); Maternal Death; Nepal*

Background

Pregnancy itself is a normal health event in the reproductive life of women. But, this life-affirming process also carries certain health risk for many women. Death due to the conditions related to pregnancy and childbirth, continues to be the major cause of death among women of reproductive age in many developing countries. Globally, an estimated 287,000 mothers lost their life due to such complications in 2010 of which, 85% of these deaths occurred in Sub-Saharan Africa and Southern Asia (World Health Organization, 2012).

Since the mid-1960s, safe motherhood has been a priority national health program for Nepal and significant progress has been achieved in reducing maternal mortality ratio (MMR) but high maternal mortality still remains a public health concern in Nepal. Nepal

Demographic and Health Survey (NDHS) 2006 indicated that MMR was 281 per 100,000 live births in 2006 [1]. While WHO, LINICEF, UNFPA and World Bank estimate indicates that MMR was 190 per 100,000 live births in 2013 in Nepal (World Health Organization, 2014).

In order to understand and address the issue of maternal death appropriately, it is very essential to have reliable and detail information on the reasons/contexts that lead to the death. This information is also essential for public health planning and resource allocation. But as about 42% of the maternal deaths in Nepal occurs at the community [2], there is paucity of information on the causes and circumstances surrounding them. In such context, Verbal Autopsies (VA) could be an alternative method of ascertaining and estimating biomedical causes of death. In fact, VA has been widely used to define cause of deaths (CoDs) in low and middle income countries (LMIC). It is done basically by interviewing close associate/caretaker of the deceased, using a questionnaire to explore information on the signs, symptoms and chronological sequence of events during the final illness leading to death [3].

Family Health Division (FHD) has envisioned using VA as a tool throughout Nepal to capture most-probable causes of maternal death that occurs in the community. It has already contextualized and translated standard questionnaires recommended by World Health Organization (WHO) into Nepali language. The task ahead was to assess the validity/reliability of the revised tool before implementing it at full scale [4,5].

The major objective of this study was to critically review the developed verbal autopsy questionnaire and assess efficiency of the adopted VA tools by comparing its findings with information obtained from facility based review forms and medical certificates.

Objectives of the Study

Conceptually, the main objective of the study was to assess validity of the adopted and translated verbal autopsy questionnaire for Nepalese settings.

The specific objectives were:

- To assess to what extent adopted and translated questionnaire is appropriate to conduct verbal autopsy for suspected maternal deaths.
- To assess to what extent facility based death review, standard death certificate and verbal autopsy questionnaire produce similar results (cause of death).
- To identify the key areas or issues for finalizing the verbal autopsy questionnaire in Nepalese context.
- To review the status of implementation of MDR process in hospital and use of death certificate.

Methodology

Study districts: Two districts namely, Rupandehi and Surkhet were purposively selected for the study as:

- Both of the districts had relatively large number of maternal deaths reported (Figure 1),
- Facility-based maternal death review system has been implemented in both the districts and
- Both the districts were included in Nepal Maternal Mortality and Morbidity Study 2008-09.

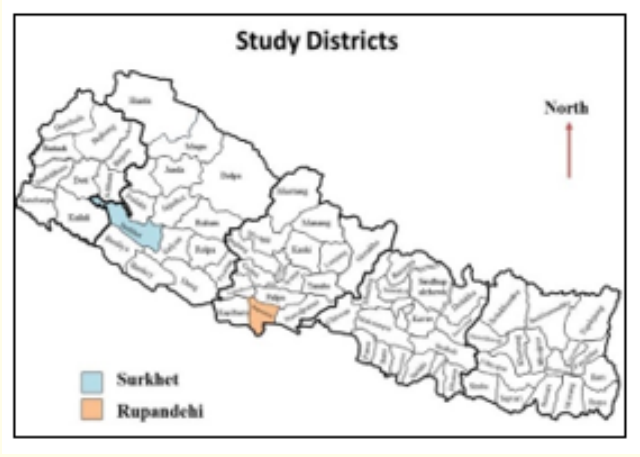

Figure 1: *Study districts.*

The activity was conducted in two stages: Initially, the VA questionnaire adopted by FHD was critically reviewed and adjusted accordingly. Simultaneously, cases of facility based maternal deaths were identified from online Maternal and Perinatal Death Review (MPDR) System developed by FHD and telephone communication with Medical Record Officers of Surkhet and Rupandehi districts.

Later, research core team members reviewed the primary data sources and medical records from all the health facilities in the study districts to ensure none of the maternal death case that occurred during the study period get missed or skipped.

Maternal death review forms and clinical record forms of these deaths were collected. Discussion on the implementation status of Maternal and Perinatal Death Review (MPDR) system and the use of maternal death certificate were held with the hospital team. An obstetrician with sound professional tracks was used to assign the primary and final causes of maternal death based on the medical records available.

Also, with the help of medical recorders, DPHO staffs and Female Community Health Volunteers (FCHV) detail address of the entire household where maternal death was reported were explored. The team members visited the household and administered the VA questionnaires. Among the family member the one who was more involved/engaged in taking care of deceased women was selected as the primary respondent. Another obstetrician was involved to analyze the information obtained from the autopsy questionnaire to establish the primary and final causes of death.

Confidentiality was maintained between these two doctors who were involved in assigning the causes of deaths so that their findings on causes of death derived from two different sources do not gets influenced to each other.

Medical recorder trained in International Classification of Disease (ICD) code was used for assigning the appropriate ICD code for both the findings obtained from two different sources.

Data thus obtained from these two sources were entered into the computer using Cspro and the databases were analyzed using Stata and Excel.

Considering the hospital diagnosis as the gold standard and regarding the VA interview as a screening test, the cause of death assigned by two different obstetricians was compared through contingency tables and the degree of agreement was estimated using Kappa statistics.

Inclusion criteria: Maternal deaths that meet ALL the four criteria mentioned below were only included in the study:

- The death occurred at the facility selected for the activity with an adequate diagnosis,
- The medical records for the death were available for determining the cause of death,
- The death occurred during two years period between 2069 and 2070 BS (2013 and 2014),
- The deceases were resident of the study district.

In total nine (six from Rupandehi and three from Surkhet) maternal deaths met the above criteria and were considered for the study.

Limitations

- MDR form of one of the maternal death case reported in Surkhet was missing therefore cause of deaths (assigned from MDR and VA tools) were compared only for 8 maternal deaths.
- A full version of Inter Va and IRIS software could not be used for data analysis as it was not completely compatible with the revised tool prepared for assessing maternal death. Instead, CS Pro and STRATA was used.

Ethical consideration

The study was conducted after receiving approval from Family Health Division of Department of Health Service, Nepal the data collection through questionnaire were done only after obtaining inform consent from the respondents. All possible level confidentiality was maintained to acknowledge the privacy of the deceased women and the findings was used only for study purpose.

Results and Discussion

The finding of the assessment has been divided into three sections. The first section includes the implementation status of online MPDR system and the use of maternal death certificate. The second section contains issues related to the use of community verbal autopsy and its applicability. The third section includes the characteristics of maternal deaths identified from the community verbal autopsy and information on the agreement between the cause of deaths assigned from the community VA and hospital MDR forms.

Implementation status of MPDR system

The maternal and perinatal death review has been partially implemented. Status of reviewing maternal deaths is relatively better. Because of less in number, the maternal deaths are reviewed and the forms are filled up in hospitals. But the perinatal deaths are not reviewed. Main issues raised during the discussion were the problem of photocopy and printing due to the lack of budget specified for this activity. They also reported that the online system of reporting the MPDR form is non-functional. That is why, the filled up MPDR forms are kept at hospital. The hospital team suggested to provide them the name of contact person at district, region and center for implementation of online MPDR system. Because they have not received clear instruction and support to resolve the problems faced during the online entry of the MPDR forms. The online MPDR system software was not working at the time of hospital visit.

Use of maternal death certificate

We had asked the medical record officer and doctors met at the visited hospitals in Rupandehi and Surkhet districts about the use of death certificate. Medical Record Officer showed the sample of the death certificate sent from center, but none of the hospitals have used the recommended certificate. However, the hospitals have their own version of death certificate which they provide regularly. One reason for not using the death certificate recommended from center is that the certificate does not contain signature of person receiving it. They are willing to use the certificate by including the patient party's signature in the certificate.

Applicability of the VA form

The respondents had well cooperated by providing the information in detail. They were willing to provide the conditions surrounding death and missed opportunities at the community and at the facility. However, the questionnaire was relatively long and it took about an hour or more. In most of the VA process, the respondents looked irritated to respond answer to the questions such as accident, injury, poisoning, and risk behaviors. It seemed that the whole set of questionnaire is not feasible to ask at the community context. It would therefore be better to break the questionnaire for different types of deaths such as one set for maternal deaths and another set for non-maternal deaths. For sustainable use of the VA approach and high response rate, the forms should be developed in such a way to built good rapport of interviewer with respondent for which shortening the form is very important.

Because of multi-ethnic community and different native language within a same community as well as across communities, the VA questionnaire should be translated in different language and one person from the local community or understanding and speaking local language should be included in the interviewer's group.

The respondents who were either close relative of the deceased or was with the deceased most of the time during illness and at the time of death, provided more accurate and detail information than others therefore selection of the appropriate respondent is very important for getting complete information asked in the VA. In one case of Surkhet district, the respondent was mother-in-law but she was not with the deceased during illness, therefore, she could not provide enough information needed to complete the VA.

The cause of death was assigned by two obstetricians, one assigned cause of death from MDR form and the other obstetrician assigned cause of death from VA form. But due to the lack of adequate and additional information from community VA form, she had difficulty in assigning cause of a death.

Characteristics of maternal deaths and cause of deaths assigned from VA and MDR

In total, nine maternal deaths, six from Rupandehi and 3 from Surkhet district, met the inclusion criteria and were thus considered for the study. Out of these nine maternal deaths notified, 3 were of age less than 25 years, 5 were of age between 26 and 35 year and one was over age 35 years. Three of the nine deaths did not have any formal education. Three had secondary level of education, two had completed intermediate level and one had completed bachelor degree. One-third (3) of the maternal deaths were from Brahmin community and one each was from Kami, Sunar, Gurung, Yadav, Malaha and Kusunda community. Eight out of nine deceased women did not have any formal employment but one was permanent teacher working in government school. One died before delivery, most (5) of the women had been delivered by Caesarean Section, two had normal delivery and one had assisted vaginal delivery. The characteristics of women have been summarized in table 1.

Characteristics	Number	Percentage
District		
Rupandehi	6	67
Surkhet	3	33
Age		
< 25 year	3	33
26 - 35 year	5	56
36+ year	1	11
Education		
No formal education	3	33
Primary	0	0
Secondary	3	33
Intermediate	2	22
Bachelors degree	1	11
Ethnicity		
Brahmin	3	33
Kami	1	11
Sunar	1	11
Gurung	1	11
Yadav	1	11
Malaha	1	11
Kusunda	1	11
Occupation		
Government service	1	11
Not working	8	89
Type of delivery		
Not delivered	1	11
Normal	2	22
Assisted	1	11
Caesarean section	5	55
Total	9	100

Table 1: *Characteristics of maternal deaths.*

Causes of maternal deaths assigned from VA and MDR forms

The causes of maternal deaths assigned from VA tool were validated by comparing the causes with the cause of death assigned from MDR form. The two obstetricians independently assigned the cause of deaths and a trained Medical Recorder Officer provided the ICD coding of the respective cause. The causes of maternal deaths and corresponding ICD codes are presented in table 2. As the MDR form and patient chart of one maternal death occurred at Surkhet Regional Hospital could not be traced out, therefore, causes of only 8 maternal deaths were compared. The table indicates that out of 8 maternal deaths cause of 6 maternal deaths assigned from VA and MDR tools were same. The causes of maternal deaths assigned from MDR and VA were different for two maternal deaths. Reasons of the disagree-

ment between causes of deaths assigned from two different tools not clear. This could be due to insufficient information recorded in MDR forms. As MDR form for three maternal deaths occurred at UCMS were not filled up and we had collected patient charts. While assigning the cause, the obstetricians had reported that the information was not sufficient. Similarly, we could not find the appropriate respondent (who was with deceased most of the time during illness and at death) this may also have limited the information required to assign the cause. Furthermore, we should have given the forms from which different causes were assigned to the third obstetrician. But due to time limitation we could not do that. The cross tabulation between the causes assigned from MDR and VA are shown in table 3 and the total agreement between the causes assigned measured from Kappa Index is as shown in table 4.

Name of Deceased	Cause of Death		ICD Code	
	From VA	From MDR	From VA	From MDR
B S	Amniotic Fluid Embolism	NA	I50.1	NA
S G	Hepatitis	Cardio Pulmonary Arrest	K75.9	I46.9
B G	Eclampsia	Cyanotic Congenital Heart Disease	O15.9	Q24.9
S M	Postpartum Haemorrhage	Postpartum Haemorrhage	O72.1	O72.1
I Y	Postpartum Haemorrhage	Postpartum Haemorrhage	O72.1	O72.1
B G	Postpartum Haemorrhage	Postpartum Haemorrhage	O72.1	O72.1
I BK	Postpartum Haemorrhage	Postpartum Haemorrhage	O72.1	O72.1
S K	Pulmonary Embolism	Pulmonary Embolism	O88.2	O88.2
L S	Antepartum Haemorrhage	Antepartum Haemorrhage	O46.9	O46.9

Table 2: *Causes of maternal deaths assigned by obstetricians based on VA and MDR forms.*

ICD code from VA	ICD Code from MDR					Total
	O46.9 (APH)	O72.1 (PPH)	O88.2 (Pul. Emb)	Q24.9 (Cyn. Conj. H disease)	I46.9 (Card. Pul. Arr)	
K75.9 (Hepatitis)	0	0	0	0	1	1
O15.9 (Eclampsia)	0	0	0	1	0	1
O46.9 (APH)	1	0	0	0	0	1
O72.1 (PPH)	0	4	0	0	0	4
O88.2 (Pul. Emb)	0	0	1	0	0	1
Total	1	4	1	1	1	8

Table 3: *Cross tabulation between causes of maternal deaths assigned from MDR and VA tools.*

Agreement	Expected Agreement	Kappa	Standard Error	Z	P
75%	28.13%	0.65	0.16	4.14	0.000

Table 4: *Agreement between causes of death assigned from VA and MDR tools.*

The agreement between the deaths assigned from MDR and VA tools is measured by using Kappa index. The Kappa value ranges between 0 to 1, which is interpreted as [6]:

Value of Kappa	Degree of Agreement
< 0.20	Poor
0.21 - 0.40	Fair
0.41 - 0.60	Moderate
0.61 - 0.80	Good
0.81 - 1.00	Very good

As the Kappa Index is 0.65, the agreement between the causes of deaths assigned from MDR and VA tools is good [7-9].

Conclusion and Recommendations

The respondents were very positive and supported very well by providing detail information asked so as to identify causes of deaths, situations related to the illness and missed opportunities at the community and at the facility. There is good level of agreement between the cause of death assigned from VA and that from MDR forms (Kappa = 067). However, if the revised VA tool is designed for maternal deaths only few sections which are intended to cover non-maternal death can be removed. Furthermore, few issues mentioned below can be reconsidered to simplify the drafted VA questionnaire in the Nepalese context.

Suggestions in general

- It is suggested to insert signature of interviewer and the date of interview after receiving the verbal consent from the respondent.
- Serial numbers assigned to each questions are irregularly arranged. Thus, it would be better if these numbers are logically arranged with equal interval.
- Currently, there is no provision of mentioning the cause of death in death registration format issued by VDC/DDC office. Hence, QN 6h280 to Q2h320 from Section 3 of the VA questionnaire are not applicable.
- Certain terms used in the questionnaire may need further clarification. For example wet season (does it mean winter season or rainy season?), mental confusion, adequate vaccination, etc. Hence, manual guideline with operational definition should be develop for consistent understanding among the interviewers.
- Section six that deals with history of injuries/accidents could be irrelevant and redundant, that too when detail of illness/events that had led to maternal death is already asked.

Suggestions for specific questions

- Before asking question related to late maternal death (Q1A400), it is suggested to insert additional question to screen if it is maternal death.
- Asking Q 3A270 seems less relevant in the context when the exact date of death is already known.
- Q3C100 need to be place somewhere in the beginning while asking for late maternal death. Also, it should be direct and simple.
- For Q3G190, there exists possibility of death of patient. Hence, option 'died' should also be included.

- As the VA questionnaire is design for maternal death, Q3E640 and Q 3B810 of section seven become invalid. So, these questions should be removed.
- For Q3C390c, multiple responses are possible. And, hence, should be clearly instructed in the question.
- It is suggested to split Q3C270 into Pregnancy, delivery and Postpartum.
- Q3C390F: options mentioned are irrelevant and should be reformulated.
- Given options for Q3B450, Q3C390f is not suitable and need to be revised.
- Q3E340: question need to be rephrased as plant can't bite or sting.
- Skip pattern for Q3F100 is incorrect- if the response is 'no' or 'don't know' question need to be skipped to Q 3F110.

Glossary

- **Maternal death**: Death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.
- **Women of reproductive age group**: Refers to women of 15 to 49 year age group.
- **Maternal mortality ratio**: Number of maternal deaths in a given period per 100,000 live births during the same time period.
- **Still birth**: Refer to fetus which has died in the uterus or during labor or delivery.
- **Verbal autopsy**: Is a technique of finding out the medical causes of death and ascertaining the personal, family or community factors that may have contributed to the deaths in women who died out side of a medical facility. Here, relatives of the deceased person are interviewed regarding conditions and care seeking sequence preceding death. This information is used to reconstruct the course of illness and for assigning a probable cause of death.

Annexes

Annex 1: Case summary of maternal deaths

Case I: LS

Just at the age of 27, it was for the fourth time LS, a permanent resident of Bidyapur-7, was pregnant. In all her earlier pregnancies, she delivered baby at home. Her first pregnancy turn out to be still birth and a baby child who was born from her third pregnancy also died at the age of 2 and half year.

Mrs. S was little carefree type of lady. She visited for ANC checkup only once that too few weeks before her estimated date of delivery. She was informed that her baby's position is breeched and was suggested to visit higher health care facility at Surkhet. But she did not take it seriously. Neither had she had iron tablet regularly. At worst, even though when she started bleeding, Mrs. S continues to deny going to health facility. But, when the bleeding got excessive, she was carried to nearby health facility at mid night. Considering the severity, local health facility immediately referred her to Surkhet regional hospital. She was then taken to regional hospital and was operated without

delay. She gave birth to a baby boy but the team of health workers involved in her treatment informed that maximum blood has been lost from her body and asked her husband to arrange for the blood. Her husband commit that due to financial problem he could not arrange blood in time. Though two pints of blood was transfused she could not be saved; after few hours of delivery she died.

Case II: IBK

It was ninth pregnancy of a 40 year old IBK. Among eight pregnancies she had earlier, two resulted into spontaneous abortion. Though BK's house was located within municipality and many health care institutions, including mid-western regional hospital were at her walking distance, she had never visited health facilities for institutional delivery previously. Unlikely, during her last pregnancy she had visited ANC checkup consulted with health workers and was regularly taking iron tablets.

Almost a month earlier to her expected date of delivery, she had to visit Surkhet regional hospital to see one of her relative who was admitted there. As the hospital was located at walking distance, she walk alone to see her relative. To maximize the utilization of her visit, she also went for regular checkup. Surprising to her she was told that her delivery date has already arrived and was admitted. Medicine was given to induce her labor pain and within one hour of labor pain she gave birth to a baby girl via assisted vaginal delivery. But, she had excessive bleeding and before blood could be arranged, within one hour of delivery, she died. All these happened so quickly and unnaturally, it took quite a long time for her family members to accept the reality.

Case III: B S

B S, a school teacher by profession, was permanent residence of Lekhgaon Ward no. 4 of Surkhet district. But, since last few years both Mr and Mrs S were working and living life happily in a nearby district, Dailekh.

It was second time Mrs. S got pregnant. Earlier she delivered a baby boy normally at home in Lekhgaon. The couples were very concern this time for the antenatal care (ANC) and were regularly visiting nearby health facility for necessary examination. No any complication was reported so far. As she had full term pregnancy and her school vacation also started, the couple decided to go to their home to deliver baby. It takes almost three hours to reach her home from Surkhet main city, so on the way back to her home, they visited Surkhet regional hospital for check-up. After keeping her under observation for 15 days, the medical team ultimately gave medicine to induce her labor. Unfortunately, within fifteen minutes of medication, her whole body started having convulsion and before she could give birth to a baby, just at the age of 29, she died.

Case IV: B G

B G was married at the age of twenty. Soon after her marriage, she got pregnant. As the pregnancy was unwanted, on mutual consensus, the couple got it aborted. Two year later, she again got pregnant. She regularly used to visit nearby health post and zonal hospital for antenatal checkup. Even after estimated date of delivery arrives she did not had any labor pain. So, her family member took her to zonal hospital. She was admitted and given medicine thrice to induce her labor pain. Also, vacuum assisted delivery was tried initially but was not successful. Hence, the doctor decided to perform surgery. After surgery, B had chest and abdominal pain. She was having difficulty in breathing. Considering her worse health condition, the doctor referred her to Universal College of Medical Sciences (UCMS) in Bhairahawa for further treatment. She was immediately taken to UCMS and several tests were done. The doctor involved in her treatment informed that excessive fluid is collected in her lungs and need to be treated in ventilator. Unfortunately, ventilator was not vacant in the hospital and thus the family member was planning to take Bishnu to Bharatpur Medical College. Unfortunately, before all the arrangement could be done, she died.

Case V: S M

S M got married merely at the age of 16 and this was her third pregnancy. She never had any pregnancy related complication earlier nor this time. After full term pregnancy, she normally gave birth to a baby in the nearby primary health care center. But, soon after her delivery she started having excessive bleeding and was thus referred to Universal College of Medical Sciences (UCMS), a medical college situated in Bhairahawa. In UCMS, her bleeding was, to large extent, managed but soon after she develop difficulty in breathing and died leaving behind her children and mentally retarded husband.

Case VI: S K

S K from Shankarnagar ward no. 5 got married at the age of 22 and two year later she conceives a baby. But it turned out into a still birth. Consulting doctor advised the couple not to conceive at least for next four year. As suggested, the couple went for their second child after four year of her first pregnancy. As everything went well in their second pregnancy, the couple also went for their third child after 7 years of their second pregnancy. No any complication was seen during her third pregnancy. After full term pregnancy, her caesarian section was done and gave birth to a child. But, suddenly Mrs. K had difficulty in breathing. She was given oxygen but no improvement could be seen and ultimately she died.

Case VII: S G

S G was married at her early twenties and it was her second pregnancy. After delivering her first baby, the doctor advised her to maintain few years of birth spacing before she go for her next baby. But, Mrs. G hides this information from her family and got pregnant. During third trimester of her second pregnancy, her body started swelling and she started undergoing depression. S G was taken to AMDA hospital but no any remarkable improvement was achieved. Instead it got worsen-later she also started behaving like an absent minded. She was even taken to Kathmandu for her treatment. In between she also complaint of irregular heartbeats. At later stage of her pregnancy, she also had swollen abdomen and foul vaginal discharge. She was taken to nearby medical college where the doctor informed that Mrs. G have thyroid problem with jaundice and heart disease. The medical team decided to undergo surgery. However, they informed that it would be very difficult to save both mother and baby. She gave birth to a baby boy but within 72 hours of delivery she passed away.

Case VIII: I Y

I Y got married at the age of 14, however, she started living with her husband in Ekala Ward no. 6 only after six year of her marriage. It was her third pregnancy. She had no any health problem during her first two pregnancies. Even in her third pregnancy everything was well. She was having regular antenatal checkup. Her labor pain starter after full term of pregnancy. Without losing any time, she was taken to nearby health post where she was informed that her baby's position is breeched and suggested to visit Lumbini zonal hospital. Accordingly, she was taken and operated in zonal hospital. But, during post operation she continued to have excessive bleeding. Every effort was done and even four pints of blood was transfused but she could not be saved. Next day early morning she died

Case IX: B G

It was second marriage of 27 year old B G. In total, Mrs. G got pregnant for four times. All three pregnancies (conceived twice from her first husband and once from her second husband) got aborted spontaneously. She had congenital heart defect but it was not informed to her husband's family. During seventh month of her fourth pregnancy her entire body got swollen and had difficulty in breathing. B G was taken to nearby district hospital where she was also diagnosed with anemia and high blood pressure. She was treated accordingly. Later, B normally gave birth to a premature baby who could not survive more than 24 hours. Even after discharge from the hospital, she continued to have high blood pressure, difficulty in breathing, excessively sweating and was getting extremely weak. She was again taken to hospital

and treated in ICU. The doctor involved in B G treatment informed that she requires heart surgery and suggested her family members to take her to higher health center in Kathmandu. But, before much could be arranged, she died.

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Volume 9 Issue 9 September 2020