

## Assessment of Nutritional Supplements Prescribed in Pregnant Women and Pediatric Patients in Basaveshwara Teaching and General Hospital

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### Abstract

Rational use of nutritional supplements is extremely important for better survival of the patient, especially in children where poor nutritional status will cause many co-morbid conditions with an increased risk of death. About 35% of under-five space deaths in the world are associated with malnutrition. Nutrition also place a major role in maternal health poor maternal nutritional status has been related to adverse birth outcomes [1].

The aim of the study was to assess the nutritional supplements prescribed in pregnant women and pediatric patients.

A six month hospital based prospective observational study was carried out in the department of pediatric and gynecology at BTGH, Gulbarga. The aim of the study was to assess the nutritional supplements prescribed in pregnant women and pediatric patients at the respective departments. The data was collected in a specially designed data collection form, from the case sheet of inpatient of pediatric department and outpatient of gynecology department enrolled into the study [2].

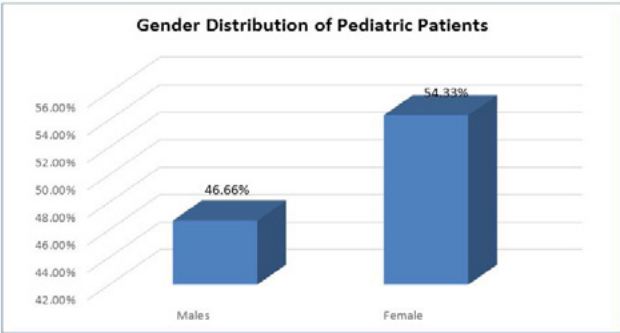
The study result shows that out of 75 patients in pediatric department, 41 (54.66%) were females and 34(45.33%) were males, malnutrition is more prevalent in toddlers (1-5 years) i.e. 48 patients (64%) when compared to neonates (up to 1 month) 02(2.66%), infants (1month-1year) 20(26.66%), children (5-14years), 5(6.66%).the educational status of their parents 27(36.00%) were grade 0 followed by 19(25.33%) were belonged to grade 1,6(8%) belonged to grade 2,11(14.66%) belonged to grade 3 and 10(13.33%) belonged to grade 4. Out of 75 patients grade 2 PEM 33(44%) is more when compared to grade 1 PEM 7(9.33%), grade 3 PEM 19(25.33%) and grade 4 PEM 16(21.33%). 57 patients were improved 14 patient were discharged under request, 4 patient were referred and 00 deaths are reported [3]. The majority of supplements were administered orally (75%) followed by parenteral route 25% various types of nutrients are prescribed in pediatrics majority including multi vitamin, elemental iron +folic acid, vit A, vit C, zinc acetate, calcium carbonate+vitD3, electrolytes. the majority of prescription were with brand name (73.33%) followed by generic name (26.66%) among the associated co-morbidity conditions with malnutrition bronchopneumonia (13.33%) followed by severe anemia (10.66%), nutritional anemia (12%), acute gastroenteritis (9.33%),pulmonary TB (6.66%) and others [4]. [Table 1-5]

Out of 100 pregnant women 50(25%) are of second trimester, 25(25%) are of first trimester, 25(25%) are of third trimester the majority of prescription were with brand name (72%) followed by generic name (28%). Majority of the supplements were administered orally (90%) when compared to parenteral administration (10%). The nutrients prescribed for pregnant women include T.doxinate plus for 47 patients, T.livogen Z (68 patients), T.mecalvit (65 patients), T.orofer XT (19 patients), cap. Becosule (23 patients), protein powder (25 patients), T.folvite (7 patients) [5]. [Table 6-9] The economic and literacy status of the households are the main factors causing nutritional imbalances in children. The number of cases reported concluded the shortage of nutrients to this region and unawareness in pregnant women [6].

Thus the interventional programmes are needed for improving the health status of mothers and children.

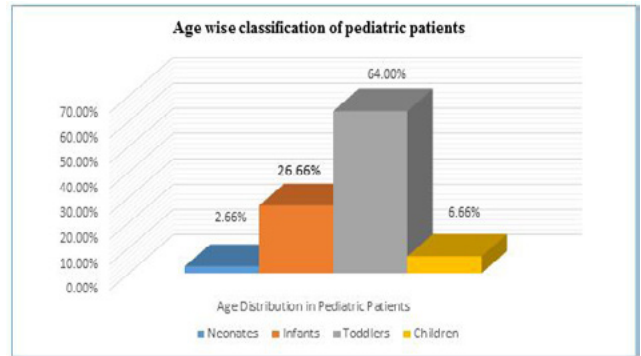
**Keywords:** Protien energy malnutrition(PEM); Nutritional Supplements; Rational Drug Use

| Gender distribution | Number of patients | Percentage (%) |
|---------------------|--------------------|----------------|
| Male                | 34                 | 45.33%         |
| Female              | 41                 | 54.66%         |
| Total               | 75                 | 100.00%        |



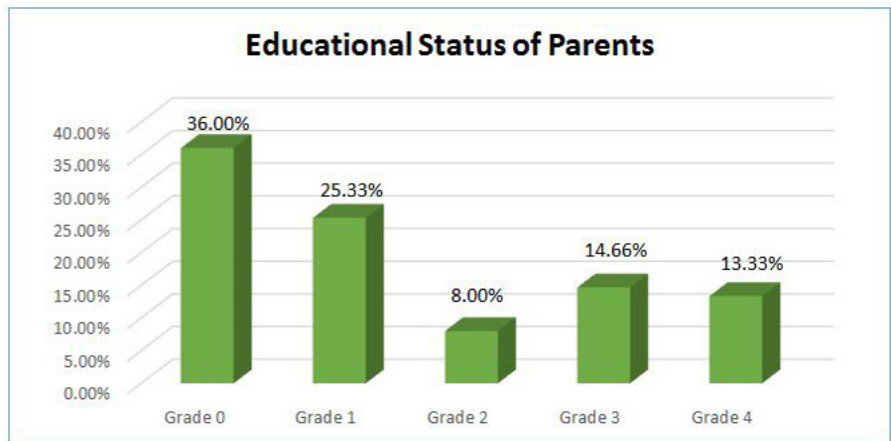
**Table 1:** Gender Distribution of Pediatric Patients

| Age Distribution           | Number of patients | Percentage (%) |
|----------------------------|--------------------|----------------|
| Neonates (upto 1 month)    | 2                  | 2.66%          |
| Infants (1 month – 1 year) | 20                 | 26.66%         |
| Toddlers (1 – 5 years)     | 48                 | 64.00%         |
| Children (5- 14 years)     | 5                  | 6.66%          |
| Total                      | 75                 | 100.00%        |



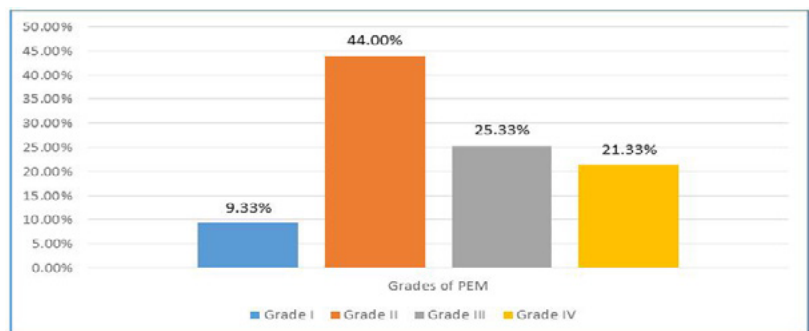
**Table-2:** Age wise classification of pediatric patients

| Grades                | Number of parents | Percentage (%) |
|-----------------------|-------------------|----------------|
| Grade 0 (illiterates) | 27                | 36.00%         |
| Grade 1 (School)      | 19                | 25.33%         |
| Grade 2 (PUC)         | 6                 | 8.00%          |
| Grade 3 (University)  | 11                | 14.66%         |
| Grade 4 (Graduates)   | 10                | 13.33%         |
| Total                 | 75                | 100.00%        |



**Table-3:** Details of educational status of Parents

| Condition | Number of patients | Percentage (%) |
|-----------|--------------------|----------------|
| Grade I   | 07                 | 9.33%          |
| Grade II  | 33                 | 44.00%         |
| Grade III | 19                 | 25.33%         |
| Grade IV  | 16                 | 21.33%         |
| TOTAL     | 75                 | 100.00%        |
| Total     | 75                 | 100.00%        |



**Table-4:** Condition of Pediatrics patients at the time of discharge

**Details of number of patients in each trimester in gynecology:**

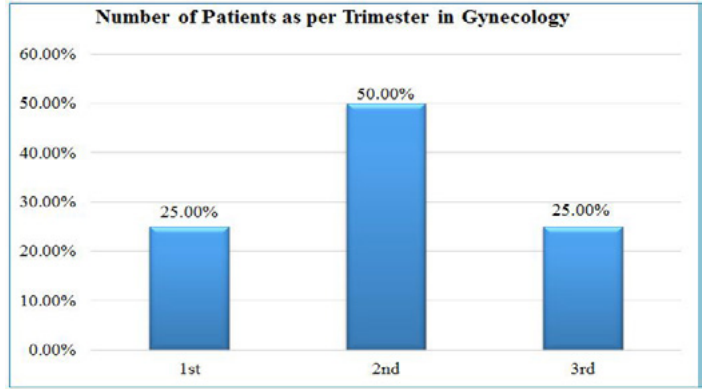
Out of 100 patients, 25(25%) patients are of first trimester, 50(50%) patients are of second trimester, 25(25%) are of third trimester .

**Introduction**

Nutrition plays a major role in maternal and child health. Poor maternal nutritional status has been related to adverse birth outcomes; however, the association between maternal nutri-

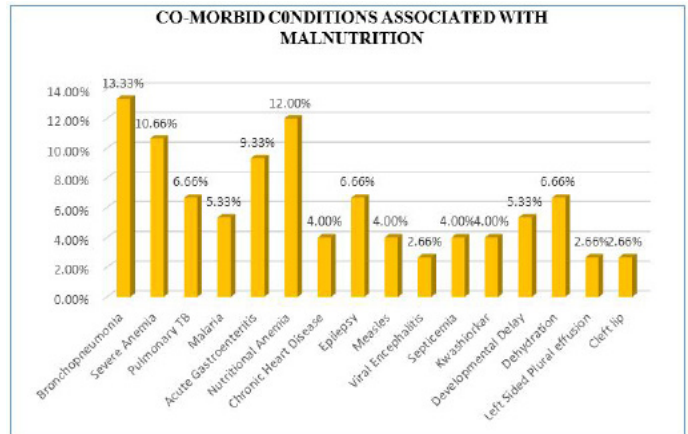
tion and birth outcome is complex and is influenced by many biologic, socioeconomic, and demographic factors, which vary widely in different populations. Understanding the relation between maternal nutrition and birth outcomes may provide a basis for developing nutritional interventions that

| Trimester | Number of Patients | Percentage |
|-----------|--------------------|------------|
| 1st       | 25                 | 25.00%     |
| 2nd       | 50                 | 50.00%     |
| 3rd       | 25                 | 25.00%     |
| Total     | 100                | 100.00%    |



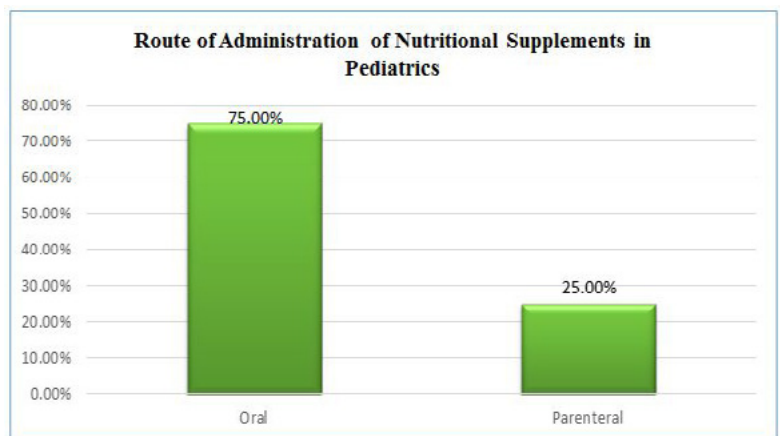
**Table-5:** Number of Patients as per Trimester in Gynecology

| Co-Morbidity               | Number of patients | Percentage (%) |
|----------------------------|--------------------|----------------|
| Bronchopneumonia           | 10                 | 13.33%         |
| Severe Anemia              | 08                 | 10.66%         |
| Pulmonary TB               | 05                 | 6.66%          |
| Malaria                    | 04                 | 5.33%          |
| Acute Gastroenteritis      | 07                 | 9.33%          |
| Nutritional Anemia         | 09                 | 12.00%         |
| Dehydration                | 05                 | 6.66%          |
| Chronic Heart Disease      | 03                 | 4.00%          |
| Epilepsy                   | 05                 | 6.66%          |
| Measles                    | 03                 | 4.00%          |
| Viral Encephalitis         | 02                 | 2.66%          |
| Septicaemia                | 03                 | 4.00%          |
| Kwashiorkar                | 03                 | 4.00%          |
| Developmental Delay        | 04                 | 5.33%          |
| Left Sided Plural effusion | 02                 | 2.66%          |
| Cleft lip                  | 02                 | 2.66%          |
| Total                      | 75                 | 100.00%        |



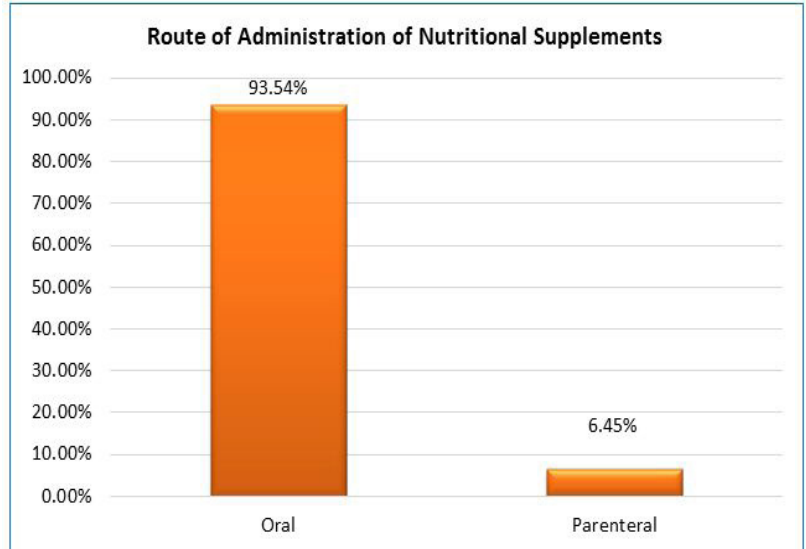
**Table 6:** Co-Morbid Conditions Associated with Malnutrition

| Route of Administration | Number of Nutritional Supplements | Percentage (%) |
|-------------------------|-----------------------------------|----------------|
| Oral                    | 137                               | 75.00%         |
| Parenteral              | 46                                | 25.00%         |
| Total                   | 183                               | 100.00%        |



**Table 7:** Route of Administration of Nutritional Supplements in Paediatrics

| Route Of Administration | Number of Nutritional Supplements | Percentage |
|-------------------------|-----------------------------------|------------|
| Oral                    | 174                               | 93.54%     |
| Parenteral              | 12                                | 6.45%      |
| Total                   | 186                               | 100.00%    |

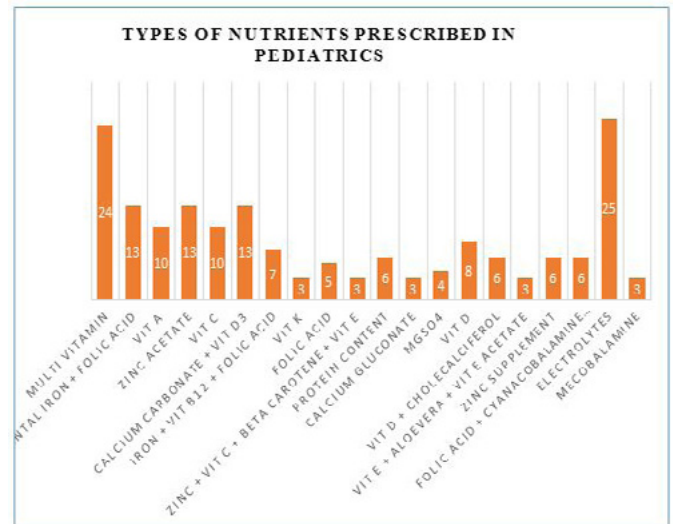


**Table 8:** Route of administration of nutritional supplements in Gynaecology

| Type of Nutrient                                | Number of patients |
|---|--------------------|
| Multivitamin                                    | 24                 |
| Elemental Iron + Folic Acid                     | 13                 |
| Vit A   | 10                 |
| Zinc Acetate                                    | 13                 |
| Vit C   | 10                 |
| Calcium Carbonate + Vit D3                      | 13                 |
| Iron + Vit B12 + Folic Acid                     | 7                  |
| Vit K   | 3                  |
| Folic Acid                                      | 5                  |
| Zinc + Vit C + Beta Carotene + Vit E            | 3                  |
| Protein Content                                 | 6                  |
| Calcium Gluconate                               | 3                  |
| MgSo4   | 4                  |
| Vit D   | 8                  |
| Vit D + Cholecalciferol                         | 6                  |
| Vit E + AloeVera + Vit E acetate                | 3                  |
| Zinc Supplement                                 | 6                  |
| Folic Acid + Cyanacobalamine + Ferrous Fumarate | 6                  |
| Electrolytes                                    | 25                 |
| Mecobalamine                                    | 3                  |

**Table 9:** Types of Nutrients Prescribed in Pediatrics

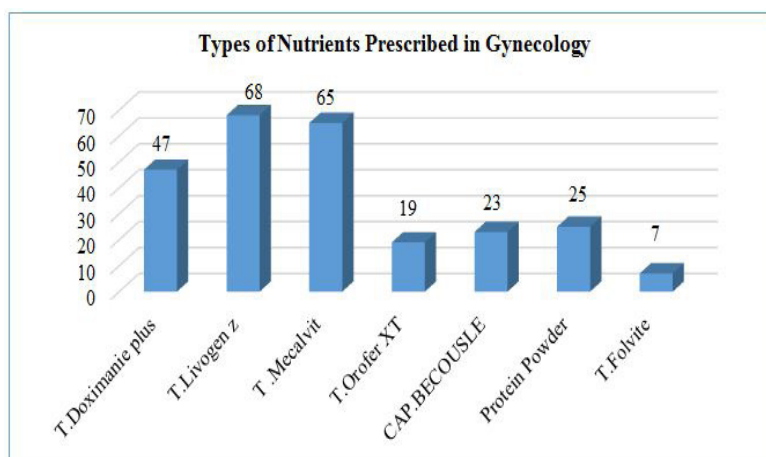
will improve birth outcomes and long-term quality of life and reduce mortality, morbidity, and health-care costs [7]. Current knowledge on maternal nutritional requirements during pregnancy and review studies of the nutrients/nutrient combinations that have been most commonly investigated in association with birth outcomes, including energy, protein, essential fatty acids (specifically omega-3 fatty acids), iron, folate, and multi nutrient supplements. Other nutrients which have been



studied in conjunction with birth/pregnancy outcomes (e.g., magnesium, zinc, calcium, vitamin C) but for which there is less evidence are not included because of space limitations [8].

Malnutrition is inadequate intake of nourishing food or consumption of a particular type of food item little or no nutritional value [9]. It is a state of nutrition where the weight for age, height for age and weight for height indices are below than the normal [10]. Malnutrition continues to be a major public health problem in developing countries. Marshal and Buffington stated that sometimes, a pregnant woman does not know that she needs to eat a greater amount of quality food. For a healthy pregnancy, steady supplies of micro nutrients are essential both for the mother and the growing baby. Modern research has best way to ensure long term health of mothers and their infants [11]. [Table 10-15]

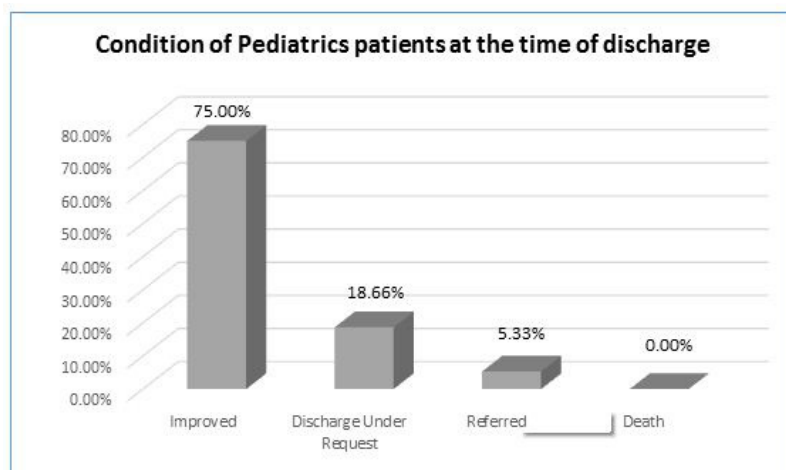
| Type of Nutrient | Number of patients |
|------------------|--------------------|
| T.Doximanie plus | 47                 |
| T.Livogen z      | 68                 |
| T .Mecalvit      | 65                 |
| T.Orofer XT      | 19                 |
| Cap.Becousle     | 23                 |
| Protein Powder   | 25                 |
| T.Folvite        | 07                 |



**Table 10:** Types of nutrients prescribed in gynaecology

In our study the condition of the patient at the time of discharge was observed at 75% in improved conditions (57 cases) and none of the cases reported as death in the study.

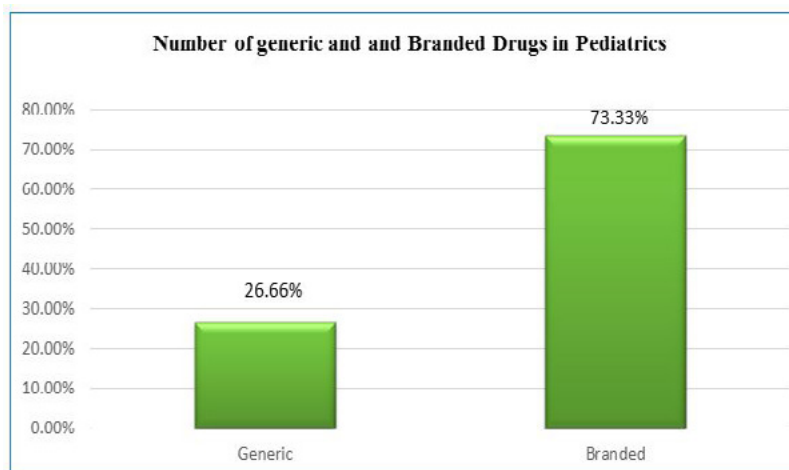
| Condition               | Number of patients | Percentage (%) |
|-------------------------|--------------------|----------------|
| Improved                | 57                 | 75.00%         |
| Discharge under request | 14                 | 18.66%         |
| Referred                | 04                 | 5.33%          |
| Death                   | 00                 | 00.00%         |
| TOTAL                   | 75                 | 100.00%        |



**Table 11:** Condition of Pediatrics patients at the time of discharge

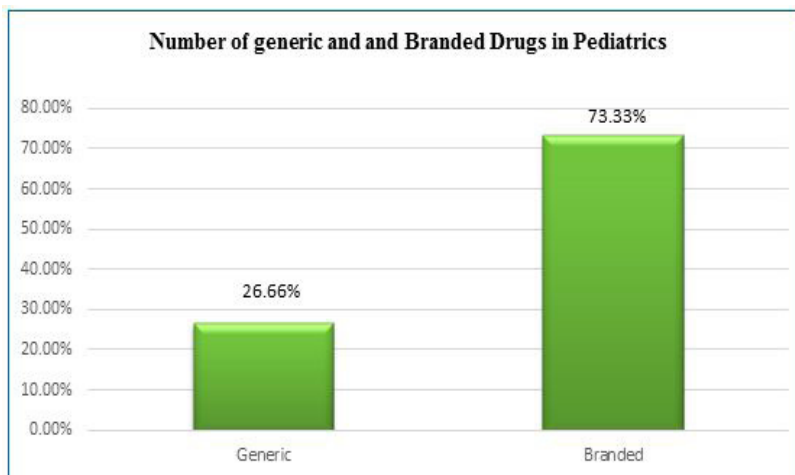
Also the study observed that vitamins are given more priority than powders and syrups.

| Number of Nutrients | Number of Prescriptions | Percentage |
|---------------------|-------------------------|------------|
| 2                   | 38                      | 50.66%     |
| 3                   | 16                      | 21.33%     |
| 4                   | 9                       | 12.00%     |
| 5                   | 6                       | 8.00%      |
| 6                   | 6                       | 8.00%      |
| Total               | 75                      | 100%       |



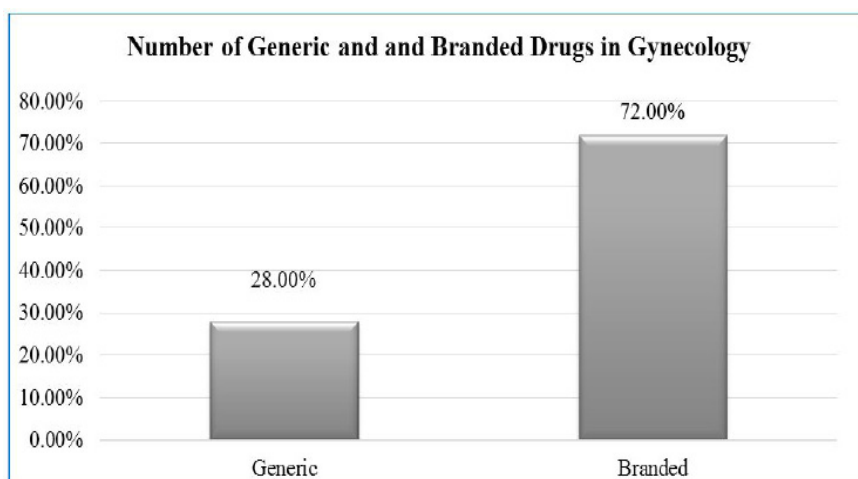
**Table 12:** Number of generic and Branded Drugs in Pediatrics

| Type of Drug | Number of Prescriptions | Percentage |
|--------------|-------------------------|------------|
| Generic      | 20                      | 26.66%     |
| Branded      | 55                      | 73.33%     |
| Total        | 75                      | 100.00%    |



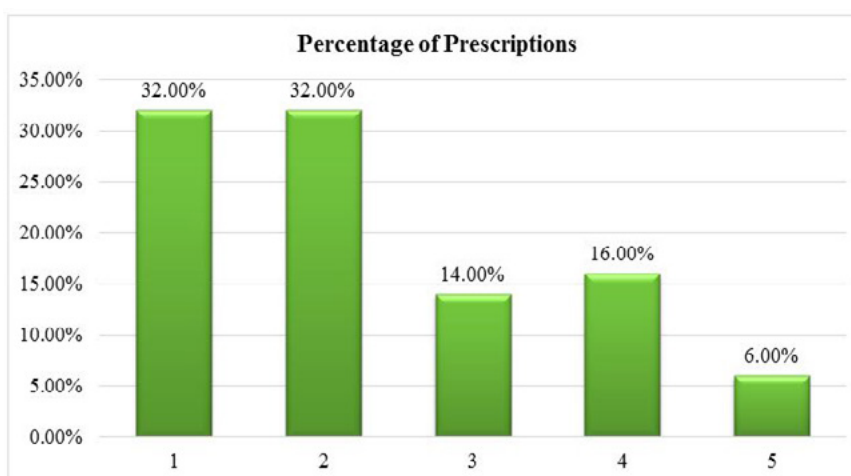
**Table 13:** Number of generic and Branded Drugs in Pediatrics

| Type of Drug | Number Of Prescriptions | Percentage |
|--------------|-------------------------|------------|
| Generic      | 28                      | 28.00%     |
| Branded      | 72                      | 72.00%     |
| Total        | 100                     | 100.00%    |



**Table 14:** Number of Generic and Branded Drugs in Gynecology

| Number of Nutrients | Number of Prescriptions | Percentage |
|---------------------|-------------------------|------------|
| 1                   | 32                      | 32.00%     |
| 2                   | 32                      | 32.00%     |
| 3                   | 14                      | 14.00%     |
| 4                   | 16                      | 16.00%     |
| 5                   | 6                       | 6.00%      |
| Total               | 100                     | 100%       |



**Table 15:** Number of Nutritional Supplements per prescription in Gynaecology



## Materials and Methods

### Study site

The study was conducted at the department of pediatrics and department of gynecology at Basaveshwar teaching and general hospital (BTGH) a 765 bedded tertiary care teaching hospital, which is one of the largest hospitals in Gulbarga.

### Study period

The study was carried out for a period of six months from December 2013 to May 2014.

### Study design

It is a prospective-observational study.

### Study criteria

Inpatients visiting to the department of pediatrics and outpatients visiting to the department of gynecology are enrolled in the study by considering the following inclusion and exclusion criteria after taking consent from the parent/guardians of patients(annexure-I)

### Inclusion criteria

Patients below age of 14 years of either sex, who are malnourished.(pediatric department)

Patients prescribed with nutritional supplements.

Pre-natal pregnant women from first trimester to third trimester.(gynaecology department)

Pregnant women prescribed with nutritional supplements.

Patients willing to participate in the study.

### Source of data

The data of the study was collected by using the following:

Case sheets of the Inpatients.

OPD cards of the Out-patients.

Lab reports.

## Methodology

The study was conducted at the department of pediatrics and department of gynecology at Basaveshwar teaching and general hospital (BTGH). Inpatients visiting to the department of pediatrics and outpatients visiting to the department of gynecology are enrolled in the study by considering the inclusion and exclusion criteria after taking consent from the parent/guardians of patients. The following data was collected from case sheets of In-patients, OPD cards of out-patient and from lab reports from lab reports in a specially designed data collection form [18]. (Annexure-II)

- Demographic profile of the patient
- Details of prescribed nutritional supplements (name ,strength ,routes of administration )
- Dose and dosing frequency
- Diagnosis of the case
- Co-morbid conditions associated with PEM.
- Condition of the patient at the time of admission and discharge.

### Socio-demographic data

- Name
- Age

- Sex
- Occupation
- Educational status
- Regional status

### Disease data

- Type of PEM

### Treatment data

- Nutritional supplement prescribed
- Number of supplements prescribed
- Route of supplements prescribed
- Dose of the supplements prescribed
- Therapeutic outcomes

The collected data was assessed by using standard textbooks, journals, articles, internet sources like Micromedex online and by other relevant sources.

## Results and Discussion

The present study was carried out in pediatrics and gynecology department of BTGH, Gulbarga. The whole population was used as a sample hence there were no sampling techniques used in the study. The findings of the study also revealed that malnutrition in pregnancy resulted in offspring's with low birth weight. The study further showed that socio economic factors in literacy are some of the causes of malnutrition in population [19].

Pediatric toddlers of age bearing 1-5 years are maximum cases shown i.e. 64% (48 cases) and neonates are lowest number of cases are observed. i.e. 2.6% (2 cases) during the study. The study also reveals that nearly 50% of population are illiterates this is one of the major reason for continued malnutrition problems in the region [20]. In the study more than 75% (57 cases) are shown improvement in hospitalized treatment and only 5% (4 cases) of population are referred for higher treatment. 7.50% of pregnant women's are malnutrition suffering in second trimester [21].

The major associated co-morbid conditions of the cases are bronchopneumonia (13%) and maximum number of cases are reported for pulmonary tuberculosis (6%). It also indicates that pediatrics are reported co-morbidity followed by pregnant women. This study has tried to examine the consequences of malnutrition among child bearing mothers in this region [22].

This study also recommends that pregnant women should always attend the antenatal clinics to learn more about what to eat and how to prepare nutritive food. Government should establish more number of primary health care centers especially in the rural areas so that pregnant women and child could attend [23].

This study indicates that the maximum numbers of cases could not utilize the antenatal clinics. Lowest number of malnutrition children were found among mother with antenatal care visits. This study shows that there is a significant association between mothers antenatal care visit and child nutritional status [24].

This study indicates previous birth intervals as an important risk factors of child malnutrition. The maximum two types of formulations are prescribed in 50% (38 cases) and more than three formulations are prescribed in 21% (16 cases) [25].

This study shows that multi-vitamins are the formulations prescribed for more time followed by iron supplements (13cases) and condition in our study the condition of the patient at the time of discharge was observed at 75% in improved conditions (57 cases) and none of the cases reported as death in the study. Also the study observed that vitamins are given more priority than powders and syrups [26].

## Conclusion

The economic and literacy status of the household is the main factor causing nutritional imbalances in children. This study recommends the evaluation of prescription during pregnancy may reduce percentage of shortage of nutrients in this region. Thus the interventional programmes are needed for improving the health status of mothers and child.

In this study it is concluded that malnutrition is still an important problem in this region. Socioeconomic and demographic factors are found to be significantly associated with high prevalence of malnutrition among children [27].

A continued effort by the government and non-government organizations and the community is essential to improve the nutritional status of the children. In addition, the nutritional programmes need to be done continually and special attention should be given to the rural and poorest and the most undernourished.

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