

## Self-Care Practices Utilized By Yemeni Pregnant Women in Hodeida City

<sup>1</sup>Dr. Sahar Anwar Rizk, <sup>2</sup>Dr. Asmaa Saber Ghaly, <sup>3</sup>Hajer Ibraheem Youssef Motakef

Professor of Obstetrics and Gynecologic Nursing,<sup>1</sup>Lecturer of Obstetric and Gynecologic Nursing,<sup>2</sup> Faculty of Nursing, Alexandria University, Egypt  
Demonstrator of Nursing Department Faculty of Medicine and Health Sciences, Hodeida University, Yemen<sup>3</sup>  
Corresponding Author: Dr: Asmaa Saber Ghaly.

---

**Abstract:** Pregnancy is a perfectly normal physiological stage in the mother's life. However, the ignorance of health care during this period can have irretrievable consequences for the mother and her fetus. Therefore, health promotion during this period is necessary and special care measures about self-care are required in order to enjoy that pregnancy passes without unhampered and unnecessary restriction or complications for both mother and child. **Objective:** The current study was conducted to find out the self-care practices utilized by Yemeni pregnant women in Hodeida city. **Setting:** This study was carried out at 6 MCH from the three available directorates in Hodeida city. **Subjects :** A convenience sample of 330 pregnant women constituted the study sample, 55 women were conveniently chosen according to the following inclusion criteria: Had normal pregnancy course, was free from any medical disease, was attending antenatal clinic, was willing to participate in the study. **Tool:** "Pregnant Women's Self-Care Practices Tool" was used to collect necessary data. **Results:** The results of current study showed that almost three fifths (58.2%) of the pregnant women obtained fair universal self-care practices, while 40.6% of them had good universal self-care practices. It was also evident that more than one half (58.5%) of subjects had got fair health deviation self-care practices, compared to only 5.5% of them who had good health deviation self-care practices. **Conclusion:** Most of Yemeni pregnant women had fair self-care to meet their universal and health deviation requisites.

**Keywords:** Selfcare- Self care theory- Pregnant women- Yemen.

---

Date of Submission: 03-08-2019

Date of Acceptance: 19-08-2019

---

### I. Introduction

Pregnancy is a time during which the health practices and activities are very important for its results. It can be defined as the activities affecting the life of mothers, fetuses and newborns. These practices should be determined and healthy enhanced during prenatal period. Pregnancy is a time of transition in woman's life, as it occupies a critical and unique place in the course of their life. Although this period is a perfectly normal physiological stage. The ignorance of health care during this period can have irretrievable consequences for the mother and her fetus. It also can lead to maternal mortality. <sup>(1-3)</sup>

Maternal mortality is unacceptably high. There are about 800 women die from pregnancy- or childbirth-related complications around the world every day. In 2013, 289 000 women died during and following pregnancy and childbirth worldwide. Statistics revealed that 99% of these deaths occur in developing countries. <sup>(1-3)</sup> Yemen is one of those countries in which mortality rate related to pregnancy is high. Where World Health Organization (WHO) showed that the number of Yemeni women who died from pregnancy-related causes (during pregnancy or within 42 days of pregnancy termination) per 100,000 live births reduced from 416 at 2010 to 385 at 2015. These numbers are still meaningfully higher than the developing countries with higher levels prenatal care. <sup>(4-6)</sup> The lives of women and newborn babies could be saved by skilled care before, during and after childbirth. <sup>(5)</sup>

During pregnancy, woman's body goes through many physical and psychological changes. These changes are secondary to the effect of estrogen and progesterone hormones. These changes enable the fetus and placenta to grow and prepare the mother and the baby for childbirth, which include: reproductive; cardiovascular; gastrointestinal; endocrine; musculoskeletal; integumentary and urinary systems. These changes are entirely normal but they may prone woman to health care deficit that may cause many minor disorders/discomforts. <sup>(7-9)</sup>

Although the discomforts of pregnancy are not in particular life threatening, their presence detracts from the mother's feeling of comfort and well-being. In many instances they can be avoided by preventive

measures, or entirely overcome by common sense in daily living once discomforts occur. Therefore, antenatal care plays a crucial role in ensuring a healthy pregnancy course and outcome.<sup>(10)</sup>

Scientific advances have been made in amelioration the care of maternal deaths due to pregnancy complications, however, the most common cause of maternal mortality is due to lack of care during pregnancy.<sup>(3)</sup> Thus, antenatal care (ANC) is important for the health of mothers and the development of the unborn babies as the pregnancy period is a crucial time to promote healthy behaviors and parenting skills. Moreover, the health care plays a crucial role which provides anticipatory guidance and teaching to pregnant women in order to encourage safe and healthy self-care practices.<sup>(11)</sup>

There are many theories that viewed self-care concepts in different ways. **Dorothea Orem's** conceptual framework of nursing, which has been called self-care nursing theory, is based on the premise that each person requires self-care in order to maintain health and life. She proposed three related concepts: self-care; self-care deficit and nursing system. According to Orem, **self-care** constitutes those activities performed to maintain life and health. **Self-care requisites** are the actions or measures used to provide self-care. She classified those requisites or needs into universal self-care, developmental and health deviation self-care requisites or needs. Thus **self-care deficit** arises when the pregnant woman cannot meet the self-care requisites such as early entry into prenatal care. The theory of **nursing systems** refers to a series of actions nurses take to meet a patient/client's self-care requisites.<sup>(12,13)</sup>

Accordingly, this study aims to find out the self-care practices utilized by Yemeni pregnant women in Hodeida city. Such information will help health care providers to provide specifically tailored antenatal care through: encouraging safe and healthy self-care practices, omitting unhealthy self-care practices and modifying neutral self-care practices. This will improve pregnancy outcomes, assure safe passage during pregnancy for both mother and expected baby and ultimately minimize maternal, neonatal morbidity and mortality.<sup>(14, 15)</sup>

## **II. Materials & Method**

**Research design:** A descriptive exploratory research design was adopted in this study.

**Setting:** The study was conducted at 6 MCH centers at Hodeida city in Yemen, where two centers were randomly chosen from each of the three available directorates in the city.

The six MCH centers were:

1. Al-Bostan center to represent Al-Meena directorate
2. AL-Zabaria center to represent Al-Meena directorate
3. Gholeel center to represent Al-Hawak directorate
4. Al-Rabasa center to represent Al-Hawak directorate
5. Zayd center to represent Al-Hali directorate
6. Al-Salkhanah center to represent Al-Hali directorate

These above mentioned six setting were selected because they represent almost all directorates in Hodeida. They were also particularly selected because the number of attendants in antenatal clinics is satisfactory for the study.

**Subjects:** A convenience sample of 330 pregnant women constituted the study sample, 55 women were conveniently chosen from each of the previously mentioned settings according to the following inclusion criteria:

- Has normal pregnancy course.
- Free from any medical disease.
- Attending antenatal clinic.
- Willing to participate in the study.

**Tools for data collection:** One tool was used for data collection

**Tool: Pregnant women's self-care practices structured interview schedule:**

A structured interview schedule was developed and utilized for data collection. This tool was originally developed by Hables R (2008) and then adapted by researcher to assess self-care practices during pregnancy. It entailed three main parts: basic data, universal self-care practices and health deviation self-care practices.<sup>(15)</sup>

### **Part I: Basic data structured interview schedule**

- a. Socio-demographic characteristics such as: age, marital status, pregnant's woman and husband's level of education, pregnant's woman and husband's occupation, family type, housing condition, residence, income.
- b. Reproductive history such as: gravity, parity, last inter pregnancy interval, number of abortions, number of living children, number of still births.
- c. History of previous and current pregnancy such as: perinatal complications, duration of present pregnancy, time of first antenatal visit, number of antenatal visits.

## **Part II: Universal self-care practices**

It was adapted by the researcher to assess pregnant women's self-care practices according to Orem's model. It was comprised of 27 items as follows:

- Personal hygiene (4 items), Teeth care (2 items), Breast care (2 items), Clothes (2 items), Nutrition (2 items), Fluid intake (2 items), Rest and activity (2 items), Exercises (2 items), Travel (2 items), Drug intake (2 items), Immunization (2 items), Follow-up and number of visits (2 items).

The subject's response for each item varied between not done (1), sometimes (2), and always (3).

The total score of universal self-care practices was ranged between (27 to 81):

- Poor self-care practices <45.
- Fair self-care practices 45-63.
- Good self-care practices >63.

## **Part III: Health deviation self-care practices during pregnancy:**

It was adapted by researcher to assess self-care practices in relation to relief minor discomforts according to Orem's model. Namely:

- Nausea and vomiting (6 items), Heart burn (6 items), Constipation (5 items), Backache (6 items), Legs cramps (6 items), Feet edema (6 items), Increased vaginal discharge (6 items), Frequency of urination (6 items), Insomnia (6 items), Shortness of breath (5 items)

- The subject's response for each item varied between never (1), sometimes (2), always (3).

The total score of health deviation self-care practices was ranged between (58 to 174):

- Poor self-care practices <96
- Fair self-care practices 97 – 135
- Good self-care practices >135

## **Method: The study was conducted according to the following steps:**

1. The study protocol was reviewed and approved by the Ethical Committee and Institutional Review Board of the Faculty of Nursing, Alexandria University.
2. An official letter from Faculty of Nursing, Alexandria University was directed to responsible authorities of the study setting to take their permission to collect data after explaining the purpose of the study.
3. Tools of data collection were adapted by the researcher, and then tools were tested for content validity by Jury of five experts in the related field. Tool reliability was checked by Cronbach's alpha test, the result was statistically acceptable (Alpha= 0.88).
4. A pilot study was carried on 33 pregnant women who were excluded from the selected subjects to ascertain relevance, clarity and applicability of the tools and also to detect any problem peculiar to the statements as sequence and clarity that might interfere with the process of data collection. After conducting the pilot study, it was found that the sentences of the tools were clear and relevant; however, few words had been modified. Following this pilot study the tools were revised, reconstructed and made ready for use.
5. Collection of data:
  - Data was collected over a period of 3 months starting from November 2016 to the end of January 2017.
  - Data was collected through interviewing technique where each subject was individually interviewed before antenatal care is given.
  - The researcher explained the content of the tools.
  - Data were collected 4 days/ week; 6-8 pregnant woman/day.
  - The average time needed to complete the questionnaire ranged between 20-25 minutes, depending upon degree of understanding and response of each pregnant woman.
6. Statistical analysis was done: after data were collected, it was revised, coded and fed to statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft excel software. Qualitative data were described using number and percent. Quantitative data were described using mean, standard deviation. Significance of the obtained results was judged at the 5% level. The following statistical tests were used:
  - a- Chi square test: For categorical variables, to compare between different groups.
  - b- Fisher's Exact or Monte Carlo correction: Correction for chi-square when more than 20% of the cells have expected count less than 5.
  - c- Reliability Statistics was assessed using Cronbach's Alpha test.

## **Ethical consideration**

For each recruited subject the following issues were considered: securing the subject's informed written consent after explanation of research purpose, keep her privacy, anonymity and right to withdraw at any time as well as assuring confidentiality of her data.

### III. Results

The results of this study will be presented under the following headings: Basic data, Universal self-care practices during pregnancy, and Health deviation self-care practices during pregnancy.

#### 1. Basic data

Table (I) shows the number & percent distribution of the study subjects according to their socio-demographic data. Almost half (54.2%) of the subjects were in their twenties, more than one third (40.0%) of them were 30 years old or more. Table also shows that the mean and standard deviation of the study subject age (28.10 ±5.81). In relation to marital status, the majority (94.9%) of them were married. More than two thirds (69.1%) of those women were housewives. Concerning pregnant woman's level of education, only one fifth (19.6%) of them were illiterate and about one quarter (27.0%) of them had primary or preparatory education. Concerning husband's level of education, only 12.1% of them were illiterate, whereas one third (30.9%) of them had either secondary or university education or higher. Slightly more than half of husbands (53.3%) were workers in different settings. Referring to family type, it was clear that more than two fifths (46%) of pregnant women were living in nuclear families, compared to more than one third (36.4%) of them were living in extended ones with mother in law. Regarding residence, almost four fifths (78.2%) of families were urban dwellers. According to the subjects reports, more than half (58.5%) of them believed that their families monthly income were just enough, and only (15.4%) of them had enough & more income.

**Table (I):** Number and percent distribution of the study subjects according to their socio-demographic data

| Socio-demographic data                      | NO.<br>N=330 | %    |
|---|--------------|------|
| <b>Age:</b>                                 |              |      |
| • <20                                       | 19           | 5.8  |
| • 20 - < 30                                 | 179          | 54.2 |
| • ≥ 30                                      | 132          | 40.0 |
| Min. – Max.                                 | 18.0 – 46.0  |      |
| Mean ±SD.                                   | 28.10 ±5.81  |      |
| <b>Marital status:</b>                      |              |      |
| • Married                                   | 313          | 94.9 |
| • Divorced                                  | 10           | 3.0  |
| • Widow                                     | 7            | 2.1  |
| <b>Pregnant woman's level of education:</b> |              |      |
| • Illiterate                                | 65           | 19.6 |
| • Primary or preparatory education          | 89           | 27.0 |
| • Secondary education or equivalent         | 88           | 26.7 |
| • University education or higher            | 88           | 26.7 |
| <b>Pregnant woman's type of work:</b>       |              |      |
| • House wife                                | 228          | 69.1 |
| • Worker                                    | 20           | 6.1  |
| • Employee                                  | 82           | 24.8 |
| <b>Husband's level of education:</b>        |              |      |
| • Illiterate                                | 40           | 12.1 |
| • Primary or preparatory education          | 86           | 26.1 |
| • Secondary education or equivalent         | 102          | 30.9 |
| • University education or higher            | 102          | 30.9 |
| <b>Husband's type of work:</b>              |              |      |
| • Do not work                               | 15           | 4.6  |
| • Worker                                    | 176          | 53.3 |
| • Merchant                                  | 12           | 3.6  |
| • Employee                                  | 127          | 38.5 |
| <b>Family type:</b>                         |              |      |
| • Nuclear                                   | 152          | 46   |
| • Extended without mother in law            | 58           | 17.6 |
| • Extended with mother in law               | 120          | 36.4 |
| <b>Residence</b>                            |              |      |
| • Urban                                     | 258          | 78.2 |
| • Rural                                     | 72           | 21.8 |
| <b>Housing condition:</b>                   |              |      |
| • Water                                     | 303          | 91.8 |
| • Electricity                               | 145          | 43.9 |
| <b>Income:</b>                              |              |      |
| • Not enough                                | 86           | 26.1 |
| • Just enough                               | 193          | 58.5 |
| • Enough & more                             | 51           | 15.4 |

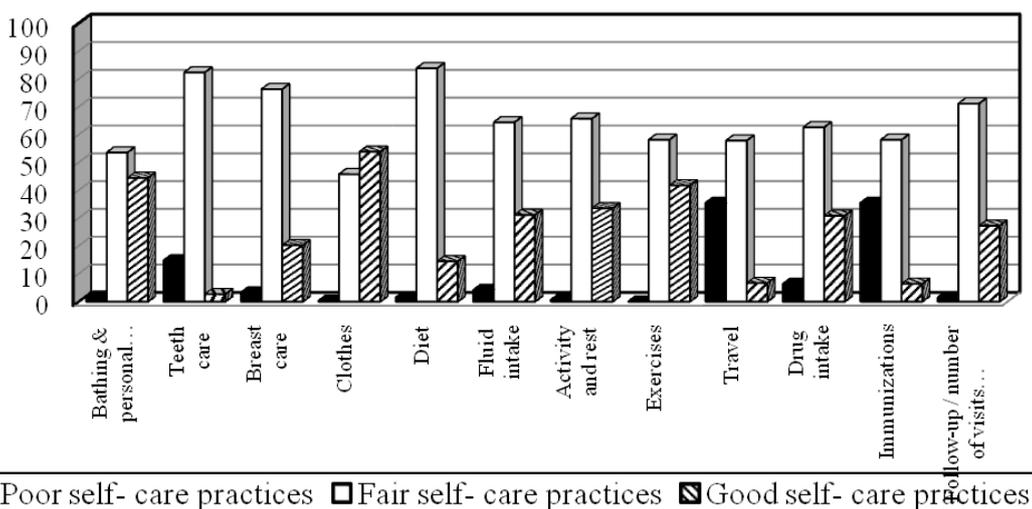
Table (II) presents number and percent distribution of the study subjects according to their reproductive history. More than one quarter (26.4%) of the study subjects were primigravida. While almost one half (49.1%) of them were pregnant for two or three times. It was also found that more than three fifths (65.0%) of those pregnant women gave birth one or two times, whereas about one third (30.9%) of them had delivered three times or more. Only 4.1% were nulliparous. Accordingly, two-thirds (61.7%) of study subjects had less than two years interpregnancy interval, and rest of them (38.3%) had more than two years interval. Almost three quarters (72.8%) had no previous history of abortion. Slightly less than two fifths (38.7%) of the study subjects had one living child. And only 9.5% of them had no living child. It was also obvious that more than two thirds (69.1%) of pregnant women have had no child loss, while slightly more than one fourth (27.6%) had one child loss.

**Table (II):** Number & percent distribution of the study subjects according to their reproductive history

| Reproductive history                        | NO.          | %    |
|---|--------------|------|
| <b>Gravidity:</b>                           | <b>N=330</b> |      |
| • Primigravida                              | 87           | 26.4 |
| • 2-3                                       | 162          | 49.1 |
| • ≥ 4                                       | 81           | 24.5 |
| <b>Parity :</b>                             | <b>N=243</b> |      |
| • Nullipara                                 | 10           | 4.1  |
| • 1-2                                       | 158          | 65.0 |
| • ≥ 3                                       | 75           | 30.9 |
| <b>Last inter-pregnancy interval :</b>      |              |      |
| • Less than two years                       | 150          | 61.7 |
| • More than two years                       | 93           | 38.3 |
| <b>Number of abortions:</b>                 |              |      |
| • None                                      | 177          | 72.8 |
| • Once                                      | 50           | 20.6 |
| • Twice or more                             | 16           | 6.6  |
| <b>Number of living children:</b>           |              |      |
| • None                                      | 23           | 9.5  |
| • One                                       | 94           | 38.7 |
| • Two                                       | 61           | 25.1 |
| • Three or more                             | 65           | 26.7 |
| <b>Number of still birth (child loss) :</b> |              |      |
| • None                                      | 168          | 69.1 |
| • One                                       | 67           | 27.6 |
| • Two more                                  | 8            | 3.3  |

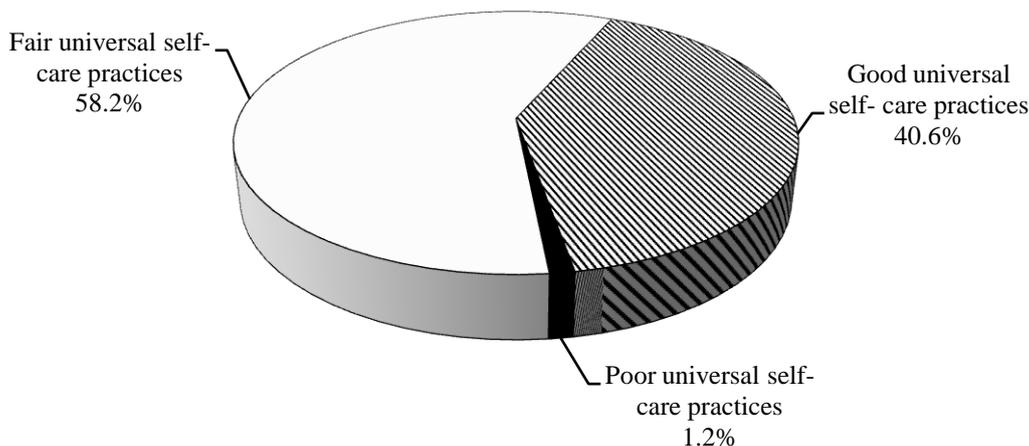
## 2. Universal self-care practices during pregnancy

Figure (1) portrays percent distribution of the study subjects according to their total score of each universal self-care practices during pregnancy. In relation to **bathing & personal hygiene**, it was found that more than one half (53.6%) of the study subjects obtained fair self-care practices, whilst more than two fifths (44.5%) of them got good self-care practices. Concerning **teeth care**, it was obvious that the majority (82.4%) of the subjects attained fair self-care practices. Regarding **breast care**, it was observed that three quarters (76.4%) of the subjects came by fair self-care practices, and only one fifth (20.3%) of them obtained good self-care practices. It is interesting to notice that more than one half (53.9%) of subjects had good self-care practices in relation to clothes. On the other hand, only 14.5 had good self-care practices in relation to **nutrition**. And only one third of them who had good self-care practices in relation to **fluid intake**. Regarding **activity and rest**, it was found that more than three fifths (65.8%) of the study subjects got fair self-care practices, whereas one third (33.6%) of them obtained good self-care practices. Furthermore, more one half (58.2%) of the subjects acquired fair self-care practices with regard to **exercises**. Almost three fifths (57.9%, 62.7%, 62.7%) of subjects had fair self-care practices regarding **travel, drug intake and immunization** respectively. In relation to **follow-up & number of visits during pregnancy**, it was obvious that almost three quarters (71.2%) of the subjects attained fair self-care practices, compared to more than one fourth (27.3%) of them got good self-care practices.



**Figure (1):** Percent distribution of the study subjects according to their total score of each universal self-care practices during pregnancy

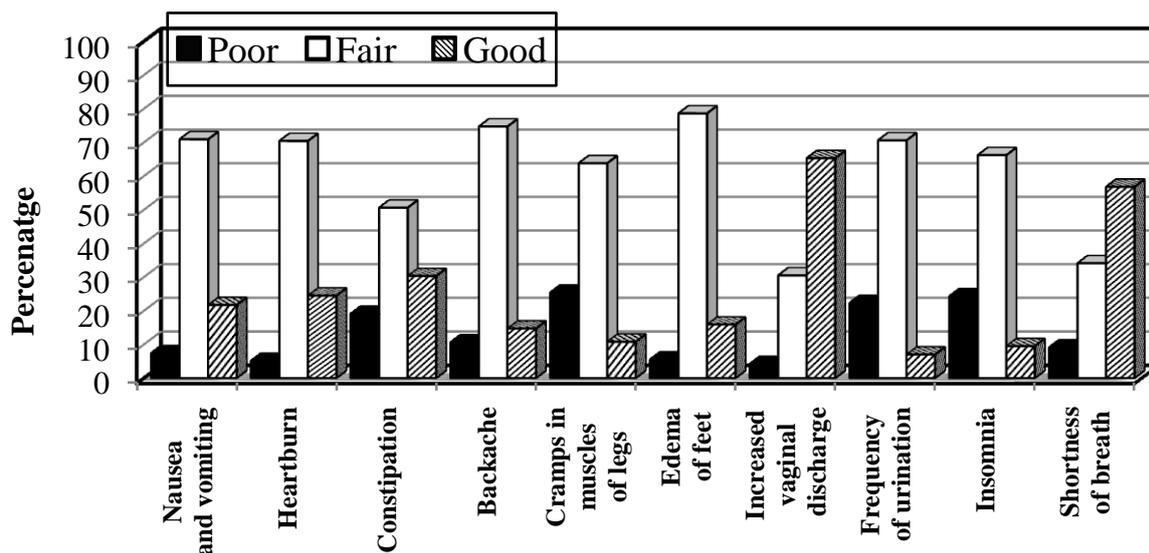
Figure (2) expounds percent distribution of the study subjects according to their total score of universal self-care practices during pregnancy. It was obvious that almost three fifths (58.2%) of the pregnant women obtained **fair self-care practices**, while 40.6% of them had **good self-care practices**.



**Figure (2):** Percent distribution of the study subjects according to their total score of universal self-care practices during pregnancy

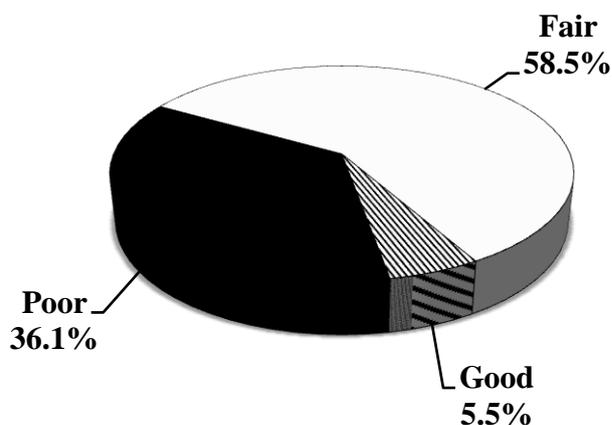
### 3. Health deviation self-care practices during pregnancy

Figure (3) portray percent distribution of the study subjects according to their total score of health deviation self-care practices during pregnancy. This figure displays that fair self-care practices (70.9% & 70.4% & 50.6% & 74.7% & 63.8% & 78.6% & 70.6% & 66.2%) were attained to meet requisites of nausea and vomiting & heartburn & constipation & backache & legs cramps & edema of feet & frequency of urination & insomnia respectively. On the other hand, good self-care practices (65.3% & 56.8%) were gained by to meet the requisites of increased vaginal discharge & shortness of breath.



**Figure (3):** Percent distribution of the study subjects according to their total score of health deviation self-care practices during pregnancy

Figure (4) typify percent distribution of the study subjects according to their percent score of health deviation self-care practices during pregnancy. It was evident that more than one half (58.5%) of subjects had got fair health deviation self-care practices, compared to only 5.5% of them who had good health deviation self-care practices.



**Figure (4):** Percent distribution of the study subjects according to their percent score of health deviation self-care practices during pregnancy

Table (III) exhibits the relationship between total score of universal self-care practices & socio-demographic data. A statistically significant correlation is observed between the total score of universal self-care practices and most of subject’s socio-demographic data. Namely: pregnant woman’s level of education & her type of work ( $p < 0.001$ ), husband’s level of education & his type of work ( $p 0.004$  &  $0.018$ ), residence ( $p 0.007$ ), availability of electricity ( $p 0.003$ ) and income ( $p 0.001$ ). Specifically, more than one half (54.5% & 59.8%) of the study subjects who had good universal self-care practices completed university education & were employees respectively. About three fifths (53.9% & 58.3%) of the study subjects who had got good universal self-care practices reported that their husbands had university education & were merchants. Good universal self-care practices was also evident among one half or more (45.0% & 49.7% & 66.7%) of subjects who were urban dwellers, had electricity, had enough or more income respectively.

**Table (III):** Relationship between total score of universal self-care practices & socio-demographic data

| Socio-demographic data                      | Total score of universal self-care practices |      |              |      |          |      | χ <sup>2</sup> | MC <sub>p</sub> |
|---|--|------|--------------|------|----------|------|----------------|-----------------|
|   | Poor <45                                     |      | Fair 45 – 63 |      | Good >63 |      |                |                 |
|   | NO.  | %    | NO.          | %    | NO.      | %    |                |                 |
| <b>Age</b>                                  |  |      |              |      |          |      |                |                 |
| • <20                                       | 2  | 10.5 | 10           | 52.6 | 7        | 36.8 | 9.819          | 0.108           |
| • 20 - < 30                                 | 2  | 1.1  | 101          | 56.4 | 76       | 42.5 |                |                 |
| • ≥ 30                                      | 0  | 0.0  | 81           | 61.4 | 51       | 38.6 |                |                 |
| <b>Marital status:</b>                      |  |      |              |      |          |      |                |                 |
| • Married                                   | 4  | 1.3  | 184          | 58.8 | 125      | 39.9 | 4.080          | 0.387           |
| • Divorced                                  | 0  | 0.0  | 6            | 60.0 | 4        | 40.0 |                |                 |
| • Widow                                     | 0  | 0.0  | 2            | 28.6 | 5        | 71.4 |                |                 |
| <b>Pregnant woman's level of education:</b> |  |      |              |      |          |      |                |                 |
| • Illiterate                                | 1  | 1.5  | 51           | 78.5 | 13       | 20.0 | 27.676*        | <0.001*         |
| • Primary or preparatory education          | 3  | 3.4  | 57           | 64.0 | 29       | 32.6 |                |                 |
| • Secondary education or equivalent         | 0  | 0.0  | 44           | 50.0 | 44       | 50.0 |                |                 |
| • University education or higher            | 0  | 0.0  | 40           | 45.5 | 48       | 54.5 |                |                 |
| <b>Pregnant woman's type of work:</b>       |  |      |              |      |          |      |                |                 |
| • House wife                                | 2  | 0.9  | 148          | 64.9 | 78       | 34.2 | 22.897*        | <0.001*         |
| • Worker                                    | 2  | 10.0 | 11           | 55.0 | 7        | 35.0 |                |                 |
| • Employee                                  | 0  | 0.0  | 33           | 40.2 | 49       | 59.8 |                |                 |
| <b>Husband's level of education:</b>        |  |      |              |      |          |      |                |                 |
| • Illiterate                                | 1  | 2.5  | 30           | 75.0 | 9        | 22.5 | 16.110*        | 0.004*          |
| • Primary or preparatory education          | 2  | 2.3  | 53           | 61.6 | 31       | 36.0 |                |                 |
| • Secondary education or equivalent         | 1  | 1.0  | 62           | 60.8 | 39       | 38.2 |                |                 |
| • University education or higher            | 0  | 0.0  | 47           | 46.1 | 55       | 53.9 |                |                 |
| <b>Husband's type of work</b>               |  |      |              |      |          |      |                |                 |
| • Do not work                               | 1  | 6.7  | 11           | 73.3 | 3        | 20.0 | 14.185*        | 0.018*          |
| • Worker                                    | 3  | 1.7  | 111          | 63.1 | 62       | 35.2 |                |                 |
| • Merchant                                  | 0  | 0.0  | 5            | 41.7 | 7        | 58.3 |                |                 |
| • Employee                                  | 0  | 0.0  | 65           | 51.2 | 62       | 48.8 |                |                 |
| <b>Family type</b>                          |  |      |              |      |          |      |                |                 |
| • Nuclear                                   | 2  | 1.3  | 82           | 53.9 | 68       | 44.7 | 2.203          | 0.328           |
| • Extended without mother in law            | 2  | 1.2  | 105          | 61.8 | 63       | 37.1 | 1.984          | 0.343           |
| • Extended with mother in law               | 0  | 0.0  | 76           | 62.3 | 46       | 37.7 | 2.886          | 0.216           |
| <b>Residence</b>                            |  |      |              |      |          |      |                |                 |
| • Urban                                     | 3  | 1.2  | 139          | 53.9 | 116      | 45.0 | 9.813*         | 0.007*          |
| • Rural                                     | 1  | 1.4  | 53           | 73.6 | 18       | 25.0 |                |                 |
| <b>Housing condition:</b>                   |  |      |              |      |          |      |                |                 |
| • Water                                     | 4  | 1.3  | 172          | 56.8 | 127      | 41.9 | 2.829          | 0.214           |
| • Electricity                               | 0  | 0.0  | 73           | 50.3 | 72       | 49.7 | 10.707*        | 0.003*          |
| <b>Income:</b>                              |  |      |              |      |          |      |                |                 |
| • Not enough                                | 3  | 3.5  | 59           | 68.6 | 24       | 27.9 | 22.510*        | <0.001*         |
| • Just enough                               | 1  | 0.5  | 116          | 60.1 | 76       | 39.4 |                |                 |
| • Enough & more                             | 0  | 0.0  | 17           | 33.3 | 34       | 66.7 |                |                 |

χ<sup>2</sup>, p: χ<sup>2</sup> and p values for **Chi square test** for comparing between the three groups

MC<sub>p</sub>: p value for **Monte Carlo** for Chi square test for comparing between the three groups

\*: Statistically significant at p ≤ 0.05

Table (IV) denotes the relationship between total score of universal self-care practices & reproductive history. Only gravidity was statistically significant correlated with total score of universal self-care practices (p = 0.006). Specifically, good universal self-care practices were noticed among majority (87%) of subjects who were pregnant for two or more times, compared to one only third (29.9%) of them who were primigravida. The relationship between total score of universal self-care practices & history of previous & current pregnancy is portrayed in the table (VIII). Generally, the table indicates absence of a statistically significant correlation between total score of universal self-care practices and history of previous pregnancy except presence of bleeding as one of complications (p0.025), beside, Cesarean section as one of types of previous deliveries (p0.007). Where only one fourth (25.8%) of subjects who had previous history of bleeding had good universal self-care practices. On the other hand, good universal self-care practices were obvious among about two thirds (64.9%) of subjects who had previous history of cesarean birth.

Referring to history of current pregnancy, merely there is a statistically significant correlation between total score of universal self-care practices and duration of pregnancy (MC<sub>p</sub>=0.001) & number of visits (p0.038). The table makes clear that good universal self-care practices were observed among three fifths (58.6%) of

subjects who were in their first trimester of pregnancy. Additionally, less than one half (45.2%) of subjects who visited health center 4 or more had got good universal self-care practices.

There is an obvious statistically significant correlation between percent score of health deviation self-care practices and most of socio-demographic data where p. value was  $\leq 0.001$  for all of the following: pregnant woman's level of education & her type of work, husband's level of education & his type of work, residence, availability of electricity and income. Generally, it was found that fair percent score of health deviation self-care practices were clear among less than three quarters (70.5% & 69.5%) of subjects who had university education or higher & were employees respectively. On the same time, more than two thirds (69.6% & 75.0%) of the study subjects who had got fair percent score of health deviation self-care practices reported that their husbands had university education & were merchants respectively. Fair percent score of health deviation self-care practices was also apparent among more than three fifths (61.6% & 69.7% & 64.7%) of subjects who were urban dwellers & had electricity & had enough or more income respectively.

**Table (IV):** Relationship between total score of universal self-care practices & reproductive history

| Reproductive history                     | Total score of universal self-care practices |     |              |      |          |      | $\chi^2$ | MC p   |
|--|--|-----|--------------|------|----------|------|----------|--------|
|  | Poor <45                                     |     | Fair 45 – 63 |      | Good >63 |      |          |        |
|  | NO.  | %   | NO.          | %    | NO.      | %    |          |        |
| <b>Gravidity:</b>                        |  |     |              |      |          |      |          |        |
| • Primigravida                           | 4  | 4.6 | 57           | 65.5 | 26       | 29.9 | 12.878*  | 0.006* |
| • 2-3                                    | 0  | 0.0 | 87           | 53.7 | 75       | 46.3 |          |        |
| • $\geq 4$                               | 0  | 0.0 | 48           | 59.3 | 33       | 40.7 |          |        |
| <b>Parity :</b>                          |  |     |              |      |          |      |          |        |
| • Nullipara                              | -  | -   | 4            | 40.0 | 6        | 60.0 | 1.668    | 0.436  |
| • 1-2                                    | -  | -   | 86           | 54.4 | 72       | 45.6 |          |        |
| • $\geq 3$                               | -  | -   | 45           | 60.0 | 30       | 40.0 |          |        |
| <b>Last inter pregnancy interval :</b>   |  |     |              |      |          |      |          |        |
| • Less than two years                    | -  | -   | 90           | 60.0 | 60       | 40.0 | 3.135    | 0.077  |
| • More than two years                    | -  | -   | 45           | 48.4 | 48       | 51.6 |          |        |
| <b>Number of abortions:</b>              |  |     |              |      |          |      |          |        |
| • None                                   | -  | -   | 94           | 53.1 | 83       | 46.9 | 4.712    | 0.095  |
| • Once                                   | -  | -   | 28           | 56.0 | 22       | 44.0 |          |        |
| • Twice or more                          | -  | -   | 13           | 81.3 | 3        | 18.8 |          |        |
| <b>Number of living children:</b>        |  |     |              |      |          |      |          |        |
| • None                                   | -  | -   | 10           | 43.5 | 13       | 56.5 | 1.961    | 0.582  |
| • One                                    | -  | -   | 53           | 56.4 | 41       | 43.6 |          |        |
| • Two                                    | -  | -   | 33           | 54.1 | 28       | 45.9 |          |        |
| • Three or more                          | -  | -   | 39           | 60.0 | 26       | 40.0 |          |        |
| <b>Number of still birth(child loss)</b> |  |     |              |      |          |      |          |        |
| • None                                   | -  | -   | 86           | 51.2 | 82       | 48.8 | 4.235    | 0.116  |
| • One                                    | -  | -   | 44           | 65.7 | 23       | 34.3 |          |        |
| • Two or more                            | -  | -   | 5            | 62.5 | 3        | 37.5 |          |        |

$\chi^2$ , p:  $\chi^2$  and p values for **Chi square test** for comparing between the three groups

MC p: p value for **Monte Carlo** for Chi square test for comparing between the three groups

\*: Statistically significant at  $p \leq 0.05$

Table (V) demonstrates absence of a statistically significant correlation between percent score of health deviation self-care practices and most of reproductive history items except number of abortions ( $p = 0.044$ ) and number of still births ( $p = 0.001$ ). Where almost two thirds (65.0% & 64.9%) of the subjects who did not have a history of abortion & still births respectively had fair percent score of health deviation self-care practices.

**Table (V):** Relationship between percent score of health deviation self-care practices and reproductive history

| Reproductive history | Health deviation self-care practices |      |                            |      |                               |     | $\chi^2$ | P           |
|----------------------|--------------------------------------|------|----------------------------|------|-------------------------------|-----|----------|-------------|
|                      | Poor (<50%) (n = 119)                |      | Fair (50% -<75%) (n = 193) |      | Good ( $\geq 75\%$ ) (n = 18) |     |          |             |
|                      | No.                                  | %    | No.                        | %    | No.                           | %   |          |             |
| <b>Gravidity:</b>    |                                      |      |                            |      |                               |     |          |             |
| • Primigravida       | 35                                   | 40.2 | 47                         | 54.0 | 5                             | 5.7 | 5.040    | MC p= 0.280 |
| • 2 – 3              | 49                                   | 30.2 | 104                        | 64.2 | 9                             | 5.6 |          |             |
| • $\geq 4$           | 35                                   | 43.2 | 42                         | 51.9 | 4                             | 4.9 |          |             |

| Parity :                          |    |      |     |      |    |     |         |                |  |
|-----------------------------------|----|------|-----|------|----|-----|---------|----------------|--|
| • Nullipara                       | 3  | 30.0 | 7   | 70.0 | 0  | 0.0 | 4.465   | MC<br>p=0.318  |  |
| • 1 – 2                           | 48 | 30.4 | 101 | 63.9 | 9  | 5.7 |         |                |  |
| • ≥ 3                             | 33 | 44.0 | 38  | 50.7 | 4  | 5.3 |         |                |  |
| Last inter-pregnancy interval :   |    |      |     |      |    |     |         |                |  |
| • Less than two years             | 58 | 38.7 | 84  | 56.0 | 8  | 5.3 | 2.992   | 0.224          |  |
| • More than two years             | 26 | 28.0 | 62  | 66.7 | 5  | 5.4 |         |                |  |
| Number of abortions:              |    |      |     |      |    |     |         |                |  |
| • None                            | 51 | 28.8 | 115 | 65.0 | 11 | 6.2 | 9.181*  | MC<br>p=0.044* |  |
| • Once                            | 25 | 50.0 | 23  | 46.0 | 2  | 4.0 |         |                |  |
| • Twice or more                   | 8  | 50.0 | 8   | 50.0 | 0  | 0.0 |         |                |  |
| Number of living children:        |    |      |     |      |    |     |         |                |  |
| • None                            | 7  | 30.4 | 16  | 69.6 | 0  | 0.0 | 4.475   | MC<br>p=0.606  |  |
| • One                             | 29 | 30.9 | 60  | 63.8 | 5  | 5.3 |         |                |  |
| • Two                             | 20 | 32.8 | 37  | 60.7 | 4  | 6.6 |         |                |  |
| • Three or more                   | 28 | 43.1 | 33  | 50.8 | 4  | 6.2 |         |                |  |
| Number of still birth(child loss) |    |      |     |      |    |     |         |                |  |
| • None                            | 46 | 27.4 | 109 | 64.9 | 13 | 7.7 | 16.375* | MC<br>p=0.001* |  |
| • One                             | 33 | 49.3 | 34  | 50.7 | 0  | 0.0 |         |                |  |
| • Two or more                     | 5  | 62.5 | 3   | 37.5 | 0  | 0.0 |         |                |  |

$\chi^2$ , p:  $\chi^2$  and p values for **Chi square test** for comparing between the three groups  
 MC p: p value for **Monte Carlo** for Chi square test for comparing between the three groups  
 \*: Statistically significant at  $p \leq 0.05$

Table (VI) exhibits the relationship between percent score of health deviation self-care practices and history of previous and current pregnancy. This table indicates absence of a statistically significant correlation between percent score of health deviation self-care practices and history of previous pregnancy except history of bleeding (p 0.009) and history of cesarean section (p 0.043), where two fifths (41.9%) of subjects who had previous history of bleeding had fair health deviation self-care practices. On the other hand, fair percent score of health deviation self-care practices were obvious among about three quarters (70.3%) of subjects who had previous history of cesarean birth. Regarding to history of current pregnancy, merely there is a statistically significant correlation between percent score of health deviation self-care practices and number of visits in current pregnancy (p 0.005). More than two thirds (67.9%) of subjects who visited health center 4 times or more had got fair percent score of health deviation self-care practices.

**Table (VI):** Relationship between percent score of health deviation self-care practices and history of previous and current pregnancy

| History of previous                            | Health deviation self-care practices |      |                            |      |                      |      | $\chi^2$ | P             |
|--|--------------------------------------|------|----------------------------|------|----------------------|------|----------|---------------|
|  | Poor (<50%) (n = 119)                |      | Fair (50% -<75%) (n = 193) |      | Good (≥75%) (n = 18) |      |          |               |
|  | No.                                  | %    | No.                        | %    | No.                  | %    |          |               |
| <b>Complications in previous pregnancies:*</b> |                                      |      |                            |      |                      |      |          |               |
| • None   | 48                                   | 29.6 | 105                        | 64.8 | 9                    | 5.6  | 5.279    | 0.071         |
| • Bleeding                                     | 18                                   | 58.1 | 13                         | 41.9 | 0                    | 0.0  | 9.524*   | 0.009*        |
| • Hypertension                                 | 12                                   | 38.7 | 16                         | 51.6 | 3                    | 9.7  | 1.844    | 0.398         |
| • Others **                                    | 12                                   | 37.5 | 19                         | 59.4 | 1                    | 3.1  | 0.436    | 0.804         |
| <b>Type of previous deliveries:*</b>           |                                      |      |                            |      |                      |      |          |               |
| • Vaginal birth ( normal)                      | 47                                   | 39.2 | 70                         | 58.3 | 3                    | 2.5  | 5.170    | 0.075         |
| • Vaginal birth with episiotomy                | 32                                   | 36.0 | 51                         | 57.3 | 6                    | 6.7  | 0.767    | 0.681         |
| • Cesarean section (C / S)                     | 7                                    | 18.9 | 26                         | 70.3 | 4                    | 10.8 | 6.279*   | 0.043*        |
| <b>Complications in previous deliveries:</b>   |                                      |      |                            |      |                      |      |          |               |
| • None   | 53                                   | 34.2 | 91                         | 58.7 | 11                   | 7.1  | 2.094    | 0.351         |
| • Prolonged labor                              | 9                                    | 31.0 | 19                         | 65.5 | 1                    | 3.4  | 0.854    | MC<br>p=0.824 |
| • Preterm labor                                | 7                                    | 41.2 | 9                          | 52.9 | 1                    | 5.9  | 1.842    | MC<br>p=0.399 |
| • Bleeding                                     | 12                                   | 46.2 | 14                         | 53.8 | 0                    | 0.0  | 2.126    | MC<br>p=0.349 |
| • Others ***                                   | 7                                    | 38.9 | 10                         | 55.6 | 1                    | 5.6  | 1.480    | MC<br>p=0.492 |
| <b>Complications in previous puerperium :</b>  |                                      |      |                            |      |                      |      |          |               |
| • None   | 67                                   | 35.1 | 112                        | 58.6 | 12                   | 6.3  | 1.154    | 0.562         |
| • Postpartum hemorrhage                        | 4                                    | 33.3 | 8                          | 66.7 | 0                    | 0.0  | 0.515    | MC<br>p=1.000 |
| • Puerperal fever                              | 5                                    | 62.5 | 3                          | 37.5 | 0                    | 0.0  | 3.873    | MC<br>p=0.155 |

|   |     |      |     |      |    |     |         |                       |
|---|-----|------|-----|------|----|-----|---------|-----------------------|
| • Breast Complications                          | 6   | 27.3 | 15  | 68.2 | 1  | 4.5 | 1.477   | <sup>MC</sup> p=0.520 |
| • Others ****                                   | 1   | 25.0 | 3   | 75.0 | 0  | 0.0 | 1.041   | <sup>MC</sup> p=1.000 |
| <b>History of current pregnancy</b>             |     |      |     |      |    |     |         |                       |
| <b>Duration of current pregnancy in month</b>   |     |      |     |      |    |     |         |                       |
| • First trimester                               | 22  | 31.4 | 44  | 62.9 | 4  | 5.7 | 1.650   | 0.800                 |
| • Second trimester                              | 38  | 36.9 | 61  | 59.2 | 4  | 3.9 |         |                       |
| • Third trimester                               | 59  | 37.6 | 88  | 56.1 | 10 | 6.4 |         |                       |
| <b>Is this pregnancy desired?</b>               |     |      |     |      |    |     |         |                       |
| • Yes   | 91  | 34.0 | 163 | 60.8 | 14 | 5.2 | 3.224   | 0.200                 |
| • No  | 28  | 45.2 | 30  | 48.4 | 4  | 6.5 |         |                       |
| <b>First antenatal visit in this pregnancy:</b> |     |      |     |      |    |     |         |                       |
| • First trimester                               | 79  | 35.3 | 132 | 58.9 | 13 | 5.8 | 3.392   | <sup>MC</sup> p=0.495 |
| • Second trimester                              | 23  | 37.1 | 38  | 61.3 | 1  | 1.6 |         |                       |
| • Third trimester                               | 17  | 38.6 | 23  | 52.3 | 4  | 9.1 |         |                       |
| <b>Number of visits in current pregnancy</b>    |     |      |     |      |    |     |         |                       |
| • 1 – 3   | 100 | 40.7 | 136 | 55.3 | 10 | 4.1 | 10.759* | 0.005*                |
| • 4 or more                                     | 19  | 22.6 | 57  | 67.9 | 8  | 9.5 |         |                       |

$\chi^2$ , p:  $\chi^2$  and p values for **Chi square test** for comparing between the three groups

<sup>MC</sup>p: p value for **Monte Carlo** for Chi square test for comparing between the three groups

\*: Statistically significant at  $p \leq 0.05$

#### IV. Discussion

Despite pregnancy is the normal event in the life of women, it needs special care from the time of conception to the postnatal stage, thus it is a crucial time to promote healthy behaviors and parenting skills. Unfortunately, **World Health Organization (WHO)** 2012 estimated that every year nearly one third of a million female worldwide dying due to pregnancy related circumstances, about three-quarters of them are considered avoidable.<sup>(16, 17)</sup>

Therefore, good care during pregnancy is important for the health of mother and the development of unborn baby. Good ante-natal care links the woman and her family with the formal health system, increases the chance of using a skilled attendant at birth and contributes to good health through the life cycle. Inadequate care during this time breaks a critical link in the continuum of care, and affects both women and babies. One of the major goals of ante-natal care is health education programs that focus on promoting self-care, which may lead to reduced mortality and morbidity, improve quality of life and reduce pregnancy-related health care costs.<sup>(11)</sup>

Hormonal, metabolic, and postural changes of pregnancy may result in minor discomforts, these discomforts like, nausea & vomiting, heartburn, constipation, backache, leg cramps, edema, and leucorrhoea, frequency of urination, insomnia and shortness of breath.<sup>(18)</sup> These minor discomforts might affect the health of mother and fetus lifestyle, therefore, if pregnant women are helped to change behaviors related to lifestyle, it effectively restores their health. One of the objectives of the **WHO** by 2020 is to promote healthy lifestyle in all people and this is an effective factor in removing risk factors to prevent diseases and promote health.<sup>(19)</sup> So, **the present study aimed to** find out the self-care practices utilized by Yemeni pregnant women in Hodeida city.

The discussion of the study results will be presented under two main headings: pregnant woman universal self-care practices, health deviation self-care practices during pregnancy.

##### First: Pregnant woman universal self-care practices

The results of the present study show that almost three fifths of the study subjects had obtained fair total score of universal self-care practices and only about two fifths who had obtained good universal self-care practices. This may be attributed to many causes, which include: about one half of subjects were illiterate or had primary or preparatory qualification & about one quarter of them were primigravida which affect their knowledge about self-care. Finally unavailability of electricity in almost one half of homes. Thus, they did not have enough information about self-care during pregnancy from mass media.

These results are not in accordance with the study conducted in Iraq by **Kadham N (2015)** who found that the overall assessment of the self-care practices during prenatal period is good. This is due to availability of mass media that play a strong role by creating awareness about pregnancy related complications and negative effect on the future health of mothers and their newborn babies. Her results also showed that the mothers who are exposed to mass media are (2.253) times more likely to go for medical checkup than those who not exposed.<sup>(20)</sup>

Infection prevention in pregnancy requires preventive health behaviors, which is that healthy expectant mothers undertake to keep themselves or others healthy and prevent infection or detect an illness when there are no symptoms.<sup>(21)</sup> This statement is in line with the result of this study where more than one half of the study subjects obtained fair self-care practices regarding bathing & personal hygiene, whilst more than two fifths of

them got good self-care practices and only 1.8% had poor self-care practices. This result is expected because more than one half of subjects had good educational levels which elevate woman's awareness about importance of personal hygiene. Moreover, the availability of water in the vast majority of homes as most of them were urban dwellers.

This result is in congruent with the result of **Joshua C et al (2016)** who conducted a study in Nigeria on preventive health behaviors for infection among pregnant mothers attending antenatal clinics. They reported that 89.2% of the respondents maintained good personal hygiene.<sup>(22)</sup> On contrary, this result disagree with **Kadhani N (2015)** study in Iraq. She reported that overall assessment of the self-care practices was poor at the personal hygiene.<sup>(20)</sup> The results of the practices of bathing and personal hygiene showed that more than four fifths of the study subjects always have daily bath and wash their hands before and after the bathroom. This seems to be very good practice especially because the data was collected in the winter time. Winter in Hodeida city is characterized by being temperate and wet. This result is somewhat different in **Hables R (2008)** study in Egypt on self-care practices utilized by pregnant women in Alexandria. She stated that more than half of the subjects had a bath three or more times a week and the rest did so twice a week.<sup>(15)</sup>

In the present study, it was also evident that about three quarters of subjects did not visit the dentist during pregnancy. This result is similar with **El-Sherbini AF et al (1993)**. They found that more than three fifths of subjects did not seek dental care during pregnancy.<sup>(23)</sup> Despite the evidence that dental care during pregnancy, including prevention and treatment, is safe and important to overall health, many pregnant women do not receive oral health care. Additionally, oral health disorders have been found to be associated with a number of diseases affecting women across their lifespan such as osteoporosis of the oral cavity.<sup>(24)</sup>

In relation to breast care, the results of presents study showed that more than four fifths (86.7%) of the study subjects wash their breasts with water only. This result is satisfactory and came in line with relevant literature. During pregnancy it is best to wash the breasts with water only to avoid irritation and dryness for nipples resulting from the use of soap.<sup>(25)</sup>

Pregnancy requires management of one's appearance to accommodate the changing body. Appropriate clothing suited to the needs of the pregnant woman must be specifically designed or alterations must be occurred.<sup>(26)</sup> This statement is in line with the result of the present study which showed that the vast majority of present study subjects avoid tight bra, more than two thirds of them reported that they always wear loose clothes, and only 1.5% of them who did not. This is in congruent with medical order where doctors saw tight-clothes as a life-long abuse that resulted in problems with maternity. The pressure on the body from tight-clothes was thought to displace the internal organs in a woman; this could result in problems with her reproductive systems. As a consequence women were said to have weakened systems that prevented them from getting pregnant or carrying the child to term.<sup>(26)</sup>

Concerning nutritional self-care practices, the present study showed that more than one half of the study subjects sometimes consume adequate and balanced meals daily (at least 3 main meals + 2 snacks). While only 4.8% of them did not consume. This result is supported with **El-Sherbini AF et al (1993)** study who reported that two fifth of their study subjects added some foods to their diet and increased their food intake.<sup>(23)</sup> On the other hand, this result conflicts with **El-Shazali H (1989)** who did a study about dietary practices during pregnancy in Sudan. He had reported that the majority of his sample did restrict their food intake during their pregnancies because of minor discomforts and for fear of having large fetus leading to difficult labor.<sup>(27)</sup>

Meanwhile, it was also found that two thirds of the study subjects sometimes avoid consuming certain foods such as acidic and spicy foods, whereas 30.9% & 7.0% always or did not avoid consuming those foods respectively. This result agrees with the findings of **El-Sherbini AF et al (1993)** study, where more than one third of subjects eliminated fatty, greasy, and highly spiced foods from their diet.<sup>(23)</sup> Either study **Kroskey D (1989)** in Arizona about factors affecting the nutritional status of pregnant women showed a completely different result. She found that all sample had no beliefs involving the omission of meats, dairy products or grains, but 5% of subjects expressed beliefs about omitting specific foods that are included in the fruits/vegetables group.<sup>(28)</sup>

As for fluid intake, the results revealed that only 16.7% of pregnant women were not avoiding drinks containing caffeine, while the remaining majority sometimes or always avoids it. This finding is concurred with the study of **Liao S et al (2015)** in China which revealed that the incidence of caffeine consumption among pregnant women was 22.5%, whereas the majority of them did not consume it.<sup>(29)</sup>

Results about exercises showed that more than two fifths of the subjects reported that they always perform light exercises. Pregnant women who exercised regularly have more positive health promoting lifestyles. This statement is consistent with **Hung's study (1995)** in Taiwan about pregnant woman's exercise experience and labour process the study found that pregnant women who exercised maintained mother-infant health and had a better quality of life during pregnancy.<sup>(30)</sup> It also supports the recommendations of the **American College of Obstetricians and Gynecologists (ACOG) 2015** which indicated that it is safe for

pregnant women with no maternal complications or medical problems to exercise at least 30 minutes per day'. It also recommended that pregnant women should exercise based on their physical condition and stop when they feel tired. Regular exercise could help pregnant women have a smoother labor and delivery, and improve the compensatory functions of their physiological systems.<sup>(31)</sup> This finding disagree with **Lin Y.H et al (2009)** who found that one fourth of pregnant women exercised regularly, but most of subjects did not.<sup>(32)</sup>

The results about travel presented that more than two fifths of study subjects did not avoid traveling in certain months of pregnancy. However, about quarter of them who always avoid doing that. This result is accepted due to the fact that the study subjects are free from medical diseases, and that war restrictions have greatly reduced the number of flights, so the means of transportation are limited only to cars and buses. In addition, travel is predominantly local from urban areas to rural ones and vice versa.

As for drug intake, it was found that more than one half of the subjects always avoid using unprescribed drugs, compared to one fifth of them who did not, which is a large percentage. The literature had discussed the dangers of self-medication during pregnancy. **Moore & Pursaud (2012)** posited that some drugs were found to have teratogenicity and they cause a great deal of malformations and intra-uterine growth restriction. The pregnant woman should be counseled on the use of over the counter and self-prescription of drugs.<sup>(33)</sup> Furthermore, evidence suggests that self-medication may be high in rural areas with poor terrain, limited health facilities, high illiteracy level and poverty.<sup>(34)</sup>

This finding is not consistent with the Chinese **Liao S et al (2015)** where they showed that self-medication was reported to be 2.4%, which is much lower than reported for other countries.<sup>(29)</sup> This may be attributed to difference in educational level of subjects and their husbands in both samples, where study subjects & their husbands who had university education or higher in the present study were 26.7% & 30.9% respectively, whilst the other study revealed that background of college or higher education of women and their husbands had been represented by more than three quarter respectively.

It was also obvious that exactly one half of those pregnant women in the present study results always took the tetanus vaccine during pregnancy, whereas more than one third of them did not take it. A review done by **WHO (2014)** about safety of immunization during pregnancy showed that the widespread use of tetanus toxoid vaccines in many countries has not produced any signal of possible harm to pregnant women or their fetuses. The safety of widespread tetanus toxoid vaccine use over the past 40 years, as well as the substantial decrease in neonatal tetanus and increase in neonatal survival, supports vaccine use.<sup>(35)</sup> The result of the present study is not compatible with **Seger H et al (2014)** study conducted in Iraq on assessment of pregnant women's knowledge about tetanus toxoid vaccination in Karbala city who showed that the highest percentage (76.2%) of study sample have partial vaccination coverage (one to four doses of vaccine were received), compared to 15.4% of them who were unvaccinated which is much lower than the present study.<sup>(36)</sup>

On the other hand, vast majority of the present study subjects did not take the influenza virus vaccine. This is in spite of the benefits of this vaccine to the mother and newborn, particularly if it is given in the second or third trimester. These benefits have been demonstrated for both seasonal influenza and influenza pandemics. Adequate immunological responses to inactivated influenza vaccines during pregnancy and the efficient transplacental transfer of antibodies have been demonstrated in several studies.<sup>(37)</sup> However, refrain from taking the influenza virus vaccine may be due to that it is not free available in the governmental health centers and this may be attributed to the weather of Hodeida city that is hot in summer and warm in winter thus the occurrence of seasonal influenza is rare.

It was clear that slightly more than two-thirds of the pregnant women visited the health center for the first time in their first trimester, whereas nearly one fifth of them did their visits in the second trimester. This result was good since the fact that early entry into prenatal care is crucial for the supportive-educative role of the midwives to be beneficial in reducing adverse pregnancy and birth outcomes.<sup>(11)</sup>

Regarding number of visits, the results expound that three quarters of pregnant women had visited a health center 1-3 visits during current pregnancy. The remaining fourth had reported 4 visits or more. This seems to be unsatisfactory, especially that the majority of the sample in their third trimester, and this indicates that those women have no commitment to the schedule of antenatal visits. This may be due to the conditions imposed by war and low economic level resulting from increased poverty, unemployment as well as insecurity. In addition, most Yemeni pregnant women usually visit the health center only when necessary.

The situation is completely different in **El-Sherbini AF et al (1993)** who conducted a study in Egypt about assessment of knowledge, attitudes and practices of expectant mothers in relation to antenatal care in Assiut governorate. They showed that 34.5% of pregnant women attended 1 prenatal visit each month, 52% had less than 8 visits during their pregnancy and 13.5% had more than 8 visits.<sup>(23)</sup>

The results of the present study exhibits absence of any statistically significant correlation between subject's age, marital status, family type and total score of universal self-care practices. On the other hand one third of subjects were 30 years old or more & more than one half had secondary or university education & two fifths of subjects were living in nuclear families, about three fifths were multigravida & multipara which

indicates that they were married for many years. Consequently, all these factors indicates experience and might affect positively on self-care during pregnancy.

This study is not in harmony with the study of **Sen E et al (2012)** study conducted in Turkey about determination of knowledge requirements and health practices of adolescent pregnant women. They had reported that a statistically significant difference has been detected between age groups of pregnant women included in the study, marital status, and family type. All subjects are in their twenties or younger & about three quarters of them were primary school graduate & more than one half of them were married for less than a year & were members of extended families. All mentioned characteristics may negatively affect self-care practices. Hence, young maternal age, low educational level and short period of marriage generally describe women who receive little or no care and also indicates lack of awareness about importance of self-care during pregnancy.<sup>(38)</sup>

### **Second: Health deviation self-care practices**

Generally, the present study elucidated that fair self-care practices were attained to meet requisites of nausea and vomiting & heartburn & constipation & backache & legs cramps & edema of feet & frequency of urination & insomnia respectively. On the other hand, good self-care practices were gained by to meet the requisites of increased vaginal discharge & shortness of breath.

Referring to self-care practices of nausea & vomiting (NVP), it was found that more than three quarters (51.5% & 23.1%) of the study subjects sometimes or always eat dry carbohydrate meal on awakening respectively. The first step in management of NVP is a dietary advice and life style changes, it is recommended in relevant textbooks. This finding is similar with the findings of two other studies, first: **Nor S et al (2014)** study in **Mansoura, Egypt** who assessed self-care practices utilized by pregnant women in early pregnancy. Their results revealed that more than three- fifths of their sample managed NVP by eating dried toast and dried bread.<sup>(39)</sup> Second: **Wills (2005)** had done study in Australia about the dietary practices to manage nausea and vomiting during pregnancy. He found out that more than one half of his sample did manage their NVP by eating dry foods such as dry biscuits or toast before arising.<sup>(40)</sup>

Again, the present study showed that about half or more of the study subjects reported that they sometimes eat 6 small meals daily or always avoid exposure to pungent odors to overcome nausea and vomiting, compared to 19.4% who did not. This result is in accordance with **Wills (2005)** study who found that more than one half of the study sample ate small frequent meals along the day to relieve nausea.<sup>(40)</sup> This result is also in line with what was mentioned by **Herrell (2014)** in the study titled nausea and vomiting of pregnancy in Johnson city. He reported that avoidance of foods with strong smells is helpful in management of NVP.<sup>(41)</sup>

Moreover, the majority of the present study subjects had reported that they always or sometimes consume prescribed drugs as vitamin B6 to manage their discomfort. This finding is in line with the recommendations of **Campbell K et al (2016)** study about the management of nausea and vomiting of pregnancy. They reported that Pyridoxine monotherapy or doxylamine / pyridoxine combination therapy is recommended as first line in treating NVP due to their efficacy and safety.<sup>(42)</sup>

The results in the present study elucidated that the study subject had fair self-care practices for management of heartburn. It also showed that vast majority of them sometimes or always increase milk intake. These results were similar to the results of two other studies. **Ghaly A (2008)** study in Alexandria who assessed knowledge, utilization, and attitudes of maternity and gynecological nurses towards complementary and alternative therapies. She had concluded that the majority (85.5%) of her study subjects used milk to manage heartburn in pregnancy.<sup>(43)</sup>

The another study which was conducted by **Abd El-Ati I et al (2015)** on strategies used by women to alleviate heartburn during pregnancy in port-said city, Egypt. They showed that the study subjects drink cold milk to manage heartburn.<sup>(44)</sup> These results were not supported with what was written in the relevant literature. Contrary to prevalent belief, milk is not a recommended antidote to heartburn. Milk does provide temporary relief as it goes down, but it contains calcium and protein, and these eventually stimulate even more acid production in the stomach. This can cause a more severe heartburn that can return in as little as a half an hour.<sup>(45, 46)</sup>

The results of the present study also present that the vast majority of the study subjects had mentioned that they avoid spicy, foundry meals and also avoid greasy foods to alleviate their heartburn. These findings are in line with the study of **Platikin C (2005)** in Virginia about heartburn in pregnancy. He observed that the most of his study subjects did not eat spicy, fried or fatty foods. Both findings seem to be good self-care practices and compatible with relevant literature as these types of food increase the sensation of heartburn.<sup>(47)</sup>

Regarding self-care practices to relieve constipation, it was clear that about one half of the subjects sometimes increase intake of fruits and vegetables & perform regular exercises. As well as, about two thirds of them always increase water intake. These results were concurred with the **American Pregnancy Association and American College of Gastroenterology** which recommended eating fiber diet (25 to 30 grams per day) as

in fruits and vegetables, drinking plenty of fluids (milk, water) 10-12 cups/day as well as exercising to manage and prevent constipation. <sup>(48, 49)</sup>

When pregnant women were probed about self-care practices to manage their backache, it was found that the majority of subjects always wear low-heeled shoes, compared to only 5.3% who did not. This result is satisfactory and this may be due to the role of extended families in giving advice to pregnant mothers about the danger of wearing high heels. This finding is in line with **Hables R (2008)** study in Egypt. She reported that about one fourth of the study subjects manage their back pain by wearing flat shoes. They may do so because of their belief that high heeled shoes in pregnancy does not only cause backache but also may lead to falls and subsequent fetal loss. <sup>(15)</sup>

Meanwhile, it was obvious that less than one half of the subjects sometimes or always avoid bending when lifting heavy objects in order to relieve their backache. This practice is recommended and healthy during pregnancy. This finding is supported with **Hables R (2008)** study in Egypt. She reported that more than two thirds of those who had back pain did manage it by using good body mechanics during their daily activities such as exaggerated lumber carven squatting rather than avoiding bending over when picking up objects and also avoid long time standing. <sup>(15)</sup> Also, **Ostgaard G (1996)** study in Europe about the treatment of low back pain in working pregnant women is also in line with the present study. He reported that the majority of the pregnant back pain sufferers did follow antenatal education instructions and expert's advice regarding use of good body mechanics as a first step in treatment of back pain. <sup>(50)</sup> All results seem similar despite the fact that present study subjects and **Hables** study subjects did not receive antenatal education like in **Ostgaard** study.

In addition, more than one half of the present study subjects responded that they did not perform back massage to manage their back pain. This finding disagrees with two other studies; First: **Wang SH et al (2005)** in Connecticut, America about complementary and alternative medicine for low-back pain in pregnancy. They reported that the majority of their study subjects and health care providers recommended and used complementary and alternative treatments (CAM treatments) for low back pain as (massage, acupuncture and yoga). <sup>(51)</sup> Second: **Amasha H et al (2013)** study titled "The use of home remedies by pregnant mothers as a treatment of pregnancy related complaints" in Jordan who reported that about three-quarters of their study subjects manage their backache by massage with natural oils as olive oil. <sup>(52)</sup>

So, subjects in this study used a variety of measures to manage their back pain; the majority always wear low-heeled shoes, less than one half sometimes avoid bending when lifting heavy objects & used warm bath in order to relieve backache. More than one third of the subjects reported that they always sleep on firm mattress and few percentages of them who were performing back massages & back exercises. These practices are healthy and effective in decreasing low backache. These results were in line with the study of **Richens Y et al (2010)** in London he made a study about low back pain during pregnancy. They advised pregnant women to use of back massage and exercises for management of backache. Also a systematic review done by **Pennick V et al (2015)** about interventions for preventing and treating pelvic and back pain in pregnancy. They concluded that exercise, massage, good posture, warm water and support belts & pillows are effective measures to reduce backache during pregnancy. <sup>(53, 54)</sup>

When study subjects were asked about self-care practices for management of leg cramps, unfortunately it was observed that sizeable proportion of them did not do massage for affected muscle nor do leg exercises, compared to minority who always practice it. This result is not accepted as leg massage and exercises has many health benefits as improving circulation and decreasing pain and stiffness of the affected leg muscles. <sup>(1, 7)</sup> On the same time, fortunately it was clear that the vast majority (90.2%) take warm bath to alleviate their leg cramps.

**These results were incongruent with other four studies. First: Hables R (2008) study reported that the majority of study subjects managed leg cramps by doing massage for the affected leg. <sup>(15)</sup> Second: Salih A et al (2007) who had assessed the underlying causes and available treatments of leg cramps in London. They recommended that elevating legs by pillow, leg extension and massage are effective measures to decrease incidence of leg cramps and relieve cramp within few minutes. <sup>(55)</sup> Third: Elsaquaa H (2017) study in Egypt about use of home remedies for the management of minor discomforts of pregnancy in a rural area. She revealed that the majority of study subjects did leg exercises as (leg extension), followed by doing massage using herbal oil such as peppermint oil. <sup>(56)</sup> Fourth: American Cancer Society which reported that warming the affected leg, massage and stretching can relieve spasm. <sup>(57)</sup>**

As regards self-care practices to manage feet edema, it was clear that about one half of the subjects sometimes elevate their legs higher than the heart level & avoid long period of sitting and standing respectively. This finding is supported with what is recommended in the relevant literature. <sup>(58, 59)</sup> Where pregnant women were advised to keep their legs elevated above the heart level while sitting down because sitting and gravity favors blood collection at the lowest point and consequently increase edema. <sup>(58, 59)</sup> Furthermore, the majority of study subjects reported that they decrease salt intake to manage feet edema. This finding is supported with the **American Pregnancy Association (2015)** which recommended that the pregnant woman with feet edema should minimize sodium (salt) intake and avoid adding additional salt to meals. <sup>(60)</sup>

Regarding self-care practices for management of leucorrhoea, the results of the present study revealed that more than one half of the subjects always keep perineal area clean and dry, rinse perineal area from front to back, wear cotton underwear and avoid tight nylon ones. These findings are supported with relevant literatures which recommended that every pregnant woman with vaginal discharges to wipe from front to back, wear cotton underwear and avoid tight & nylon pants.<sup>(61)</sup> This will help in the absorption of discharges which may cause reproduction of microorganisms and thus occurrence of vaginal infection.<sup>(62)</sup>

Moreover, it was obvious that more than one half of study subjects always avoid vaginal douching. This practice is unhealthy and not compatible with clinical review titled "vaginal discharges" done by **Spence D et al (2007)** which recommended avoidance of vaginal douching as it interrupts the normal pH balance and it can introduce new germs into vagina.<sup>(63)</sup>

When subjects are probed about self-care practices for management of urinary frequency during pregnancy. It was found that two thirds of subjects sometimes decrease fluids intake in the evening & reduce drinking tea and coffee. Meanwhile, almost one half of them sometimes increase fluids intake during the day & regulate entry to the bathroom. All these practices are healthy and accepted and compatible with what present in literature.<sup>(64)</sup>

Unfortunately, it was obvious that more than three fifths of the study subjects did not perform Kegel exercise for management of their urinary frequency. This finding is unsatisfactory and not accepted because performance of this exercise is helpful to increase muscles tone of the perineum and pelvis and gain some control over pelvic floor and increase urinary control, thus decrease the possibility of stress incontinence in women. This refrain from performing Kegel exercise may be attributed to lack of knowledge about these exercises and their benefits during pregnancy and after childbirth.<sup>(65)</sup>

The results of present study revealed that almost one half of pregnant women take a shower with warm water before sleep to manage their insomnia. This practice is healthy and satisfactory because warm bath before bed time improve circulation, relieves any discomfort and cause muscles relaxation thus induce sleep. This finding is similar with results of other three studies. First: A systematic review had done by **Hashmi A et al (2016)** about insomnia during pregnancy. They concluded that sleep hygiene strategies can significantly improve the quality of sleep without the need to resort to medications. These strategies include (13 items), one of them is using warm bath before sleep.<sup>(66)</sup>

Second: **Hables R (2008)** in Egypt who reported that her study subjects manage their insomnia by taking warm bath before sleep.<sup>(15)</sup> Third: study of **Hertz S (2000)** in Mineolia on improving the quality of pregnant's woman sleep, he showed that more than one fifth of his sample did take warm bath before bed time to cause muscles relaxation and induce sleep.<sup>(67)</sup> To reset internal clock, go to sleep and wake up at the same time every day (**Hashmi A et al, 2016**).<sup>(66)</sup> This statement is in contrast with results of the present study, where more than one half of subjects did not follow a regular schedule for sleep. Moreover, it was found that more than one half of subjects increase rest mentally and physically. This finding is in congruent with **Hashmi A et al (2016)** study. They found that behavioral therapy for insomnia include relaxation techniques like progressive muscle relaxation and abdominal deep breathing with relaxing thoughts can also be helpful if used before each sleep period.<sup>(66)</sup>

Additionally, the results of present study showed that about two thirds of pregnant women avoid heavy meals before sleep. This practice is accepted as this can lead to indigestion and heartburn. However, eating a small, easy to digest and blood-sugar-balancing snack an hour before bed may help improve sleep.<sup>(68)</sup>

Regarding self-care practices for shortness of breath, the results showed that about three fifths of these study subjects sometimes avoid exertion. This practice is good and concurred with relevant literature because exerting too much energy will make pregnant women feel breathless or make symptoms even worse.<sup>(69)</sup> Moreover, the present study revealed that about two fifths of subjects always had comfort sleep to manage shortness of breath (i.e. sleep on side and avoid sleep on back & support abdomen with pillow). This practice is helpful to relieve this discomfort and it is concurred with several studies. First: **Hables R (2008)** study in Egypt who reported that the majority of her subjects suffered from shortness of breath and they did manage it by utilization of proper position with use of supportive pillows behind their backs during sitting or sleeping.<sup>(15)</sup>

Second: suggestions of **Lee KA (2000)** in California who studied alterations in sleep during pregnancy and postpartum who advise pregnant woman to sleep in any comfortable position they can find. She also advised pregnant women to stay off their backs as much as possible because a heavy uterus can press on nerves in the spine the inferior vena cava that carries blood between the lower body and heart. **Lee** also advised pregnant women to use pillows to be more comfortable, placing one between the knees, a second under the belly, and a third behind the back to support it and relieve back pain and alleviate shortness of breath.<sup>(70)</sup>

In addition, **the National Sleep Foundation (2017)** recommends that pregnant women should sleep on their left side, which may improve the flow of blood and nutrients to the developing fetus and to a woman's heart, uterus and kidneys.<sup>(68)</sup> and **the American Pregnancy Association (2015)** also recommended "SOS" (sleep on side) especially left side because it improves circulation as well as decreases the backache. Accordingly, the breathing

will improve.<sup>(71)</sup> Fortunately, the majority of subjects wear loose and comfortable clothes at bed time. This practice is satisfactory because this type of clothes decrease pressure on body thus enhance the breathing pattern.<sup>(183)(72)</sup>

Furthermore, there was statistically significant correlation between percent score of health deviation self-care practices and pregnant woman's level of education. This result came in agreement with other two studies. First: **Aziz K et al (2016)** study which showed that there was a highly significant association between level of education with self-management of pregnant women regarding minor discomforts.<sup>(73)</sup> Second: **Karnati S et al (2015)** study to assess the knowledge regarding home management of minor ailments in pregnancy among rural women in India. They found that there was significant association between level of education and care for minor discomforts during pregnancy.<sup>(74)</sup>

In addition, there is an obvious statistically significant correlation between the percent score of health deviation self-care practices and income, where fair percent score of health deviation self-care practices was apparent among more than three fifths of subjects who had enough or more income. This result is not surprising because money has utmost importance in arrival and access to good care. On the other hand, poor economic conditions lead to poorer health and unhealthy material environment as well as unhealthy behaviors which have direct harmful effects.<sup>(75)</sup>

The current study is supported by results of what was found in **Lin Y.H et al (2009)** who did a cross-sectional research design on health promoting lifestyles and related factors in pregnant women in Taiwan. They stated that pregnant women with a better financial condition were found to have greater abilities of having health promoting lifestyles.<sup>(76)</sup>

The results of present study indicate that there is an obvious statistically significant correlation between total score of universal self-care practices and cesarean section as one of types of previous deliveries. Furthermore, there is statistically significant correlation between percent score of health deviation self-care practices and cesarean section. This correlation is expected especially in Yemeni society in which the rate of caesarean births is low. This was clear in cross-national study done by **Jurdi R et al (2004)** about caesarean section rates in the Arab region, which revealed that caesarean section rates in Yemen was represented by below 5% which is much less than present study result and the ideal rate for caesarean sections recommended by the international healthcare community ( between 10% and 15% ).<sup>(77, 78)</sup>

Therefore, the previous history of cesarean birth is enough cause and motivation for pregnant woman and her family to reinforce self-care practices during current pregnancy to avoid any future causes may lead to caesarean deliveries that the community treats it as rare.

The results of present study also exhibit presence of a statistically significant correlation between percent score of health deviation self-care practices on one hand and number of abortion & still births on the other hand. This may be attributed to the belief that as self-care practices during pregnancy increase, there is a corresponding increase in improvement of birth outcomes. Meanwhile, every woman loss her pregnancy previously, becomes more attentive to the current pregnancy for fear of losing it.

This result came in line with **Gomora A et al (2016)** study in Zimbabwe about the relationship between prenatal self-care and adverse birth outcomes in young women aged 16 to 24 years. They reported that there is a moderately strong positive and statistically significant correlation of self-care practices during pregnancy and birth outcomes. This result support the premise that as self-care practices during pregnancy increases, the birth outcomes improve.<sup>(79)</sup>

## V. Conclusion

**Based on the finding of the present study results, it can be concluded that:** Most of Yemeni pregnant women had fair universal self-care practices. This was more apparent in matters related to bathing & personal hygiene, teeth care, breast care, nutrition, fluid intake activity and rest, exercises, travel, drug intake and immunization, follow-up and number of visits during pregnancy. On the other hand, only two fifths of them had good universal self-care practices, specifically in relation to clothes. In relation to practice, Yemeni pregnant women had fair self-care practices to meet their health deviation requisites (minor discomforts). Specifically in relation to of nausea & vomiting, heartburn, constipation, backache, legs cramps, edema of feet, frequency of urination and insomnia. Good self-care practices only noted in meeting the requisites of increased vaginal discharge and shortness of breath.

## References

- [1]. Brucker MC. Management of common minor discomforts in pregnancy. *J Nurse Midwifery* 1988.(33)2: 67-73.
- [2]. Pillitteri A. *Maternal and Child Health Nursing*. 6<sup>th</sup> ed. Philadelphia: Awolters Kluwer Company; 2010. 282-8.
- [3]. Zhianian A, Zareban I, Moghaddam A, Rahimi S. Improving self-care behaviours in pregnant women in Zahedan: applying self-efficacy theory. *Caspian J Health Res* 2015; 1(1): 18-26
- [4]. WHO, UNICEF, UNFPA, World Bank Group, and United Nations Population Division, Maternal Mortality Estimation Inter-Agency Group. *Maternal mortality in 1990-2015*. Available from: [http://www.who.int/gho/maternal\\_health/countries/yem.pdf](http://www.who.int/gho/maternal_health/countries/yem.pdf). [Accessed on: 10March, 2017]
- [5]. World Health Organization (WHO). *World health statistics 2014*. Geneva: WHO; 2014.

- [6]. Graham WJ, Ahmed S, Stanton C, Abou-Zahr C, Campbell OM. Measuring maternal mortality: an overview of opportunities and options for developing countries. *BMC Med* 2008; 6:12.
- [7]. Marshal JE, Raynor MD. *Myles Textbook for Midwives*. 16<sup>th</sup> ed. China: Elsevier Company; 2014. 143-70.
- [8]. Macdonald S, Magill-Cuerden J, Mayes, Midwifery. 14<sup>th</sup> ed. Italy: Elsevier Company; 2011. 434-8.
- [9]. Page L, Percival P, Kitzinger S. Promoting healthy birth, using midwifery skills and the organization of practice. In: Page L, Percival P, Kitzinger S (eds). *The New Midwifery, Science and Sensitivity Practice*. China: Churchill Livingstone; 2000. 289-359.
- [10]. Reeder SJ, Luigi JR, Martin LL. *Maternity Nursing*. 15<sup>th</sup> ed. Philadelphia: Lippincott Company; 1983. 430-9.
- [11]. Lincetto O, Mothebesoane-Anoh S, Gomez P, Munjanja S. Ante natalcare. Opportunities for Africa's Newborns. Available from: [http://www.who.int/gho/maternal\\_health/reproductive\\_health/antenatal\\_care\\_text/en/pdf](http://www.who.int/gho/maternal_health/reproductive_health/antenatal_care_text/en/pdf). [Accessed on: 26Aug, 2016].
- [12]. Orem D. *Nursing Concepts of practice*. 6<sup>th</sup> ed. London: Mosby Company; 2001. p.47-79.
- [13]. Harkreader H, Hogan MA, Thobaben M (eds). *Fundamental of Nursing, Caring and clinical judgment*. 3<sup>rd</sup> ed. London: W.B. Saunders Company; 2007. p.109 -11.
- [14]. Gururani L, Kumar A, Mahalingam G. Minor disorder of pregnancy and its home management. *International Journal of Medical Science and Public Health* 2016; (4): 684-7.
- [15]. Hables R. Self-care practices utilized by pregnant women in Alexandria. Master Thesis. University of Alexandria. Faculty of Nursing. 2008.
- [16]. Tekelab T, Berhanu B. Factors associated with late initiation of antenatal care among pregnant women. *Official Int J Wollega University Ethiopia* 2014; 3(2):108.
- [17]. Thomas M. A study to assess the effectiveness of structured teaching program on knowledge and practice regarding management of minor disorders of pregnancy among primigravida mothers in district hospital, Tumkur. Available from: [http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05\\_N047\\_14375.doc](http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N047_14375.doc). [Accessed on: 6Aug, 2017]
- [18]. Savita RH. Effectiveness of structured teaching programme on minor ailments of pregnancy among primi gravida mothers attending antenatal clinic at general hospital, Bangalore, Available from: [http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05\\_N091\\_7260.doc](http://www.rguhs.ac.in/cdc/onlinecdc/uploads/05_N091_7260.doc). [Accessed on: 20July, 2017].
- [19]. Abraham R. Study to assess the effectiveness of structured teaching program on knowledge regarding common minor disorder of pregnancy and its management among primigravida mothers in selected Hospital, Kolare. 2012. Available from: [http://www.rguhs.ac.in/cdc/onlinecdc/.../05\\_N023\\_39918.doc](http://www.rguhs.ac.in/cdc/onlinecdc/.../05_N023_39918.doc). [Accessed on: 8 Aug, 2016]
- [20]. Kadham N. Assessment of self – care practices during prenatal period among mothers in Babylon city. Master Thesis. University of Babylon. College of Nursing. 2015.
- [21]. Labspace. Health education and mobilization heat model: The chain of infection. 2013. Available from: <http://www.labspace.open.ac.uk/content>. [Accessed on: 12June, 2017].
- [22]. Joshua C N, Clementina U N, Clementine II, Ezenduka , Monica C M. Preventive health behaviours for infection among pregnant mothers attending antenatal clinics in Nnamdi Azikiwe university teaching hospital, Nnewi, Anambra State, Nigeria. *JRNM* 2016 ; 5(2): 45-54
- [23]. El-Sherbini AF1, el-Torky MA, Ashmawy AA, Abdel-Hamid HS. Assessment of knowledge, attitudes and practices of expectant mothers in relation to antenatal care in Assiut governorate. *J Egypt Public Health Assoc* 1993; 68(5-6):539-65.
- [24]. Oral health practice guidelines for pregnancy and early childhood. 2016. Available from: [www.mass.gov/dph/oralhealthguidelines](http://www.mass.gov/dph/oralhealthguidelines). [Accessed on: 10July, 2017]
- [25]. Breast care during pregnancy. 2015. Available from: <http://www.kidspot.com.au/birth/pregnancy/pregnancy-health/breast-care-during-pregnancy/news-story/3541804d03cf0ab2a47f1f457588d77e>. [Accessed on: 10Aug, 2017].
- [26]. Moon CC. Selecting and adapting clothing for pregnancy in the nineteenth century. Master Thesis. Iowa State University. 1995.
- [27]. El-Shazali H. Dietary practices during pregnancy among Sudanese women. *J Clin Nutr* 1985; 31:116-19.
- [28]. Kroskey D. Factors affecting the nutritional status of pregnant women. Master Thesis. University of Arizona. College of Nursing. 1989; 52, 63
- [29]. Liao S, Luo B, Feng X, Yin Y , Yang Y, Jing W. Substance use and self-medication during pregnancy and associations with sociodemographic data. *Int J Nurs Sci* 2015; 2: 28-33
- [30]. Hung WC. Relative research in pregnant women's exercise experience and labour process. Unpublished doctoral dissertation, University of National Taiwan. Normal College, Taipei. 1995.
- [31]. The American College of Obstetricians and Gynecologists. Exercise during pregnancy. 2015. Available from: [http://www.acog.org/publications/patient\\_education/bp119.cfm](http://www.acog.org/publications/patient_education/bp119.cfm). [Accessed on: 7July, 2017].
- [32]. Lin YH, Tsai EM, Tsai TF, Chan TF, Chou FH, Lin YL. Health promoting lifestyles and related factors in pregnant women. *J Health Promotion Pregnant Women* 2009; 32 (6):653- 57.
- [33]. Moore KL, Persaud TV, Torchia MG. *Before We Are Born. Essentials of Embryology and Birth Defects*. 9th ed. Philadelphia. W. B Saunders; 2015.
- [34]. Fakeye TO, Adisa R, Musa IE. Attitude and use of herbal medicines among pregnant women in Nigeria. *BMC Complement Alter Med* 2009; 9:53–9.
- [35]. World Health Organizations (WHO). Safety of immunization during pregnancy: A review of the evidence) Global Advisory Committee on Vaccine Safety. 2014. Available from: [http://www.who.int/vaccine\\_safety/publications/safety\\_pregnancy\\_nov2014.pdf](http://www.who.int/vaccine_safety/publications/safety_pregnancy_nov2014.pdf) [Accessed on: 10Jan, 2017]
- [36]. Seger H, Abbas I. Assessment of pregnant women's knowledge about tetanus toxoid vaccination in Karbala city. *Iraqi Notl J Nurs Specialties* 2014; 27 (1): 23-31.
- [37]. Natural Hydration Council. Hydration of pregnancy and motherhood.. May 2016. Available from : <http://www.naturahydrationcouncil.org.uk/wp-content/uploads/2012/11/NHC-Pregnancy-Mother>. [Accessed on: 17Dec, 2016].
- [38]. Sen E, Güneri S, Yanikkerem E, Kavlak O, Sirin A. Determination of knowledge requirements and health practices of adolescent pregnant women. *Int J Caring Sci* 2012; 5( 2):171-6.
- [39]. Nor S, Ibrahim S, Taha S. Self-care practices utilized by pregnant women in early pregnancy in Mansoura. *Port Said Sci J Nurs* 2014; 1(1): 283-304.
- [40]. Wills G. Nausea and vomiting in pregnancy what devices do midwives give? *Midwifery* 2008; 24(4):390-8.
- [41]. Herrell HE. Nausea and vomiting of pregnancy. *Am Fam Physician* 2014; 89(12): 965-70.
- [42]. Campbell K, Rowe H, Azzam H, Lane C A. The management of nausea and vomiting of pregnancy. *J ObstetGynecolCanada* 2016; 38(12): 1127–37.
- [43]. Ghaly A. Knowledge, utilization, and attitudes of maternity and gynecological nurses towards complementary and alternative therapies. Master Thesis. Alexandria University, Egypt. 2008.
- [44]. Abd El-Ati I, Amasha H. Strategies used by women to alleviate heartburn during pregnancy. *IOSR-JNHS* 2015; 5: 1-8.

- [45]. Gillson SH. Will a glass of milk smooth heartburn?. 2016. Available from: <https://www.verywell.com/will-milk-stop-heartburn-3971986.pdf>. [Accessed on: 6July, 2017].
- [46]. Katz PO, Gerson L, Vela M. Guidelines for the diagnosis and management of gastro esophageal reflux disease. *Am J Gastroenterol* 2013; 108: 308-28.
- [47]. Platikin C. A guide to heart burn. 2005. Available from: <http://proquest.umi.com.ezproxy.umi.edu/pqdweb>. [Accessed on: 25July, 2017]
- [48]. Pennick VE, Liddle SD. Interventions for preventing and treating pelvic and back pain in pregnancy. 2015. *Cochrane Database Syst Rev*. 2015; 30(9): Available from: <https://www.ncbi.nlm.nih.gov/pubmed/26422811>. [Accessed on: 25July, 2017]
- [49]. Ford A, Moayyedi P, Lacy P, Lembo A, Saito Y, Schiller L, et al. American College of Gastroenterology Monograph on the Management of Irritable Bowel Syndrome and Chronic Idiopathic Constipation. *Am J Gastroenterol* 2014; 109: S2-26
- [50]. Ostgaard G. Intervention for preventing and treatment of pelvic and back pain in pregnancy. 1996. Available from: <http://www.proquest.umi.com.ezproxy.mate.edu/padweb>. [Accessed on: 30July, 2017].
- [51]. Wang SH, Dezinno P, Fermo L, William K, Alison A, Andrews C, et al. Complementary and alternative medicine for low-back pain in pregnancy: A cross-sectional survey. *J Altern Complement Med* 2005; 11(3): 459-64.
- [52]. Amasha H, Heiba M. Maternal awareness of pregnancy normal and abnormal signs: An exploratory descriptive study. *IOSR-JNHS* 2013; 2(5): 39-45.
- [53]. American pregnancy association. Constipation during Pregnancy 2013. Available from: <http://americanpregnancy.org/app/uploads/2013/03/constipation.pdf>. [Accessed on: 22July, 2017]
- [54]. Richens Y. Lower back pain during pregnancy: Advice and exercises for women. *Br J Midwifery* 2010; 18(9): 562-6.
- [55]. Salih A. Leg cramps: the underlying causes and available treatments. 2007. Available from: <http://www.escriber.com.Pdf>. [Accessed on: 30July, 2017].
- [56]. Elsaquaa H. Use of home remedies for the management of minor discomforts of pregnancy in a rural area. Master Thesis. Alexandria University. Faculty of Nursing. 2017.
- [57]. The American Cancer Society medical and editorial content team. Leg Cramps. 2015. Available from: <https://www.cancer.org/treatment/treatments-and-side-effects/physical-side-effects/leg-cramps.html>. [Accessed on: 23July, 2017].
- [58]. Heine R, Swamy G. Lower-extremity edema during late pregnancy. 2017. available from: <http://www.msmanuals.com/professional/gynecology-and-obstetrics/symptoms-during-pregnancy/lower-extremity-edema-during-late-pregnancy>. [Accessed on: 30July, 2017].
- [59]. Leg edema in pregnancy. 2006. Available from: [http://www.fitnesshealth/fitness\\_pregnancy/pregnancy-exercises\\_articles\\_at\\_pregnancy\\_guideline.htm](http://www.fitnesshealth/fitness_pregnancy/pregnancy-exercises_articles_at_pregnancy_guideline.htm). [Accessed on: 5July, 2017]
- [60]. American Pregnancy Association . Swelling during pregnancy. 2015. Available from: <http://americanpregnancy.org/pregnancy-health/swelling-during-pregnancy/>. [Accessed on: 28July, 2017]
- [61]. Vaginal discharge during pregnancy. 2017. Available from [https://www.babycenter.com/0\\_vaginal-discharge-during-pregnancy\\_270.bc](https://www.babycenter.com/0_vaginal-discharge-during-pregnancy_270.bc). [Accessed on: 1Aug, 2017].
- [62]. Mitherando J. Ask the doctor; Policing your pregnancy; Non prescription drugs. 2004. Available from: <http://proquest.umi.com.ezproxy.mate.edu/padweb>. [Accessed on: 5Aug, 2017]
- [63]. Spence D, Melville C. Vaginal discharge. *US National Library of Medicine . Natl Institutes Health* 2007; 335(7630): 1147-51.
- [64]. Burroughs A, Leifer G. *Maternity Nursing, An introductory Text*. 11th ed. Philadelphia: W.B. Saunders Company; 2011. 56-57.
- [65]. Dermott M. Urinary tract infection during pregnancy. *J ObstetGynecolNurs* 2000; 119-20
- [66]. Hashmi A, Bhatia S, Khawaja I. Insomnia during pregnancy: Diagnosis and rational interventions. *Pakistan J Med Sci* 2016; 32(4): 1030-7.
- [67]. Hertz S . Learn to sleep well: a practical guide to getting a good night's rest. 2000. Available from: <http://proquest.Umi.com.ezproxy.matc.edu/pqdweb>. [Accessed on: 5Aug, 2017]
- [68]. National sleep foundation. Natural Remedies for Pregnancy Insomnia. 2017. Available from: <https://sleepfoundation.org/insomnia/content/what-is-insomnia> [Accessed on: 1Aug, 2017]
- [69]. Shortness of breath during Pregnancy. 2016. Available at: <https://www.checkpregnancy.com/shortness-breath-during-pregnancy/> [Accessed on: 10Aug, 2017]
- [70]. Lee KA. Alterations in sleep during pregnancy and postpartum: a review of 30 years of research. *Sleep Med Rev* 1998; 2(4): 231-42.
- [71]. American pregnancy Association. Sleeping positions during Pregnancy. 2015. Available from: <http://americanpregnancy.org/pregnancy-health/sleeping-positions-during-pregnancy/>. [Accessed on: 1Aug, 2017].
- [72]. Barari A. Importance of comfortable clothes for pregnant women. 2011. Available from: <https://www.boldsky.com/pregnancy-parenting/prenatal/2011/comfortable-clothes-pregnant-woman-220811.html>. [Accessed on: 8Aug, 2017].
- [73]. Aziz K, Maqsood SH. Self management of pregnant women regarding minor discomforts in primary health care centers in Erbil city. *Med J Babylon* 2016; 13(2): 284-93.
- [74]. Karnati S, Kumari VB. A study to assess the knowledge regarding home management of minor ailments in pregnancy among rural women. *Int J Recent Sci Res* 2015; 6(6): 4593-6.
- [75]. Wilkinson R, Marmot M. *The Solid facts: Social determinants of health*. Geneva: WHO. 1998.
- [76]. Lin YH, Tsai EM, Tsai TF, Chan TF, Chou FH, Lin YL. Health promoting lifestyles and related factors in pregnant women. *J Health Promotion Pregnant Women* 2009; 32 (6): 653- 57.
- [77]. JurdiR ,Khawaj M. Caesarean section rates in the Arab region: a cross-national study. *Health Policy Plan* 2004; 19(2): 101-10.
- [78]. World Health Organization. WHO statement on caesarean section rates. *Human reproductive program (hrp)*. 2015. Available from: [http://www.who.int/about/licensing/copyright\\_form/en/](http://www.who.int/about/licensing/copyright_form/en/). [Accessed on: 5Aug, 2017]
- [79]. Gomora A, Mukona D, Zvinavashe M, Dhaka A. The relationship between prenatal self-care and adverse birth outcomes in young women aged 16 to 24 years. *J Nurs Health Sci* 2015; 4 (1): 72-80.

Dr. Asmaa Saber Ghaly. " Self-Care Practices Utilized By Yemeni Pregnant Women in Hodeida City " .IOSR Journal of Nursing and Health Science (IOSR-JNHS), vol. 8, no.04 , 2019, pp. 32-50.