



Major reproductive health problems of dairy cows under different management systems in Jimma town, Southwestern Ethiopia

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Abstract

The study which employed both questionnaire and observational survey was conducted from November, 2018 to April, 2019 with the objectives of determining the prevalence of major reproductive health problems of dairy cattle and the possible risk factors in Jimma town. A total of 360 dairy cattle (330 cross and 30 local breed) which were kept under different management system (25 intensively, 79 semi intensively and 30 were extensive) were included in the study, out of which 31.6% (n=114) were found to be affected either with one or more of reproductive health problems. Retained fetal membrane (RFM), repeat breeder, anestrus, abortion, and dystocia were found to be the major reproductive health problems containing 8.6%, 5.3%, 4.7%, 3.6% and 3.3% prevalence rate respectively and other reproductive health problems observed with lower prevalence include clinical endometritis, mixed problems, uterine and vaginal prolapsed having 2.5%, 1.9%, 1.1%, and 0.6% respectively. The overall prevalence of reproductive health problems showed significant difference ($p < 0.05$) with respect to age, parity and body condition score of dairy cattle's under investigation. Major reproductive health problems were observed more frequently in aged (old), multiparous and poor body conditioned cows. Breed, management system and method of service have no a significant influence ($p > 0.05$) on the occurrence of reproductive health problems in the area according to the finding of this study. Therefore, it is recommended that awareness creation to farm owners, attendants and improved management such as, proper feeding, accurate heat detection, considering the size of sire and dam while using artificial insemination, and health management should be improved to minimize the occurrence of these problems and associated economic losses in the dairy farms of the area.

Keywords: Cattle; Dairy farm; Jimma; Reproductive Health; Risk Factors

1. Introduction

Cattle production has been considered as the main component of agricultural development in most parts of sub-Saharan Africa. As in many countries, livestock, particularly cattle play different roles in Ethiopia being a source of milk, meat, hide, etc. (Mekonnen *et al.*, 2002). Ethiopia is one of the sub-Saharan Africa with a large potential for livestock production. The country is 1st among African countries and the 9th in the world (Hunduma, 2012). The Ethiopian total cattle population is estimated to be

about 56.71 million. Out of this total cattle population the female cattle constitute about 55.45% and the remaining 44.55% are male cattle (CSA, 2015). Ethiopia holds a substantial potential for dairy development mainly due to its large livestock population coupled with the relatively suitable environment for livestock production (Ahmed *et al.*, 2004). Livestock represent a major national resource and form an integral part of the agricultural production system (Birhanu *et al.*, 2010). Livestock production

accounts for approximately 30% of the total agricultural GDP and 16% of national foreign currency earnings (IBC, 2004).

Despite the huge number of cattle and their economic importance, the productivity is low due to the constraints such as diseases of different origin, low quality and quantity nutrition, poor management and poor performance of indigenous breeds. These constraints result in poor reproductive performance of dairy cattle (Shiferaw *et al.*, 2005; Lobago *et al.*, 2006). Reproductive disorders have been found to be a major reason for decreased reproductive efficiency in cattle and consequently reproductive efficiency is the major determinant of lifetime productivity of dairy cows (Del-Vecchio *et al.*, 1992).

Reproductive performance is one key component of dairy production and the goal of reproductive management in dairy cattle is to have cows become pregnant in an efficient manner and at a profitable interval after calving (Plaizier *et al.*, 1997). So, high reproductive efficiency is necessary for a successful dairy operation and requires a calving interval that maximizes milk production within the herd (Ferguson and Galligan, 2000). Good estrus detection, good insemination technique, quality semen, and a healthy uterine environment are critical components of high reproductive efficiency (Nebel, 1999).

The major reproductive health problems that have direct impact on reproductive performance of dairy cows are abortion, dystocia, Retained Fetal Membrane (RFM), metritis, prolapse (uterine and vaginal), anestrus and repeat breeding. These could be classified as before gestation (anestrus and repeat breeding), during gestation (abortion, vaginal prolapse and dystocia) and after gestation (retained fetal membrane and uterine prolapse) (Lobago *et al.*, 2006). These reproductive health problems were the area of study for this research (Shiferaw *et al.*, 2005).

Regular breeding depends upon the normal function of the reproductive system. In order to breed regularly, the cow has to have functional ovaries, display estrous behavior, mate, conceive, sustain the embryo through gestation, calve, and resume estrous cycle and restore uterine function after calving. Each of these aspects of reproductive function can be affected by management, disease and the genetic make-up of the animal. When the function of the reproductive system is impaired, cows fail to produce a calf regularly (Arthur *et al.*, 1996).

Upon closer examination of reproductive processes in the dairy cattle, the post-partum period is the most varied and vulnerable to problems and that incidentally coincides with the peak of milk production, uterine involution, and resumption of ovarian activity, conception and greater risk to infection (Robert, 2000). It is very difficult to diagnose those problems by one particular disorder or symptom because there is interrelation between predisposing factors such as management at calving, hygiene and parity, stage of gestation, nutrition and environment (Msangi *et al.*, 2005).

The total cattle population of Jimma Zone registered cattle is 2,200,106 from this cattle population 1,149,144 is female cows (CSA, 2015). Although, there are enough dairy farms in Jimma town, ample studies have not been conducted on the major reproductive health disorders in dairy animals. The reproductive health problems are greatly responsible for high economic loss and their reproductive performance in dairy cows, the research done on the prevalence, risk factors and relative importance of these reproductive health problems in Jimma town was less and there is still a need to investigate the reproductive health problems. So this study was performed to investigate the current status of major reproductive health problems in the study area.

Therefore, the objectives of this study were:-

- ❖ To determine the prevalence of major reproductive health problems of dairy cattle and
- ❖ To assess possible risk factors which play major roles in causing reproductive health problems in Jimma town.

2. Materials and Methods

2.1. Description of the Study Area

The study was conducted in Jimma town, in Oromia regional state which is located at 352km south west of Addis Ababa at latitude of 7°13' and 8°56' N and at longitude of 35°52' and 37°03' E & an elevation of 1915masl. The minimum and maximum annual temperature of the area ranges from 7°C and 30°C respectively. The mean annual rainfall is 1530mm. The livestock population of the area were about 2,016,823 cattle, 942,908 sheep, 288,411 goats, 74,574 horses, 49,489 donkey, 28,371 mules, 1,139,735, poultry and 418,831 bee hives (JAO, 2008).

2.2. Study Animal

In this study dairy cows which are found in 30 dairy farms and managed in different management system were included to assess the major reproductive health problems in the study area. Local and cross breed cows were included for this study. Sampled animals constitute different age groups and have various numbers of parity.

2.3. Study Design

Longitudinal or follow-up study and questionnaire survey was conducted in Jimma town from November, 2018 to April, 2019 in order to identify the major reproductive health problems of dairy cows. In order to generate the required data questionnaire survey and regular follow up on the randomly selected dairy cows were performed.

2.4. Data Collection

2.4.1. Questionnaire Survey

The study employed a face to face interviewing technique of cow owners using a semi- structured questionnaire. In order to get co-operation of the dairy owners and obtain reliable information about their animals, thorough explanation on the objective of the study was given before the start of the interview. Following that, the actual questions were asked about major reproductive health problems on individual cattle level like abortion, dystocia, retained fetal membrane, metritis, uterine/vaginal prolapsed, anestrus, repeat breeding, management systems and parity. Data were collected from 30 dairy farm owners about the major reproductive health problems.

2.4.2. Observational study

To increase the reliability of information a regular visit was carried out once per weeks on 5 dairy farms which was purposively selected on the basis of animal size, facility availability, ease of access, and production system. Subsequently, about 39 pregnant cows were purposively selected from 158 cows (found in 5 dairy farms) out of 360 dairy cows to collect data on the major reproductive problems. The study animals were identified by their tag number/ID, parity and pregnant animals that were suspected to give birth within the study period were included and followed up from the start to the end of study period. During regular follow up study, different methods of

diagnosis was used to detect major reproductive health problems encountered in dairy cows and the result was recorded in follow up data collection sheet. If a cow has not shown estrus by 60 days postpartum period record as anestrus, if the cow has not been conceived from three or more regularly spaced service recorded as repeat breeder, if the fetal membrane of the cow has not been removed or expelled within 24 hours of postpartum period recorded as retained fetal membrane (RFM), if the cow had parturition problem recorded as dystocia, if the cow had delivered fetus before full gestation period recorded as abortion, and if the cow has reddish brown, white to yellow mucoprulent, vaginal discharge after parturition was recorded as clinical endometrities (Takele *et al.*, 2005).

2.4.3. Body Condition Scores

For all of the animals under study body condition was scored in order to assess the nutritional status of the animal and the prevalence of reproductive health problems.

Therefore, animals were grouped in to 1, 2, 3, 4 and 5 body condition scores according to Nicholson and Butter (1986) and later on classified as poor (score 1 to 2), medium (score 3) and good (score 4 to 5) (Benti and Zewdie, 2014). The measurement was done through palpation and visualization of the transverse and spinous processes for the lumbar vertebrae (loin) and tail head respectively.

2.4. Sample Size and Sample Size Determination

The sample size required for this study was determined depending on the expected prevalence of reproductive health problems and the desired absolute precision by the formula given by Thrusfield (2005). Previously study done on prevalence of reproductive health problems in dairy cows in Jimma town indicated 33.59% (Gashaw *et al.*, 2011). Therefore, in this study 33.59% prevalence rate with 5% desired level of precision and 95% of confidence interval were used to calculate the sample size using the following formula.

The proposed sample size is;

$$n = z^2 P_{exp} (1 - P_{exp}) / d^2$$

Where, n = sample size

d = Desired absolute precision at 95% confidence interval = 5%

p_{exp} = expected prevalence

$$Z = 1.96$$

$$n = (1.96)^2 * 0.3359(1 - 0.3359) / (0.05)^2$$

$$n = 343$$

Therefore, the desired sample size of the present study was 343, but 360 dairy cows were included in the study in order to increase precision.

2.5. Data Analysis Procedure

The data obtained from questionnaire and regular follow up were entered on a Microsoft Excel spreadsheet and analyzed using Statistical Package for Social Sciences (SPSS, 2016). The prevalence of reproductive problems was determined as a proportion of affected animals out of the total animal examined. The differences or association between in different risk factors such as age, parity, method of service, body condition score, breed and production system with over all prevalence of reproductive problems was analyzed by using χ^2 (Chi-square) technique and value of $p < 0.05$ considered as significant.

3. Results

3.1. Questionnaire Study

Based on the questionnaire study out of 30 dairy farm owners 24 (80%) were males and 6 (20%) were females, and as observed from the educational level of farm owners or attendants, 4 (13.3%) were illiterate, and the rest 26 (86.6%) were literate. With regard to

the location of the farms, 27 (90%) were found in the urban location and 3 (10%) were in peri-urban area.

3.2. Animals' Management

From a total of 360 dairy cattle that were included in the study period, 251 (69.7%) were managed intensively, 79 (21.9%) were semi intensive and 30 (8.3%) were extensively and of which 330 (91.6%) were cross breed and the rest 30 (8.3%) were local breed. Almost the entire respondent agreed that feeding practice depends on the availability of feed because land space and water that is important factors for cultivation of animal feed is limited in the farm area. The feed on which the animals are fed include natural pasture (cut-and-carry), grass hay, straw, milling byproducts (frushka), dairy concentrate mix, crop residues, some green grasses like alfalfa, elephant grass and nonconventional feeds like "atela" were among the commonest and mainly available feed types.

3.3. Major Reproductive Health Problems Identified

In the present study, out of 360 dairy cows that were included in the study period, 31.6% ($n=114$) cows were found to have suffered from at least one of the reproductive health problems. Accordingly, dairy cows that have a reproductive health problems by questionnaire interview of owners and on regular follow up were 32.1% ($n=103/321$) and 28.2% ($n=11/39$), respectively (**Table 1**).

Table 1: The reproductive health problems in dairy cows in Jimma town on different method of study

Method of study	No. of cows examined	No. of cows affected (%)
Questionnaire	321	103(32.1%)
Regular follow up	39	11(28.2%)
Total	360	114(31.6%)

In this study (including both questionnaire and regular follow up), the major reproductive health problems identified were retained fetal membrane, repeat breeder, anestrus, abortion and dystocia found to be the major reproductive health problems containing 8.6%, 5.3%, 4.7%, 3.6% and 3.3%, respectively. Other

reproductive health problems observed with lower prevalence include clinical endometritis, mixed problems, uterine prolapse and vaginal prolapse accounting 2.5%, 1.9%, 1.1% and 0.6% respectively (**Table 2**).

Table 2: Relative occurrence of major reproductive health problems in dairy cows and their overall prevalence rate in Jimma town

Major reproductive health problems encountered	No. of affected cows	Prevalence (%)
Anestrus	17	4.7
Repeat breeder	19	5.3
Abortion	13	3.6
Dystocia	12	3.3
Retained fetal membrane	31	8.6
Vaginal prolapse	2	0.6
Uterine prolapse	4	1.1
Clinical endometritis	9	2.5
Mixed problems	7	1.9
Total	114	31.6

*Mixed problems include abortion and retained fetal membrane, dystocia and retained fetal membrane, retained fetal membrane and clinical endometritis, (2 and above cases)

In this study among risk factors like age, parity, method of service, body condition score, breed and management system were considered to assess its association with the occurrence of the reproductive health problems. Age has significant association (2: 50.913: $p < 0.05$) with prevalence of the major reproductive health problems. The proportion was descending from old to young cows with above seven years (40%), between five and seven years (36.15%) and below five years or young (22.75%). The effect of parity on the prevalence rate of major reproductive health problems was assessed and there was

significant association (2: 20.861: $P < 0.05$) between prevalence rate of reproductive problems and the parity of the individual cow. The prevalence rate of the reproductive disorders and the effect increased progressively from primiparous to multiparous with prevalence of 27.67% and 33.46%, respectively. Method of service has no significant association (2: 9.162: $p > 0.05$) on the prevalence rate of major reproductive problems, but the prevalence rate of the reproductive problem is significantly lower in artificial insemination (30.59%) when compared with that of natural breeding (39.53%) (**Table 3**).

Table 3:The association of prevalence rate of major reproductive health problems with age, parity and breeding system of the dairy cows

Risk factors	Categories	Total no. of cows examined	No. of cows affected	Percentage (%)	X ²	p-value
Age	<5	145	33	22.75	50.913	0.000
	5-7	130	47	36.15		
	>7	85	34	40		
Parity	Multiparous	248	83	33.46	20.861	0.013
	Primiparous	112	31	27.67		
Method of service	AI	317	97	30.59	9.162	0.422
	NB	43	17	39.53		

AI=Artificial insemination

NB=Natural breeding

Reproductive health problems were assessed with respect to body condition score of dairy cattle and there was significant association (χ^2 :35.244: $p < 0.05$) between the prevalence rate of reproductive problems and body condition of the cows. The prevalence was

higher in poor body condition score (52.77%), followed by good body condition score (28.47%) and less in medium body conditioned (24.08%) cows (**Table 4**).

Table 4: Prevalence and association of major reproductive health problems with body condition scores

BCS	No. of cows examined	No. of cows affected	Percentage	X ²	P-value
Poor	72	38	52.77	35.244	0.009
Medium	137	33	24.08		
Good	151	43	28.47		

BCS=body condition score

As shown on the table below, there is no statistically significant difference ($P>0.05$) in the occurrence of

reproductive health problems with respect to breed and management systems (**Table 5**).

Table 5: Prevalence and association of reproductive health problems with breed and production systems

Risk factors	No. of cows examined	No. of cows affected	Percentage (%)	X ²	p-value
Breeds of cows					
Cross breed	330	105	31.8	5.051	0.830
Local	30	9	30		
Total	360	114			
Production system					
Intensive	251	78	31.07	16.933	0.528
Semi-intensive	79	27	34.17		
Extensive	30	9	30		
Total	360	114			

4. Discussion

In the current study, out of 360 examined dairy cattle, 114 dairy cows were positive for at least one reproductive health problem with overall prevalence rate of 31.6%. Among which, retained fetal membrane, repeat breeder, anestrus, abortion and dystocia were found to be the major reproductive health problems comprising 8.6%, 5.3%, 4.7%, 3.6% and 3.3% respectively. Other reproductive health problems observed with lower prevalence include clinical endometritis, mixed problems, uterine prolapse and vaginal prolapse, accounted 2.5%, 1.9%, 1.1 and 0.6% respectively.

The overall prevalence of major reproductive health problems reported in this study was in close agreement with previous reports of Addis *et al.* (2019) in Alage southern Ethiopia, Abunna *et al.* (2018) in Bishoftu town, Fitsum *et al.* (2017) in and around Chench town, Blen (2016) in bishoftu town, Beredu and Biruk (2019) in Asella town, Wujira and Nibret (2016) in Wolaita Sodo town, Ebrahim (2003) in and around

Kombolcha, Gizaw *et al.* (2007) in and around Nazaret town, and Gashaw *et al.* (2011) in Jimma town southwestern Ethiopia, who reported the prevalence of reproductive problems as 31.79, 30.1, 32.5, 30.12, 30.3, 35.5, 34.8, 31.76 and 33.59%, respectively. The reproductive health problems prevalence reported in this study is higher than the report of Hunduma (2013) in Asella town (18.5 %), Bizuayehu and Wale (2016) in Essera district, dawuro zone, southern Ethiopia (19.8%), and Bitew and Shiv (2011) in and around Bedelle (26.5%). Whereas, the findings of the present study was lower than the reports of Hadush *et al.* (2013) in central Ethiopia, Haile *et al.* (2014) in urban and per urban areas of Hosanna, Southern Ethiopia, and Dawit and Ahmed (2013) in North-East Ethiopia, who reported 44.3, 43.07 and 40.3%, respectively. This variation in overall prevalence rate could possibly be attributed due to difference in management system, nutritional status, breeds of animals and environmental conditions as well as sample size, production system and study methodology (Gashaw *et al.*, 2011).

The prevalence rate of retained fetal membrane(8.6%) recorded in the current study was similar with the reports of the previous study conducted by Bitew and Shiv (2011), 8.6% in and around Bedelle, and closely related with Benti and zewdie (2014), 7.6% in Borena zone of Southern Ethiopia, but lower than Ebrahim (2003), 28.9% in and around Kombolcha, Tadelech (2004), 14.3% in Debre-Zeit, Amene (2006), 26.6% in Alage dairy farm, Gashaw *et al.* (2011), 19.2% in Jimma town. On the other hand the current finding is higher than Takele *et al.* (2005), 2.5% in and around Nazareth town, central Ethiopia. The variation in prevalence of RFM may be related to infection, dystocia and its predisposing factors, disease conditions, as well as management difference especially feeding and sanitation.

The prevalence rate of repeat breeder (5.3%) recorded in this study is in close agreement with prevalence rate of 4.6% reported in and around Holeta (Tigre, 2004), 6.2% reported in Addis Ababa (Haile *et al.*, 2010). And the finding in this study is higher than the report from Chench (Fitsum *et al.* 2017), Kombolcha (Dawite and Ahmed, 2013), Bedelle town (Bitew and Shiv, 2011) and Jimma town (Gashaw *et al.*, 2011), which was 3.65, 3.87, 3 and 1.3% respectively. However, it is lower than the prevalence of 13.08% that had been reported in Hossana (Adane *et al.*, 2014), 13% in Hawassa (Micheal, 2003), 11.42% in Central Ethiopia (Hadush *et al.*, 2013), 21.1% in Gonder town (Kifle and Moges, 2016)and 21% reported in Mekelle (Alemselam *et al.*, 2015). The difference between the repeated breeding findings of the current study and previous reports may be attributed a number of factors, including sub-fertile bulls, endocrine imbalance, malnutrition, reproductive tract infections and poor management practices such as wrong time of insemination or improper heat detection, inappropriate semen handling and insemination techniques and communal use of bull for natural services also considered as contributing factor. High incidence of repeat breeding could be due to lack of nutrition, improper insemination and timing of AI and poor semen quality (Esheti and Moges, 2014).

The prevalence of anestrus (4.7%) observed in this study is in line with Wujira and Nibret (2016), Tigabneh *et al.* (2017) and Addis *et al.* (2019), who reported the prevalence of the problem as 4.8, 5.3 and 4.05%, respectively. However, the finding of the current study is lower than the results reported by Hadush *et al.* (2013) 12.9% in dairy cattle in DebreZeit and Haile *et al.* (2014) who reported

12.26% in urban and Peri urban area of Hosanna. The prevalence found by this study is higher than the prevalence reported by Bitew and Shiv (2011), Zewdu (1992), Ebrahim (2003) and Gashaw *et al.* (2011) reported 1.7, 0.7, 1.7 and 0.3%, respectively. The variation in prevalence of anestrus might be due to the age, inappropriate heat detection, breed, nutritional status, poor body condition and management system.

The prevalence rate of abortion recorded in the present study was (3.6%) which is fairly consistent with the finding of Ebrahim (2003) who reported 3.19%, Gizaw *et al.* (2007) who reported 2.23% and Haile *et al.* (2014) who reported 2.56%. On the other hand, Bitew and Shiv (2011), Dinka (2013) and, Benti and Zewdie (2014) reported 13.9%, 14.6% and12.2%, respectively which are higher than the current finding, but compared with the finding of Getenet *et al.* (2014) who reported 0.63% and Gashaw *et al.* (2011) who reported prevalence rate of 1% the present finding is higher. The difference in prevalence of abortion may be due to variation in practice of AI, genetic, nutritional status, infection, level of toxicities and husbandry management system in different areas.

The prevalence rate of dystocia (3.3%) obtained in this study was similar with the previous reports which was conducted by Esheti and Moges (2014), 3.3%, and in close agreement with Benti and Zewdie (2014), Amene (2006),and Hadush *et al.* (2013), accounted 3.4, 3.1 and 2.9% respectively. On the other hand, the current finding is higher than the previous findings of Getenet *et al.* (2014), 0.79%; Demissu *et al.* (2013), 1.4% and Tilahun *et al.* (2015), 1.89%. But, lower than 5.79%, Mamo(2004);6.95% Gizaw *et al.* (2007); 6.6% Bitew and Shiv(2011); 7.75% Dawit and Ahmed(2013); 9.65% Kassahun (2003) and 11.6% Mekonnin *et al.* (2015). This variation in the occurrence of dystocia might be due to the fact that it was influenced by several factors such as nutritional status, age and parity as well as breed of the sire and size of the dam. Small sized breeds of cows inseminated with the semen collected from larger sized bulls could be an important cause of dystocia.

The prevalence of endometritis (2.5%) in the current study is higher than the previous findings conducted by Blen (2016) in Bishoftu town, who reported 0.6% and Esheti and Moges,(2014) in Ada'a District, who reported 1.2%. Moreover, the present finding is inclose agreement with Beredu and Biruk (2019) in Asella town, Gashaw *et al.*(2011) in Jimma town and Berihu and Abebaw (2009) in and around Bako, who

reported 2.6, 2 and 3.21% respectively. However, the finding of this study was greatly lower than 8.7% in central Ethiopia (Hadush *et al*, 2013), 16.63% in Nazereth (Gizaw *et al*, 2007) and 12.7% in and around Gonder town (Kifle and Moges, 2016). Factors influencing the incidence of undefined clinical endometritis may be retention of fetal membrane, negative energy balance, dystocia and parity of cow had been reported to be associated with metritis (Giuliodori *et al*, 2013). Other influencing factors for undefined metritis may include unhygienic parturition, unhygienic AI and injury of uterus by AI guns during insemination.

Prevalence rate of mixed problems (1.9%) of the current study is fairly agreed with that of 1.03% the record of Hossana (Adane *et al*, 2014) and 1.05% in Mekelle (Simret, 2010), but lower than that of 5.6% in Jimma (Gashaw *et al*, 2011) and 4.16% in Chench town (Fitsum *et al*, 2017). This variation could be due to inter relationship between of reproductive problems as predisposing factors for each other.

The prevalence rate of uterine prolapse (1.1%) in current study is relatively lower than the previous study of Benti and Zewdie (2014) who reported the prevalence rate of 2.7% in indigenous Borena breed cows in Borena zone in Southern Ethiopia. However, higher than the previous reports by Haile *et al*. (2014) who reported 0.76%, Bitew and Shiv (2011) who reported 0.65%, Dawit and Ahmed (2013) who reported 0.43% and Gashaw *et al*. (2011) who reported 0.5%. These could be fairly related to the incidence of dystocia cases and associated factors.

The prevalence rate of vaginal prolapse (0.6%) recorded in this study are nearly close with other records of 0.52% (Fitsum *et al*, 2017), 1.95% (Hadush *et al*, 2013) and 1.24% (Dawit and Ahmed, 2013), but is lower than the prevalence of 5.2% (Kidusan, 2009) and 3.44% (Adane *et al*, 2014) that had been reported. This minimal variation could be due to inter-relationship between different reproductive problems as predisposing factors for each other (Adane *et al*, 2014).

In general, as the present study shows that retained fetal membrane, repeat breeding, anestrus, abortion and dystocia were the major reproductive health problems in the study area with their relative importance depending on overall prevalence percent. Age has significant association ($p < 0.05$) with prevalence of the major reproductive health problems.

The proportion of major reproductive health problems decreased from old to young cows with proportion of above seven years or old (40%), between five to seven years or adult (36.15%) and less than five or young (22.75). An increased rate of reproductive health problems with increased age of cows is due to the fact that frequency of exposure to reproductive health problems with increased age, lack of uterine tone and slow involution of the uterus at high parity (Mee, 2008). A higher prevalence rate of reproductive problems observed in old cows greater than 7 years of age, followed by 5 to 7 years of age when compared to less than 5 years of age cows, is in contrary to the report of Esheti and Moges (2014). This result is in accordance with the incidence of reproductive health problems reported with respect to age by Benti and Zewdie (2014).

Reproductive health problems were seen increased from primiparous to multiparous with prevalence of 27.67% and 33.46%, respectively. This result is similar to the previous findings (Dinka, 2013; Haile *et al*, 2014); which is probably due to a reproductive system of aging cows (Cow with higher parity) involves more complex and permanent uterine changes than those cows with lower parities (Hebert *et al*, 2011). In addition, the effect of parity number on the occurrence of reproductive health problems is probably due to repeated exposure of the genital tract to environmental factors which result in increased uterine infections. Longer recovery time from parturition, lactation stress and the low feed intake capacity of the older cows could also be other reasons for this variation (Hebert *et al*, 2011).

In the present study, a highly significant association was indicated between body condition score and reproductive health problems, in poor body condition dairy cows 38(52.77%) being more susceptible, followed by good body condition 43(28.47%) and lower in medium body conditioned 33(24.08%) cows. High prevalence of reproductive health problems in poor and good body condition and less in medium body condition in the present finding was in contradiction with the report of Gashaw *et al*. (2011), who reported a low prevalence of the problems in body condition score as 0, 1 and 5. Moreover, the previous findings of Gashaw *et al*. (2011) realized the fact that poor body condition animals were susceptible to the problems due to weakness preventing expulsion of the fetal membrane, leading to secondary complications and poor defense mechanism that increase rate of infection and a fat cow was more

susceptible to metabolic problems and infections and is more likely to have difficult at calving, retained placenta and metritis. Therefore, thinness or fatness could be a clue to underlying nutritional imbalance, health problems or improper herd management. If done on a regular basis, body condition scoring can be used to troubleshoot problems and improved the health and productivity of the dairy herd; whereas, medium body condition animal was in perfect condition to meet performance needs (Hafez, 1993). Reproductive health problems were assessed with respect to the breed of the cows, management systems and methods of service, however; there was no significant association found.

5. Conclusion and Recommendations

The present study revealed that the reproductive health problems particularly of retained fetal membrane, repeat breeder, anestrus, abortion and dystocia were the major causes of low reproductive performance of dairy farms in the study area. These reproductive health problems could be due to the poor management practice like unsatisfactory feeding, housing, health and reproduction management practices, poor farm hygienic practices and lack of regular clinical follow up by animal health professional in the farms. The possible risk factors responsible for the occurrence of reproductive health problems identified include age, parity and body condition score.

As this study, tried to point out the magnitude of major reproductive health problems and their relative importance, and their association with age, parity and body condition score, reproductive health problems are the major challenge to dairy farmers in Jimma town.

In line with the above conclusion, the following recommendations are forwarded:

- ❖ There should be awareness creation to farm owners, attendants and improved management such as, proper feeding, accurate heat detection, considering the size of sire and dam while using AI.
- ❖ Health management should be improved to minimize the occurrence of these problems and associated economic losses in the dairy farms.
- ❖ Routine and periodical examination of cows during postpartum and prepartum was essential; while most cows acquire reproductive health problem during this periods.
- ❖ Proper formulation of strategic control measures of reproductive health problems, including

health education about the disease transmission, to reduce associated reproductive wastage and their risks factors is very important in the study area.

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6. References

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