

## Research Article

# Gender and Urban Solid Waste Management \_ an investigation of the challenges and coping mechanisms of women's in municipal solid waste management practices in Gondar city administration, Amhara Region of Ethiopia

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### Abstract

Women are more supportive of the environment than men despite waste being an early problem of humankind, one that is increasing and of a major concern to every nation of the world. The aim of this study is to explore the gender dimensions of solid waste management through investigating the challenges and coping mechanisms of women in waste management practices in Gondar city of Amhara region. The qualitative inquiry via phenomenology research design was employed and the collected data from in-depth interview analyzed thematically. The findings showed: lack of awareness, unsafe dumping manner and improper health and safety requirements for waste workers as sociocultural challenges of women. Limited salary, unable to feed the family and unable to afford health expenses are also economic barriers for women in MSWM. The psychological, sexual and reproductive health problems, physical harm/cutting and

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**Citation:** Bayu EK (2023) Gender and Urban Solid Waste Management \_ an investigation of the challenges and coping mechanisms of women's in municipal solid waste management practices in Gondar city administration, Amhara Region of Ethiopia.. J Environ Sci Curr Res 6: 038.

**Received:** December 26, 2022; **Accepted:** January 9, 2023; **Published:** January 16, 2023

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kidney and uterus infections were the main problems found to exist for women health in MSWM. As indicated by the findings, inadequate and malfunctioning equipment and absence of waste recovery, incompetence of the organization in human resource training were the institutional constraints. There are also personal challenges such as gender division of labour, GBV and an absence of family support while practicing SWM. As the findings stipulate, the tolerance, detailed explanations about SWM to communities, working multiple jobs, accessing indigenous health care systems and requesting support were the women's coping mechanisms. Therefore, the issues relating to gender must be integrated into waste management practices from daily activities to decision-making system for environmental sustainability.

**Keywords:** Challenges; Coping mechanisms; Environment; Gender; Solid waste; Wastes

### Background and Rationale

Human activities create waste and the ways that waste is handled, stored, collected and disposed of pose risks to the environment and public health. Solid Waste Management (SWM) includes all activities that seek to minimize health, environmental and aesthetic impacts of solid waste. In most urban areas, governments have acknowledged the importance of MSWM; however, rapid population growth overwhelms the capacity of most municipal authorities to provide even the most basic services [1]. It is an issue mostly witnessed in urban areas as a result of the surge in population growth rate and increase in per capita income thus posing a danger to environmental quality and human health [2]. Disposal of solid wastes is a stinking and widespread problem in both urban and rural areas in many developed and developing countries [3].

Solid waste has recently become a major problem in developing countries. As a result of limited funds and poor management practices, a large fraction of municipal solid waste is not collected nor properly disposed of, the problem is rapidly aggravated by the urbanization process [4]. Due to a lack of collection systems, municipal solid waste is also often burned, buried or dumped in streets, drains, riverbanks and the seashore. The waste generated by households counts for a large percentage of municipal waste, and thus contributes to serious environmental impacts and health hazards. In developing countries with ever-increasing populations, municipal solid waste management is emerging as one of the serious problems. Improper municipal solid waste management poses a potential risk to water, air and land pollution together with risks to human health [5,6].

Solid waste is often disposed of without expectation of compensation for its inherent value. Due to their very different economic circumstances, the scale of resource recovery is much wider in economically less developed countries than in the industrialized countries of Western Europe and North America. However, in less industrialized countries, the lack of suitable waste disposal sites, stricter environmental legislation and increasing amounts of hazardous waste have all contributed to a rapid increase in the cost of disposal

services [7]. Poor management of municipal solid waste may result in consequences such as air and water pollution, and economic losses due to failures in recycling and composting valuable components of the municipal solid waste. According to Mor et al.,(2006) improper management of municipal solid waste may result in serious urban, sanitary and environmental problems such as unpleasant odour, risks of explosion in landfill areas as well as groundwater contamination because of leachate percolation.

The management of solid waste is a growing problem in many urban areas in Africa today. During recent decades urban areas have experienced rapid population growth and high rates of migration from rural areas [8]. The municipalities in many African cities clearly do not have the capacity to manage the increasing volumes of waste [9,10]. Adequate municipal SWM is much more than a technological or infrastructural issue, rather a multi-dimensional issue that includes political/institutional, social, environmental and financial aspects and involves co-ordinating and managing a large workforce and collaborating with all stakeholders. Waste production is increasing and is compounded by a cycle of poverty, rapid population growth, decreasing standards of living, poor governance and the low level of environmental awareness in developing countries around the world [11].

Notably, waste is not necessarily a gender neutral concept. Given women's primary household responsibilities (such as cooking, cleaning, laundry and family health) in many societies, women and men may have different perceptions and views of what is waste and what is not AIT, 2015. The gender division of labour within a waste system in many societies reflects a picture in which the women and children are responsible for running the household and for domestic food production, while the men earn incomes outside the home. Waste recovery may provide an important source of income for many female headed households, especially in times of economic hardship. The disposal of household waste is just one of the many routine duties of housewives. The men are usually involved in the selling of valuable items and the recycling of waste materials, whereas the women tend to be involved in collecting waste from the streets and dumps [12].

The different ways in which environment impacts on the lives of women and men is largely a result of existing inequalities around the world. The impact of women and men on the environment also differs due to different gender roles, responsibilities and norms. Women and men have distinct needs and priorities and will therefore use environmental resources and services differently. Gender roles often create differences in the way men and women act in relation to and with the environment and in the ways they are enabled or prevented from acting as agents of environmental change UN Environment, 2014-2017. Women's gender responsibility for community cleanliness is often uncompensated and when these voluntary activities become paid, women are often left out. In the absence of adequate waste management services, women are often involved in voluntary community clean-ups, street sweeping and even primary collection of waste so are exposed to some specific health risks when persistently exposed to bio-accumulative chemicals they remain in the body long after exposure and can be passed from mother to baby.

Gender inequality is detrimental to effective and efficient environmental conservation and sustainable development limiting women's access to and control over benefits from resources and equitable participation in decision-making spheres. To successfully protect human health and the environment from the adverse effects of hazardous chemicals and wastes, a comprehensive and gender-responsive

approach is needed [13,14]. For instance, a study of Vikrant, Solomon and Sharma (2014) showed the municipality of Debre Berhan is facing a number of challenges: a lack of capacity in terms of financial, technical and personnel aspects to which the city administration gives less attention. The study of Camilla (2005) has shown thousands of individuals in Addis Ababa are dependent on the recovery of plastic materials in order to make a living, these activities have shown these economically profitable and play an important role in solid waste management. It showed that, a lack of a formal system for the recovery of plastic materials has made it possible for the informal sector to fill the gap left by the government. The study of Nigatu et al. (2011) revealed the reasons for low performance of SWM in the city includes technical problems such as: inaccessibility of the city due to its geographical and urban structure, lack of properly designed collection route systems and time schedules, insufficient funds, open burning of garbage, poor condition of the final dump site, littering of the areas around the skips which encourages illegal dumping. Tilay and Van Dijk, 2014; Fasil et al., 2019; Yohanis and Genemo, 2015; Biruk, 2017; and others conducted research on solid waste management, but none of studies integrate the gender issues in MSWM practices in urban areas. Therefore, this study intended to explore the gender dimensions of municipal solid waste management through investigating the challenges and coping strategies of women in MSWM in Gondar city administration of Amhara region in Ethiopia.

## Literature Review and Theoretical Frame Work

Solid waste (SW) is a material, is not in liquid form and has no value to the owner. It is commonly classified on the basis of its sources such as: municipal solid wastes, industrial solid wastes, agricultural, mining and mineral wastes, construction and demolition wastes, healthcare, radioactive, and human and animal wastes [15,16]. Municipal waste can be divided into two parts: 1,organic or biodegradable and 2, non-organic or non-biodegradable waste. Organic waste includes kitchen waste, food leftovers, rotten fruit and vegetables and peelings, straw and hay, leaves and garden trimmings, crop residues, rags, paper, animal excreta, bones and leather. Typical industrial organic waste includes coffee husks, coconut waste and sawdust. The non-organic components of solid waste include earth, including ash, stone and bricks, coal and cinders, glass, plastics, rubber and ferrous and non-ferrous metals [17].

Municipal solid waste (MSW) can be defined in several ways. Eawag 2008, p.3 defines MSW as "all the waste generated, collected, transported and ultimately disposed of within the administrative boundary of a municipal authority." MSW generally includes household waste, garden and park waste, commercial and institutional waste. The major categories of municipal solid wastes include: paper, plastics, textiles, metal, glass, ceramics and some hazardous wastes as electric lights bulbs, batteries, discarded medicines and automotive parts UNEP 2005. Production of solid waste is not a new phenomenon being as old as human civilization. However, because of rapid population growth followed by economic development and urbanization, the majority of developing countries are experiencing difficulties in the management of municipal solid waste produced by the urban dwellers [18].

In most of the cities of the developing countries, government and local city councils have a mandate for the proper management of the municipal solid waste from collection to disposal [19,20]. According to Collivignarelli et al., 2004 many developing countries have

shown progress in their municipal solid waste management practices. However, because of limited technical capacities and low financial resources, adequate management of solid waste is not achieved and is causing serious environmental risk and poor urban governance. The volume and type of MSW generated in these countries is dependent on the standard of living, consumption patterns, commercial and institutional activities and geographical location. The waste management regime is seldom integrated and often lacks clear assignment of responsibilities for tasks and schedules among the organizations involved. There is often no umbrella organization to co-ordinate overlapping responsibilities that involve more than one agency [21].

In many countries, waste is collected from areas either by the municipality (formalized) or by informal scavengers. Informal solid waste management systems are usually complex, consisting of several strongly inter-related activities; micro-enterprises, dealers or middlemen, pickers at the dump site as well as municipal workers and itinerant scavengers all play indispensable roles in the collection, treatment and disposal of waste. More and more, approaches to the development of sustainable systems are attempting to include the informal sector and to focus on the community level [22]. Poor, inaccessible and marginal urban areas suffer most from deficiencies in service and infrastructure, thus worsening poverty, ill-health and social marginalization. In low-income or squatter settlements, waste collection is often non-existent, either because the settlements are informal, unplanned and possibly unauthorized or because the strategies and technologies adopted for service provision are inappropriate for operating in settlements with narrow and unpaved streets and lanes [23].

On the gender-and-environment nexus, years of feminist theory have been calling for the development of “frameworks and perspectives that allows an understanding that women and men are not only affected by, but also have important roles to play in enabling environmental sustainability” (United Nations Environment Programme. It is argued in Schultz and Stieß (2009) that to improve the effectiveness of laws and regulations should be addressed appropriately with accompanying measures. Specifically, in environmental education, humans are commonly discussed as homogenous and un-gendered even though significant research has been informed by feminist perspectives [24].

Mainstreaming gender in waste programme mainly translates into the integration of both genders' views and priorities for waste, the improvement of the division of responsibilities and access to waste handling resources, creation of employment opportunities and the inclusive participation of women and men in decision-making. As such, the inclusion of gender perspectives in waste management and education is a twofold strategy. It should address the untapped potential of women's contribution to solving operational problems of waste systems, as well as the specific issues of gender inequality related to the system [25-27].

Eco-feminists believe, women play an essential role in the protection of the environment because women understand nature. The responsibilities for environmental destruction lie with men. According to Fathi and Farmihani (2003), women are the main group to transfer eco-literacy and manage household consumption. Vandana Shiva considered environmental problems and crises concluding that, humans have just one way to save the environment and nature which is to retrieve feminine principles and values such as respect for nature. No matter whether it is man or woman or whether they live in the north or

the south, humans have just one way [28]. The results of this research suggested women pay more attention to the environment in attitude and behaviour and the theory of eco-feminism was confirmed. Hence, women care about energy consumption, using public transportation, the re-use of some goods, waste separation and avoiding waste dumping in the environment. In contrast, these actions have less importance for men [29]. I also argues that women play the lion's share of roles in environment protection and management for environmental sustainability at all cases.

## Materials and Methods

Gondar is a city and separate woreda in Ethiopia. Located in the Semien Gondar Zone of the Amhara Region, Gondar is north of Tana Lake on the Lesser Angereb River and southwest of the Simien Mountains. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this zone has a total population of 2,929,628, ( an increase of 40.26% over the 1994 census), of whom 1,486,040 are men and 1,443,588 women; with an area of 45,944.63 square kilometres. Gondar city has 6 sub-cities and 21 kebeles in the new classification of the city in 2010 [30] For this study, the researcher applied a qualitative research approach to investigate the challenges and opportunities of women in Municipal Solid Waste Management [MSWM] practices. As Hancock (2002) noted, a qualitative research approach is concerned with developing explanations of social phenomena seeking a depth of information and attempting to gain understanding and insight related to the meaning that individuals give to their experiences [31]. The research design can be seen as the actualization of logic in a set of procedures that optimizes the validity of data for a given research problem [32]. This study employed a phenomenology research design which helps the researcher to identify the “essence” of human experiences concerning a phenomenon as described by participants in a study. Understanding the “lived experiences” marks phenomenology as a philosophy as well as a method, the procedure involves studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning [33,34].

The researcher used non-probability sampling in order to gain the following advantages: members are chosen depending on the nature of the study without giving each member of the study population an equal chance of being included [35]. Ten female municipal solid waste workers [collectors]. One criterion was they must have a 4 years experience and regularly working both morning and at night in the areas of solid waste dumping sites. This study used primary data sources to give first-hand information about the challenges and opportunities of women waste-workers. This data was collected from interviewees reflections and observations. The interview techniques of probing (verbal and non-verbal) were used and included probing or “exploring”, silence, prompting as well as summarizing. The researcher used phrases such as “Could you elaborate more on that point?” and maintained eye contact to encourage participants to continue speaking. The researcher summarized the last statements of the participants and encouraged more talking [36].

From various methods of qualitative data analysis, the researcher used thematic analysis to analyse the findings. This begins with the categorization and organization of data in search of patterns, critical themes and meanings that emerge from the data. A process sometimes referred to as open coding [37] is commonly employed whereby the researcher identifies and tentatively names the conceptual categories into grouped. Many ethical issues arise during the data collection

process of the research, the researcher needs to consider the special needs of vulnerable populations, mental victims, person with neurological impairments, pregnant women and foetuses, prisoners and individuals living with AIDS [38].

## Findings and Interpretation

### Challenges of Women in Municipal Solid Waste Management [MSWM] Practices in Gondar City Administration

Mounting evidence and the findings of this study discovered the low performance of MSWM in the city are mainly due to the personal and family, socio-cultural, economic and institutional challenges faced by women waste workers in municipal solid waste management [MSWM] practices in the city administration.

#### Socio-cultural challenges

The social problems encountered by the women include: lack of public awareness, poor dumping sites/ ill dumping practice (often around residences and any open spaces) and improper health and safety requirements for waste workers.

#### Ill-dumping practice of waste management/poor dumping sites

“As my experience so many of people who reside in the city are not oriented on how to handle their household solid wastes and even they dump wastes, it is ill dumping without proper handling methods of wastes. They are collecting and dumping wastes with small plastics, sacks, containers and bullet containers. I am very much amazing for our waste handling methods, our community is careless on household and municipal solid waste management at all”.



Image taken by the researcher since 2020.

#### Improper Outlook for Waste Workers

As one interviewee stated:

“The community has wrongly assumed ours as lower. They said as non-important individuals while working in cleaning of municipal wastes, amazingly, they throw the wastes on the street in plastic, sacks, baskets....and so on without any proper handling systems. All of my groups collected all wastes with attention for the purpose of cleaning our city even though the wrong assumption of the community towards solid waste management needs, attention to waste management to the city is underlined point!”

Another interviewee expresses her experiences below:

“Every day, each person who saw us while working covered their nose, expectation they said, the dirty are coming and we don't respond to the person even to understand that we are not dirty”.

### Less awareness among community and technical problems in SWM

A 42 year old woman is disclosed:

“The community which resides in the city administration lacks an awareness on how to dump wastes in proper ways. For example, one days someone dump the wastes in sacks in distribute methods, we ask him why you are dump in such way, his response is ‘I do not care this is not my tasks; my tasks is drop from my house only’. Therefore, some of the individuals in the community have a technical and awareness problem on how to handle household wastes to municipal solid waste in wastes management practices”.



Image taken by the researcher since 2020.

Another interviewee expresses her experiences below:

“In my rent house when I wash my clothes like other renters in a week or in two weeks the owner said ‘you carry out everyone's waste and I become your waste collection area, you collect everyone's dirty and you throw water in my house and she ordered me to throw the water outside the campus. Because of this I believe that when I come to other house I will face such type of problem and I do what she ordered me because the women need to release her house”.



Image taken by the researcher since 2020.

From the above, we can deduce, there is the technical problem of on how to handle wastes and a lack of awareness creation among the community which encourages illegal dumping in the study area.

#### Economic-related challenges

There are many economic problems faced by women waste workers in their practice of solid waste management. These are: little salary or cash payment, insufficient funds and lack of promotion by the government for environmental protection and sustainability. In this case, the issue of gender equality and work burden in environmental protection is unrecognized even though so many women of all ages participate in waste management practices.

### Little salary for Waste workers

A female interviewee of 38 stated the low payment was inadequate. This is agreed another waste worker aged 48 in the following manner:

“No adequate money, but a lot of tasks. I admire that, the amount of salary cost to our management activities in cleaning, managing and carrying as a whole in SWM. For the basic questions to our solid waste collector is that just please increase our monthly salary from year to year because the local government are not volunteer to pay as a formal civil service servant. We have less salary payment for waste collectors at all”.

Another woman whose age is 45 also experienced:

“As I tell you before me and my children didn't leave my salary. Even it is not enough to buy clothes for the family but the only advantage I got from the government that it paid”.

We understand from the above interviewees that getting a low salary is unbalanced with their work which is exploitation and discrimination in salary. The interviewee explained their experience in the following manner:

“As I told you before, I started work the same year the organization started working and have 5 years of experience. Though I am getting 750 birr per month now, this salary is not enough to cover the living costs of six family members including me because of the inflation. Because of this, I told the government about my problem and asked to increase my salary..... and then they are not volunteer to increase it”.

### Insufficient funds and lack of promotion in waste reduction

The finance which is allocated to waste reduction and waste management practices is a cornerstone to correct methods of handling waste management and environmental protection systems. The city administration and the government are allocated a small amount of money to administer it. One of the interviewees explained her experiences as follows:

“Government allocate small amount of money for MSWM; it is quite wrong for cleaning, disposal and organic wastes management. We municipal waste collectors asked them to increase the budget for waste management to proper handling methods of SWM, but their response is there is a shortage of budget and fair distribution of resources among sectors. In this case, the environmental protection sector obtains small finance than others. Additionally, I request the government to give an attention to waste reduction. Waste management in the city is not taken as a problem but it poses to serious health problems among the residents. Due to this rationale, we are not also taken as a servant for the city administration. Hence, nothing happens without due emphasis to environmental protection than economic and health services one”.

An interviewed woman of 43 expresses her experiences as below: “It is too cumbersome; the organization didn't give balanced payment with what I work. My salary is not enough for me and my family food, cloth and house rent. Even the house rent increase because the owner of the house needs to raise her house it is not enough for the rent. So, we have a problem related with money. But what is advantageous for us. What will be the salary of uneducated person? I know there is no choice for me and I keep silent and hope that my salary will be

increase one time. In order to solve the problem of small income I was started maize and sugarcane selling by now I stopped that because the society have a problem in relation with awareness even I collect their waste they think me as a waste or a dirty material. Even in my rent house when they see my clothes changed they said you wear like this we didn't think about you in this way when we see you at your work place”.

### Unable to feed the family and Children's due to limited salary

Most women experienced the inability to feed their families and difficulty of covering the health expenses, mentioned it in the following manner:

“My salary is not enough for me and my child for food, for house rent and clothes. House rent also increased because the house owner wants to go out from her house and my salary is not able to cover even this, because of this we face a challenge related with income. With my salary we are not able to have food even for one month. Because of this we are depending on our family help. My sister gives me injera and other food materials when she buys for her and hotels give me extra foods for my family members. Already our life is in help and assistance”.

From the above expression we can understand that women working in municipal solid waste management face the challenges in relation to having enough income for feeding their family because of the low salary they receive from the government.

### Unable to afford health expenses and services

Women who are experienced MSWM also explained:

“As I tell you before, I am HIV positive and I face a lot of health problems related with the job behaviour but I didn't afford to get private health services to have check up and get medication which will be identified through laboratory testing”.

From the interview findings we can conclude that women working in MSWM face problems in getting health services because of low wage which is not enough even to get everyday food.

### Health related challenges

Most of the researchers talked more about the environmental health than the sexual and reproductive health of women in environmental protection and management. The researcher argues that women are victims of many reproductive health problems due to dumping, collecting, cleaning and transporting liquid and organic wastes.

### Psychological/ Emotional problems

One of the interviewees talked of the psychological problems in the following manner:

“It is difficult to my psyche; they walk away in street corner for cleaning. Some of the individuals claim that why you are clean, when I walk in the street, and please avoid the pollution from soil. We are wearisome of being shamed, while others self-confident. I am very sad and bored, and sometimes headache due to disappointment by someone”.

A woman working in MSWM told the experience of emotional problems as follows:

“Few persons think that the collected waste is not theirs rather mine. Society call us ‘dirty person come’ rather than waste collectors and they laugh when they saw us, mean we are not waste and they said is this work? And I keep silent ...though I am sad”!

Another interviewee shares her experiences below:

“When we come with waste materials people, especially those drinkers and addicted peoples, they spit and laugh at us.. when I push waste materials a person come out from his house which the waste is already come out and he spat on my face which was unforgettable to me and (she node her head)”.

### **Sexual and Reproductive Health Problems**

One of the interviewed women whose age is 49 explained about her sexual and reproductive health problems in the following way:

I am working for more than 5 consecutive years in waste management. Now also working through fighting with health problems such as allergy, infections, typhoid and typhus.....due to pollution while I experience the management of wastes either of liquid or organic wastes. One day, while I was worked cleaning in the street corner of the major road in the city, I was sick and sitting in the street while all of our muscles shrieked up. And then, our colleagues picked me up from the street to my home and take some medicine from pharmacy. Lastly, the doctor says please keep far away from pollution and wastes, where it is not recommended to your health problem; but unconditionally I am unable to be far from it, because I sustain my life with the income from payment what I receive from city administration. What I remind to all is that, working in waste management is too difficult for health problems especially for women because wastes are not put in proper ways...it is too distributed apparently in roads, public areas, supermarkets,....so, my health is too difficult but not stopped to work on wastes”.

### **Physical harm/Cutting**

Women waste collectors are continuously facing challenges related to cutting by sharp materials including needles, razor and syringe which diabetics use to inject an themselves. A woman explains her experience as follows:

“When we collect waste materials in households we cut by needle, in some households those diabetic persons which they use at their house and they throw in waste and glass splinter, razor and we are stabbed by it and the razor snip by it. Tumbler and glass shards are cutting our hands and legs and again the needle those having diabetic person always added it in the waste and we are always snip by it”.

### **Lack of appetite or problem of interest to prepare and eating food**

The other health problem related with women is a lack of appetite to prepare food as well as to eat the prepared food. An interviewee expresses her experiences:

“When you think to eat you start to image the modies, the diaper, dead cat, dog or other things smile and your appetite will be locked”.

Another interviewee also expresses her experiences:

“ When I prepare food I memorize the dead cat, dog, diaper and all bad things of waste and when I prepare it to eat it is like that of making food from all those wastes and don't ask me how I lose

appetite to eat the food. When I started the job, I was vomiting more than two weeks and I was not able to eat food because of this I lose energy. After returning from the work to home you lose interest to prepare food rather prefer to sleep because the work is spadework”.

From the above interviewee expressions, we are able to conclude that women working in solid waste management in the city administration, face the lack of appetite to prepare food because of seeing the waste, the rotting, putrid and decaying foods, dead animals and other disgusting items.

### **Kidney infection and Uterus infections**

Health problems related with kidney infections are always challenge expressed as follows.

“When I tell you about health problems no one said I am healthy if he/she is working in MSWM. My kidney as you saw me I go with half of my waist like that my waist is also unhealthy. My nose is also don't sense anything”.

From the women's experiences, we can deduce that women working in these conditions face challenges of health issues in relation to their kidneys have included kidney problems- health-is connected to the dirty items they are constantly collecting and carrying.

### **Institutional and Service challenges**

The women working in waste management practices experience the institutional or organizational constraints that hinder the proper municipal solid waste management in the urban areas, especially in the street corners of the roads and sites.

### **Inadequate and malfunctioning operation equipment/materials**

“As municipal solid waste management needs a strong monitoring system, the institution has to support the appropriate operational equipment. While, I worked and working in waste management practices for so many times, the institution [environmental protection authority] did not provide brooms, ditches cleaners, transport services, sacks and proper sites for wastes. I was bored in one day while I asked the city government to provide a cleaning service and transport or logistic service when their response is weak to answer quickly. This told a lot the institutions did not provide the operational equipment and services for waste management practices in the city administration, even though they provide the equipment it is truly malfunctioning for a longtime: it is too artificial”.

### **Recycling and absence of waste recovery**

The practice of using waste separation and proper composting methods is important to reduce the management challenges faced in the city. As one of the interviewees, a waste collector women of 46 stated her experiences:

“I am experienced in wastes collecting especially in solid waste management for more than 6 years. We are put in difficult situation since there is no proper refuse and well final dumpsite while cleaning and dumping the wastes. This is simply an open burning of refuse, poor condition of the final dumpsite in the city administration in the corners of the street roads. We have no proper recycling methods of waste management, also absence of waste recovery and re-use of garbage outputs. This reminds the administration to look over on it unless it is difficult situation for resident community especially for those who reside in huge ditches, rivers, streams and so on”.



Image taken by the researcher since 2020.

Therefore, the municipal solid waste management is constrained by the lack of recycling and absence of waste recovery, practice of waste separation and composting are among the management challenges. The open burning of refuse and poor conditions of the final dumpsite are the major challenges for women in this work.

### **Incompetence of the organization in human resource development and training**

Most of the participants explained about the essence of training and experts' assistance in municipal waste management practices. One of the interviewees aged 31 elaborated:

“The organization has given some training; but is too short. As we doubt so many times about the equipment problem and unreliability of services. And also, we are asking in obtaining training so as built a capacity on how to handling municipal wastes properly but some of the practitioners are not voluntary to provide training and the organization do not provide continuous training, monitoring and management services for proper solid waste management in urban areas”.

From this we can understand that the incompetence of the organizations in terms of equipment required and human power/staff qualifications, training and human resource developments and/or unreliable service are among the institutional challenges experienced by workers in this field.

### **Personal and Family challenges**

Many personal challenges such as gender division of labour, gender-based violence, educational level, personal health and absence of family support were the major challenges for these workers.

#### **Division of labour and the time schedule**

One interviewee aged 48 stated her experiences:

“As many of the people who reside in the community assumed the works of solid waste is given for women only. This truly thinks with in the whole community in some case. As many of the waste collectors are women, it is duly acknowledged as women sectors. Nothing happens without the recognition of women and men in environmental protection especially in waste management”.

Another interviewee affirmed the double discrimination and work burden in the following ways:

“I have 5 children. I am working all of the household chores and the income generating activities for household consumption. I have no time and make busy within home and outside home activities. I have no any individuals that assist me in house-based activities since the absence of male counterpart: female headed household. I am



Image taken by the researcher since 2020.

responsible to all tasks to bearing children, generating income, facilitating social networks and waste management tasks”.

From the above, we can understand that waste workers experience the complexity and challenges of the family time-schedule when conducting municipal solid waste management practices especially in the absence of male counterpart.

### **Stigma within families**

Women solid waste collectors face challenges at home like stigma in eating together. One worker expressed as follows:

“In my house also I face a lot of obstacles. For example, my children have no appetite to eat with me even though I prepared the food, we didn't eat together and they said you don't eat with us because you collect the whole day dirty things here and there. Especially my little daughter said that I will prepare the food and don't touch it. When I asked why? She explained that one day when I become sick my stomach and told for classmates they said your mother prepare a food by collecting waste materials and they advise me to prepare my food. She told me that don't prepare food because I don't eat what you prepare but she is eight years old and I told her I didn't give waste food for her”.

### **Separations with husband /Partners**

Women solid waste collectors also have challenges related with their home including disagreements with their husband which end with separations. One of the interviewees-explained the experience as follows:

“My husband feels discomfort to stay with this job and he always told me that it is better to stop the job because people always told him the work is like vulture work. After that he stopped to sleep with me in one bed and finally we separate”.

From the interview results, it can be disclosed that women working in SWM faced a challenge to stop the work from their husbands because they were not able to do so they become separated.

### **Insulting and Confront**

Women also face insults from their family members even from their children and husband because of the disrespect for their job. Not only the women who are working in the waste collection but also a daughter at home is insulted by sons. Women of MSWM workers experience insults from her husband before separation:

“When he comes to my house he said you consider waste collection as a job. I marry with you because by considering as a human being. I didn't know that you are a dirty picker, vulture if you have the same position vulture marry with him and in one day he warns me you dirty vulture if you don't stop work one day you also become waste material I will breakdown your body (She was crying)”.

From the above interviewee response, we can understand that women solid waste collectors faced challenges like being insulted at their home in relation to their job because they consider the worker itself as dirty material not as a human being. In addition, the daughter at home is also insulted by sons in the same house because of their mother's job.

### **Gender based violence /violence against women (VAW)**

Violence against women/gender-based violence is a well-recognized public health problem, a gross pervasive abuse of human rights and a major obstacle to achieving the sustainable development goals which include environmental sustainability worldwide. In Ethiopia, violence against women and girls continues to be a major challenge and a threat to women's empowerment and this happens in different ways to women waste collectors. A woman faces physical, psychological and sexual abuses that undermine their health and ability to earn money; disrupt their social systems and relationships particularly for those women who are working in environmental protection. One of the interviewees dedicated her experiences of violence while working in MSWM as follows:

“I told this story to remind how much the SWM is too problematic. One day, I wake up at 12:00 to clean, dump and collect the municipal solid waste management and go to the corners of street roads. A man who travelled across the road say where are going now, I respond to him ‘I am here’. Can you tell me you phone number please? Say ‘No’. Why? ‘I haven't’. He approached to me to touch and shake my hand. I don't want to. He kicked my neck why you treated is such way...ohm. I am very sad and sat down. He bit me and a long touch my breast and the whole body...oh my God. Lately, am crying and he leaves me after sound my voice of crying. Within the whole day, I am very much fear, sadden, headache and broken the right hand of my hands, still malfunctioning.....all of my concerns is that, we waste workers needs security and social recognition among the community.....”

### **Coping Mechanisms of Women in MSWM practices in Gondar City Administration of Amhara Region**

Municipal solid waste management is serious to practice as a day-to-day task for sustaining basic needs. A woman working in municipal solid waste management faces a lot of challenges with few coping strategies. So, to overcome these challenges they use different mechanisms such as: working multiple jobs, repeatedly requesting support and access to health services, tolerance and telling detailed information about SWM tasks. They are hard working and passionate about the strategies they employ in municipal solid waste management practices in the study area.

#### **Tolerance and Accommodation**

The practices of solid management are difficult and need patience even though women working in MSWM have multi-dimensional challenges, different coping mechanisms to overcome challenges, such as tolerance, accommodation and silence. As one of the interviewees stated:

“As many of negative outlooks and social exclusion faced in my experiences of municipal solid waste dumping, I accepted as a common challenge via boosting the tolerance capacity and some meditation means while raising conflict with colleagues, families and the community. Especially, after four years of experience, I have adapted good maturity and personality behaviours and am the one exemplary waste workers to managing the problems via respective of solutions”.

#### **Silence and faithfully accepted**

Many socio-cultural problems are faced by women working in MSWM practices, waste workers also use silence, faithfully accept or praying to their Almighty God/Allah as the last option above -all corresponding problems as they think there is no another choice. Other interviewee women aged 32 explained her experience:

It is too ambiguous and difficult to remove the exclusion and rigid norms. It is not welcoming to ask any question in relation to the society rigid norms and ignorance, so I keep silent whatever happens and I told to GOD: this means I didn't have any solution by telling my problem for any person and means of reducing socio-cultural challenges”.

A woman whose age is 50 told the strategies of coping with their challenges in the following manner:

“It is so surprising what I told this means of coping. As a principal solution I pray to GOD to give me strength until my children reach at maturity level and asked to give me another solution (she was crying....feels non-sense in her face about this world).....ohhh...I hate my life... but calm with Almighty God”.

#### **Detail explanations about SWM**

Mostly, our community is not aware about MSWM and waste in general. Due to this rationale, there are different problems faced by families and community regarding the practices of waste management and environmental sustainability. As one interviewee stipulated:

“Explaining the task of waste dumping and collecting to my nearest families and community within sites, waste dumping is the best alternative to tackle the problems of awareness and family related posing enforcement. One day, I told to my families what the relevance of SWM especially in urban areas is even though they are arrogant and some of them accepted. It is duly acknowledged by the city administrator as one of the best waste workers what I learn brief explanation for the community with Sunday morning in our women's association and local groups often. However, it takes a long time to change behaviour of the community awareness about MSWM and practices. I start from my households and then families ...community and the urban residents in general...though bulky to mainstream”.

#### **Working multiple jobs/income generating activities**

This is due to the fact that the feminization of poverty is severe in both rural and urban areas of Sub-Saharan Africa especially in Ethiopia. In the same fashion, women waste workers face so many problems regarding municipal solid waste management in the city administration, but working multiple jobs is one strategies employed by women that increases their income in addition to obtaining money from waste dumping jobs. The following was truly spoken by a woman whose experience is too long in the following manner:

“It is too small salary obtained from management of waste practices. Despite limited cash income from the tasks, I preferred to work



multiple income generating activities such as petty trade, food vendor, carrying.....My rationale is correct because I obtained income that's equivalent with waste dumping to family consumption and children schooling fee. I have different source of income from different activities though busy to accomplish all concurrently....but not bad in cases”.

### **Requesting repeated support and alliance from another sub-city**

Asking support for the problems and limitations is essential to reduce the financial and institutional barriers in municipal liquid and organic waste management for environmental sustainability and attaining the sustainable development goals especially combating climate change effects and pollution. An interviewed woman stated her experience in the following manner:

“I am very much bored to request the institutions [environmental protection and mayor city administration] about the support provided to me and our groups. Their responses are not attractive as compared to the seriousness of the waste problem as well as limited finance allocation to dumping it. Our monthly salary is too small; I and we requested them more than two times per month to increase our salary, but not considered them as civil servant and useful individuals; takes as a waste. Though it takes a long-term debate, some of our groups added their salary twice from the previous income. I admit that, great effort needed to exerts the institution and other concerned bodies to waste management and their workers benefits”.

### **Accessing health care services via indigenous health care system**

Although there are a lot of sexual and reproductive health barriers in municipal solid waste management, women waste workers employed different options to reduce those barriers such as using indigenous medical systems, using modern health care centres, reporting to justice and health-care affairs to overcome health-related challenges. An interviewed woman said:

“It is usually asked the health institution to give free services to ours[waste workers].But, not considered as a problem of accessing health services to waste workers, especially for women. A timely accessible health service is not applicable. One day, I was very much sick after I dumping wastes for consecutive 2 hours. And then, I was picked up by my colleagues to health centre to treat my typhoid ... then rehabilitate from sickness after a long time. I also travelled to health centre a lot of times....since dumping and collecting wastes poses serious health problems...and difficult for women health especially pregnancy, and other reproductive care system....ohhh...so sad...needs hearing of our voice. ....our voices...our health...for our health”.

Additionally, one of the interviewees deduced the strategies of combating health-related challenges in the following manner:

“I was sick while I dumped wastes from the street corners of the main road since I have an allergic and typhoid...and sometimes I infected accidentally. Hence, I used the options of using indigenous medical care system such as lemon, Damma kesse, Hareg Riessa ...other leafs which is valuable for medicine; I recover easily via indigenous system without travel to health centre that it needs huge salary and finance in modern healthcare. Some of our groups used such options in some cases...”

### **Using Available equipment's and Materials effectively**

Availability of equipment and sufficient materials is the cornerstone of the proper household and municipal liquid and solid waste management in every rural and urban area of the world. Even though, there are a lot of barriers hindering the proper solid waste management, there is a strategy of using available equipment and materials effectively unless other options are available. As one interviewee stipulated:

“Mostly my towns have no proper equipment and materials for proper waste handling methods. We are using the sacks and containers, and small vehicles to travel and dumping into waste sites after picked up from the main corners of the roads. Obviously, I request to add the available materials and equipment for handling and proper waste recovery from the institutions frequently...though nothing new happens. So, our best means of handlings is using sacks, cartoons, plastics, containers...etc...so amazing and horrible”.

### **Reporting to the institutions and other concerned stakeholders**

Organizational structures and institutional procedures, polices and legal instruments play a significant roles for the successful accomplishment of tasks especially in environmental sustainability and attaining gender equality and equity. In the same fashion, women of the waste workers in MSWM practice employed the strategies of reporting and using the institutional framework. These issues are affirmed by a woman as follows:

“In some cases, I am vulnerable to violence while working in MSWM. In such cases, I reported to the policy offices and Women, Children and Youth Affairs office at one time to arrest the perpetrator. And then, the issues of VAW is reported by the institution of [Environmental Protection Authority in the district] the city, one of my cases is handled after a complex procedures and arrested by the prosecutor. However, most of our colleagues did not report their victimization of violence against women and some of psychological problems”. Additionally, one of the interviewees disclosed her experienced in the following way:

“It is not only to our psychological problems, but also for other socio-cultural, economic, family related and institutional barriers reported to different institutions respective of each challenge. I am indebted to thanks some organization. This is not true for all institutions. I am reporting equipment problems and some of economic problems have been solved through the support of those institutions via reporting my problems though need further works”.

### **Hard working habits and strengthens the passionate**

Waste is a phenomenon of human activities. Therefore, a hard-working habit of human beings is necessary to reduce the waste problems of urban areas, likewise, women's due emphasis emphasis to hard working habits in environmental protection and management. As one interviewee women aged 48 explained:

“I am working for more than 5 years both as a waste collectors and dual responsibility of domestic chores. I believe as an exemplary woman that satisfies the basic needs and family consumption. In this case, I am attracting the attention of the colleagues and logically discuss to family-related challenges if I strengthen my passion. So, I work in strong habits via passionate and hope for the near future. This truly happens in some of my colleagues so life is hard to survive at all cases”.

Added to by a woman about the time schedule and division of labour challenges in the following manner:

“Though multi-dimensional challenges exist, we women waste-collectors use different strategies respective of each problem too. I experienced a lot of family and personal challenges as I have 6 years of waste management. I also employed trusting personality development, hardworking and passionate in all of my careers and waste management too. Though it is cumbersome to work on it and sustain the life in such types of tasks”.

Therefore, even though a woman working in municipal solid waste management is constrained by different challenges, strengthening the hard-working habits and passion, reporting to the institutions, availability of equipment and materials are some of the coping mechanisms for waste workers while working on municipal solid waste management practices in the city administration of Amhara region.

## Overall Discussions

Women are able to protect the environment because some of the environment's problems begin from the home [39]. The management of solid waste is a growing problem in many urban areas in Africa today. The urban population of the world is expected to double to more than five billion people in the next 35 years, with 90 per cent of the growth taking place in developing countries [40]. According to Collivignarelli et al., (2004) in recent years, limited technical capacities and low financial resources, adequate management of municipal solid waste has not been achieved. The failure to provide proper waste management is causing serious environmental risks and poor urban governance. The improper management of municipal solid waste has been reported by several researchers in different cities of developing countries like Nigeria, India, China, Turkey [13,26,34,35] Additionally, insufficient funds as well as lack of promotion on waste reduction: recycling, absence of cost recovery, practice of waste separation and composting are among the financial challenges. Notably, the social problems encountered include: lack of public awareness, illegal dumping, poor conditions for waste workers, lack of private sector and community involvement [29].

Poor management of municipal solid waste may result in pollution, low aesthetic values and economic losses due to failures in recycling and composting valuable components of the municipal solid waste. According to Mor et al., (2006) improper management of municipal solid waste may result in serious urban, sanitary and environmental problems such as unpleasant odours, risk of explosion in landfill areas as well as groundwater contamination because of leachate percolation. The municipality of Debre Berhan is facing a number of challenges like a lack of capacity in terms of financial, technical and personnel aspects, no proper budget is allocated for municipal waste management. Only 25 % of the households have access to waste collection and transportation services as the city municipality is under capacity to provide a waste collection and transportation service. 75% of urban dwellers dump the waste produce illegally and there exists no well-designed dumping or landfill site, consequently urban dwellers are vulnerable to surface and groundwater pollution [41].

The waste management regime in developing countries is seldom integrated as there is no umbrella organization to co-ordinate overlapping responsibilities for waste management that involve more than one agency. Waste production is increasing and is compounded by a cycle of poverty, rapid population growth, decreasing standards of

living, poor governance and the low level of environmental awareness. The overall lack of environmental awareness and education of the public and policy-makers about the topic of waste management only perpetuates these unsustainable waste management systems [42].

Women are exposed to specific health risks in various ways. For example, as women are often caretakers of the house and responsible for household waste management, they are more exposed than men to human excreta or other raw waste materials, thereby contracting diseases such as hepatitis, diarrhoea and eye/skin infections more frequently. When women are exposed to bio-accumulative chemicals persistently, they remain in the body long after exposure and can be passed from mother to baby. Even though an awareness problem and resource constraint is limited, it was encouraging to find the community's awareness was good. However, practical applications were limited. The lack of appreciating the link between problems associated with solid waste and proper handling and disposal of waste can be big constraints to the community's effort of promoting healthy behaviour [31,32].

The facilitate disease and injury, especially among children, rag-pickers and employees in the waste management sector. Studies have shown that a high percentage of workers who handle refuse and individuals who live near or on disposal sites are infected with gastro-intestinal parasites, worms and related organisms. Contamination of this kind is likely at all points where waste is handled. Although it is certain that vector insects and rodents can transmit various pathogenic agents (amoebic and bacillary dysenteries, typhoid fever, salmonellosis, various parasitizes, cholera, yellow fever, plague and others), it often is difficult to trace the effects of such transmission to a specific population.

In the industrialized countries, the lack of suitable waste disposal sites, stricter environmental legislation and controls, and increasing amounts of hazardous waste have all contributed to a rapid increase in the cost of disposal services. In economically less developed countries, poverty is the major reason why thousands of people are involved in the (informal) collection, sorting and processing of solid waste. Rapid urbanization and related problems such as the steadily decreasing employment opportunities contribute to the extended scale of resource recovery. Human behavioural patterns are a key factor in determining the extent to which organic waste can be reused.

Poor, inaccessible and marginal urban areas suffer most from deficiencies in services and infrastructure thus worsening poverty, ill health and social marginalization. In low-income or squatter settlements, waste collection is often non-existent, either because the settlements are informal, unplanned and possibly unauthorized or because the strategies and technologies adopted for service provision are inappropriate for operating in settlements with narrow and unpaved streets and lanes [5]. The management of household waste is usually the responsibility of women. The gender division of labour within a waste system in many societies reflects a picture in which the women and children are responsible for running the household and for domestic food production, while the men earn incomes outside the home. Cultural or religious considerations often prevent women's participation in income-generating activities outside the home; whereas men have easier access to the starting capital required to purchase machinery and means of transportation [43].

Women do not always have equal inputs into the allocation of family finances, for example, although a woman might be willing to

spend scarce household resources on waste disposal, her spouse may not agree. Women's heavier workload means they often have less available time. Thus, men and women can assign different values to time spent on waste disposal. Given different responsibilities and resources, women and men may set different public health priorities and have different environmental standards. The government's lack of awareness of the informal sector has made it possible for the recovery system to develop without interference. The governmental ignorance of the informal plastic recovery system as well as civil society's lack of trust and credibility in the government has proven to be one of the main difficulties confronting the plastic recovery system.

Most cities in Africa with the fast expansion of urban areas are characterized by a lack of resources, institutional organization and the capacity to provide basic infrastructure, which in turn causes increased problems concerning the management of solid waste. Moreover, the lack of proper land-use planning has resulted in the creation of informal settlements, with narrow streets that make it difficult for collection trucks to reach many areas in the cities. Resulting in, people disposing of their waste illegally in open fields, rivers, streets and ditches [44].

In Ethiopia, the reasons for low performance of SWM includes: inaccessibility due to the geographical and urban structure, lack of properly designed collection route systems and time schedules, inadequate and malfunctioning operational equipment, poor condition of the final dump site, littering of the areas around the skips which encourages illegal dumping; these are the technical problems identified. The incompetence of organizations in terms of operational equipment required and man-power/staff qualifications, training and human resource developments and unreliable service are the institutional challenges encountered in the sector [45].

Households are sympathetic to neighbourhood level sanitation. The dreadful attitude and lack of co-operation of inhabitants at the city level account for the irresponsible littering behaviour of transitory people explained by the problem of migration, travellers and traders, the structure of the city, ownership issues, illegal functions in the city, awareness, and local versus city sanitation discourses (procedurally, administratively and perception-wise). The poor monitoring capacity of the local administration is also a potential contributor to the problem [3,4]. In Jijiga city, SWM is limited resulting in sanitation, social and environmental problems. Waste management problems are complex because they involve a multitude of scientific, technical, economic and social factors. Similarly, it is observed that lack of financial resources, institutional weakness, improper selection of technology, transportation systems, disposal options and social problems associated with lethargy towards environmental cleanliness and sanitation have made these services unsatisfactory and inefficient [15,16]. Moreover, the analysis shows, the lack of knowledge regarding the social and environmental consequences of food waste needs to be tackled to improve people's awareness of the wider impacts of wasteful behaviour. Yet, there has been little research conducted on how perceived time availability influences people's waste practices [46].

## Conclusion

The gender-and-environment nexus, a feminist theory has been calling for the development of frameworks and perspectives that allow an understanding that women and men are not only affected, but also have important roles to play in enabling environmental sustainability.

Notably, waste is not necessarily a gender-neutral concept. The different ways in which an environmental condition has an impact on the lives of women and men are largely the result of existing inequalities around the world. The impact of women and men on the environment also differs due to different gender roles, responsibilities and norms. Hence, as the study finds, women have a personal, family, socio-cultural, economic and institutional challenges to face while practicing municipal solid waste management [MSWM] in the city administration. The social problems encountered by women in MSWM include: lack of public awareness, ill dumping manner, poor dumping sites and improper outlook for waste workers. There are many economic problems by the women waste workers. The little salary or cash payment for waste work are insufficient funds and lack of education for to waste reduction by the government for environmental protection and sustainability. The inability to feed their family and afford health expenses are other economic barriers for those women. Regarding their health challenges in MSWM, the psychological or emotional problems, sexual and reproductive health problems, physical harm or cutting, lack of appetite, kidney and uterus infections were the main problems existing throughout waste management.

The women who are working in SWM additionally indicated the institutional or organizational constraints that hinder the proper municipal solid waste management as inadequate and malfunctioning operation equipment's, recycling and absence of waste recovery, incompetence of the organization in human resource development and training. There are many personal challenges such as gender division of labour, gender-based violence and absence of family support while practicing solid waste management. Similarly, the division of labour and the time schedule, stigma within families, separations with husband /love partner, insulting and confrontational behaviour were the family and personal challenges of women.

As the findings stipulate, the copying mechanisms of women in MSWM were the tolerance and accommodations, silence and faithful acceptance, detailed explanations about SWM and communities nearby waste sites, working multiple jobs, requesting repeating support and alliance from another sub-city in Gondar city administration. Additionally, the study showed that accessing health care services via indigenous systems, using available equipment and materials effectively, reporting to the institutions and stakeholders, and hardworking habits, strength and being passionate were the copying strategies of women in municipal solid waste management in the study area.

## Recommendations

Based on the findings, mainstreaming gender in waste programmes mainly translates into the integration of both genders' views and priorities for waste, improvement of the division of responsibilities and access to waste handling resources, creation of employment opportunities, and the inclusive participation of women and men in decision-making processes. Additionally, awareness and attitudes are crucial to the success or failure of an SWM system, institutional issues include current and anticipated legislation and the extent to which laws should be enforced, health education and demonstration should be conducted on the use of individual composting operations. The Municipality should provide a waste collection service especially for overcrowded areas and street corners as dumping sites. The promotion of appropriate solutions for this complex environmental problem requires broader assessment and the co-operative effort of concerned state agencies and the community as a whole.

## Acknowledgment

First of all, I would like to express our deepest gratitude to the study participants for being willing to participate in this study without whom this research would have not been realized. Secondly, the author would like to acknowledge the Gondar City Community and Administrators for providing support to conduct this research. Thirdly, I would like to thank my supervisor Getasew Nigusie (Assistant professor) for his unreserved support and contribution for the quality of the data. Lastly, the author would like to acknowledge and give deepest thanks to Ms. Judy Price from United Kingdom for helping in editing the manuscript.

## Funding

Not applicable

## Ethics approval and consent to participate

Ethical approval was obtained from the University of Gondar Research and community service affairs Vice president and College of Social Science and Humanities Research and community service affairs Committee and informed oral and written consent was taken from every woman and their parents and guardians who participated in the study.

## Competing of interests

I declared that, there is no any conflict of interests regarding the concepts and methodological parts of the study.

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