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INCIDENCE OF URINARY TRACT INFECTIONS AMONG PREGNANT WOMEN AND ANTIBIOTIC SENSITIVITY PROFILE OF THE UROPATHOGENS- A STUDY

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Abstract

Urinary tract infections are a common bacterial infection known to affect the different parts of the urinary tract and the occurrence is found in both males and females. Despite the fact that both the genders are susceptible to the infection, women are mostly vulnerable due to their anatomy and reproductive physiology. The infection is usually caused as a consequence of bacterial invasion of the urinary tract including the lower and the upper urinary tract. The aim of the study was to determine the prevalence of urinary tract infection among asymptomatic and symptomatic pregnant women reporting to a hospital in Ernakulam during the period March to June 2017 and also to determine the drug susceptibility pattern to selected antimicrobial agents. This study was conducted among 96 pregnant women with or without any symptoms of UTI. Non pregnant were excluded from the study. Midstream urine sample was collected, plated on CLED agar and the colony count was done using standard methods. The isolated bacteria were identified using biochemical tests. Disk diffusion susceptibility testing was carried to determine antimicrobial susceptibility of the isolated pathogens. Among the bacterial pathogens *Escherichia coli* account for 40% of the infection followed by *Klebsiella*, Coagulase Negative *Staphylococcus*, *Pseudomonas aeruginosa*, *Proteus sp* and *Staphylococcus aureus*. Antibiotic susceptibility test showed that greatest degree of resistance was exhibited by the isolates to the antibiotic amoxicillin and the least to ofloxacin. Almost 60% of the isolates were multi drug resistant (MDR).

Keywords: UTI, Pregnant women, *E.coli*, Antibiotic sensitivity, Multi drug resistance, uropathogen.

Introduction

An infection anywhere in urinary tract is referred to as Urinary tract infections and is one of the most common bacterial infections found in human beings. Urinary Tract Infection (UTI) is defined as the presence of at least $\geq 10^5$ colony microorganism per milliliter of sample in an asymptomatic patient or as more than 100 organism per milliliters of urine with accompanying pyuria (>5 WBC/ml) in a symptomatic patients (Johnson, 2011). Urinary tract infections is predominately a disease of the females due to short urethra , proximity of the vestibule and the anal openings, absence of prosthetic secretion, pregnancy and easy contamination of the urinary tract with fecal flora (Johnson, 2011).

Urinary tract infection in pregnancy is associated with significant morbidity for both mother and baby. Pregnancy increases the risk of UTI at around 6th week of due to the physiological changes of pregnancy, the ureter to dilate. This is also known as "hydronephrosis of pregnancy", which peaks at 22-26 weeks and continues to persist until delivery (Parveen et al., 2011). Both progesterone and estrogens levels increase during pregnancy and leads to decreased urine concentration and bladder volume. The apparent reduction in immunity of pregnant women appears to encourage the growth of both commensal and non-commensal micro-organisms. (Scott et al.,1990).

Most UTIs originate in the fecal flora but only aerobic and facultative species possesses the attributes required to colonize and infect the urinary tract. Virulence factor of pathogens like capsule, pili, urease production are associated with UTIs. (Cedric et al., 2004).

Appropriate empirical treatment of urinary tract infections (UTIs) is important for successful treatment and prevention of complications especially during pregnancy. With an increase in prevalence of antibiotic-resistant urinary pathogens, the selection of an appropriate empirical agent is increasingly difficult.

In the scenario of wide spread occurrence of urinary tract infections among pregnant women and an increase in drug resistance among uropathogens, this study was taken up with aim to isolate and identify bacterial uropathogens associated with UTI in pregnant women and also to determine the drug susceptibility pattern of these pathogens.

Materials and Methods

A hospital based study was conducted from March to June 2017 at a reputed hospital in Ernakulum. This study was conducted among 96 pregnant women with or without any symptoms of UTI. Non pregnant women were excluded from the study.

Collection of urine samples

Early morning mid stream urine was collected using sterile wide mouthed containers with tight screwed cap tops. The samples collected were labeled.

Isolation and Quantification

A calibrated sterile micron loops for the semi-quantitative method was used for the plating of 0.001ml of urine sample. The samples were cultured on to the CLED (Cysteine lactose electrolyte deficient) Agar media plate and incubated overnight at 37°C for 24 hours. Colony count yielding bacterial growth $\geq 10^5$ colony was considered as significant in the sampled urine.

Identification

All positive cultures with significant bacteruria were identified by their colony characteristics, Grams staining reaction and the pattern of biochemical profiles using standard procedures.

Antimicrobial susceptibility testing

The antimicrobial susceptibility of all identified isolates of urine samples was done according to the criteria of the Clinical and Laboratory Standards Institute Method. With a sterile wire loop 3-5 colonies of overnight culture was emulsified in 3ml of normal saline to prepare the suspension. A sterile swab soaked with the bacterial suspension was swabbed over Muller-Hinton agar (M.H.A). Using a sterile forceps the appropriate antimicrobial discs was placed. The plates were incubated aerobically at 35°C - 37°C for 16-18 hours. After the incubation period, the zone of inhibition was measured using a ruler and was reported as sensitive or resistant or intermediate (Collee, 1996; Cheesbrough, 2009)

Results and Discussion

In this study on urinary tract infections among pregnant women at a hospital in Ernakulam; it was found that out of 96 urine samples analyzed only 70 samples (72.9%) were positive. In a study by Oli et al., (2017), the percentage of bacteruria was 89.17% which was higher than that reported in this study.

Out of the 70 positive samples 16 of the bacterial isolates (22.85%) were Gram positive and the rest of 54 isolates (77.14%) were Gram negative (Figure 1). These isolates were identified based on the biochemical tests which have been summarized in Table 2.

In this study the highest rate of UTI in pregnant women was due to the presence of *Escherichia coli* (40%) which was followed by *Klebsiella* sp. (30%). The other pathogens isolated were Coagulase Negative *Staphylococcus* (10%), *Pseudomonas aeruginosa* (7.14%), *Proteus* sp. (7.14%) and *Staphylococcus aureus* (5.71%) (Figure 2).

Several other workers (Afshar and Khamenh, 2009; Alemu et al., 2012; Shaifali et al., 2012; Vasudevan, 2014 and Hamdan et al., 2015) too have reported that *E.coli* was the most prevalent pathogen isolated from UTI patients.

With regard to species diversity of the UTI pathogens isolated from pregnant women ; a study conducted by Oli et al. (2017) in South-eastern Nigeria, *E.coli* was indicated in 28.5% of the cases followed by *Staphylococcus aureus* (28%), *Pseudomonas aeruginosa* (20.5%). A similar study by Cunha et al., in 2016 too reported that *E.coli* (60.4%) was the main causative agent of UTI. The results from the work of Maji et al. (2016) in West Bengal indicated the major role was of *E. coli* (64.5%) followed by *Staphylococcus aureus* (46%). The incidence of *E.coli* in this study (Figure 2) is higher than that reported by Oli et al. (2017) whereas it is lesser than that reported by Cunha et al. (2016) and Maji et al. (2016). It is interesting to note that the diversity of species isolated is greater in this study than the others (Figure 2).

Antibiotic susceptibility testing revealed that, the highest degree of resistance was exhibited to the antibiotic amoxicillin and whereas the least resistance was to ofloxacin (Figure.3). In this investigation, Gram negatives were sensitive to Ofloxacin (81.2%), Imipenem (68.75%) and Meropenem (68.75%), while the Gram positive isolates were sensitive to Ofloxacin (85%)

and Imipenem (79.6%). Ofloxacin was found to be the most effective drug in this study. Most of the organism showed resistance to cephalosporin family, β -lactam antibiotics and nalidixic acid which are the major classes of drugs used UTI therapy.

Over 90% of the isolates of *E.coli* were resistant to amoxicillin and whereas they were least resistant to ofloxacin (Figure 4 (a)) and intermediately sensitive to cephalosporin family. A study by Oli et al. (2017) on the bacteriology of UTI among females in a tertiary health facility in south eastern Nigeria found *E.coli* (60.4%) was resistant to Ciprofloxacin (24.49%) and Sulfamethoxazole Trimethoprim (50.6%) Susceptibility showed was over 90% for nitrofurantoin, amino glycosides and third generation cephalosporin (Cunha, 2016). In a work by ECO.SENS on the prevalence and susceptibility of pathogens causing community acquired acute uncomplicated UTIs, *E.coli* was found to be resistant to ampicillin (29.8%), sulfamethoxazole (29%), trimethoprim (14.8%), and nalidixic acid (5.4%).

In this study, *Klebsiella* species exhibited the highest resistance to amoxicillin and least resistance to imipenem (Figure 4 (b)). A similar observation was made by Hamdan et al., (2015). A study by Shaifali et al., (2012) showed that the most effective antibiotic for both *E.coli* and *Klebsiella* was nitrofurantoin.

Pseudomonas aeruginosa showed 100% resistance to ampicillin and norfloxacin whereas they were all sensitive to ofloxacin and imipenem (Figure 4 (c)).

Staphylococcus aureus exhibited 100% resistance to amoxicillin, nalidixic acid, netimycin and amikacin while they were all sensitivity to nitrofurantoin, norfloxacin and ofloxacin (Figure 4(d)). *Proteus* sp. showed high degree of resistance to amoxicillin and least to imipenen. (Figure 4(e)). CONS were highly resistant to amoxicillin and least resistant to nitrofuratonin, netimycin and meropenem. (Figure 4 (f)). A study by Muili (2010) 75 to 100% *Pseudomonas* sp. were resistant to the common antibiotics and also 87.1% and 82.4% were resistant to nalidixic acid and cefuroxime respectively. In another study *Pseudomonas aeruginosa* isolates were resistant to all tested antimicrobials except amikacin and nitrofurantoin (Tamalli et al., 2013).

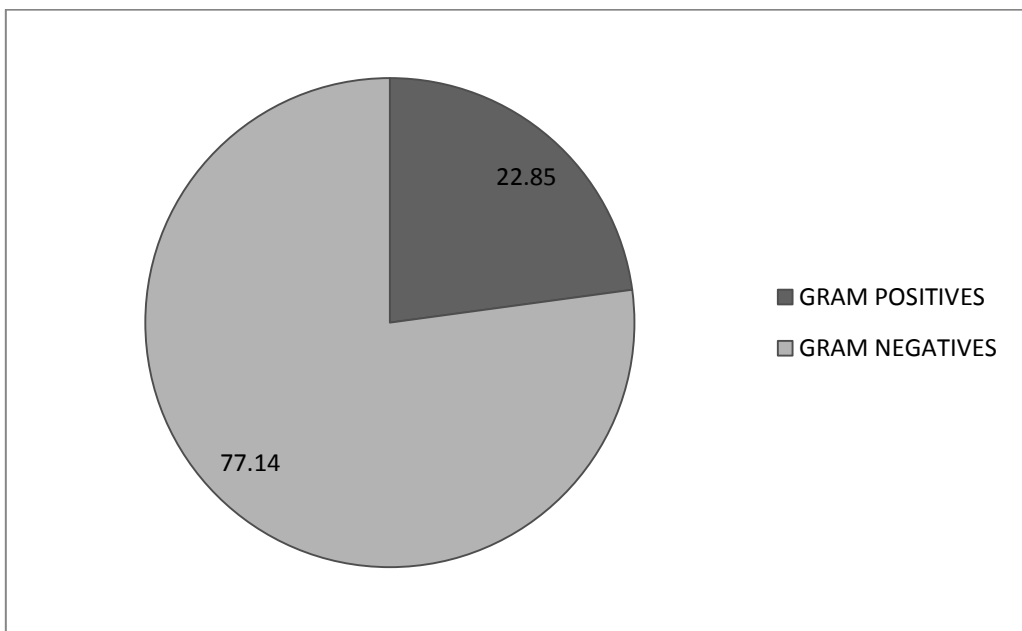


Figure 1. Percentage of UTI pathogens

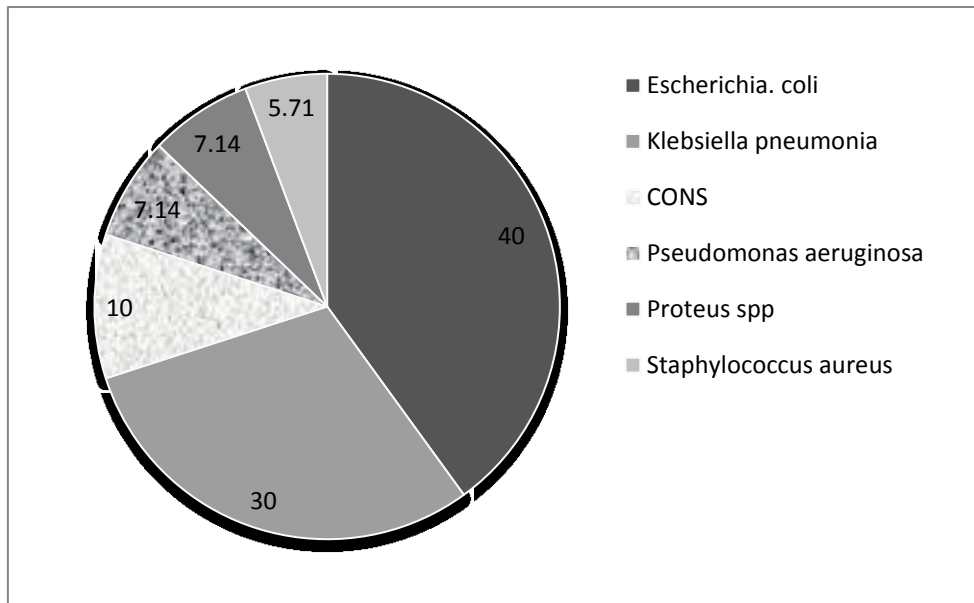


Figure 2. Species diversity of UTI pathogens

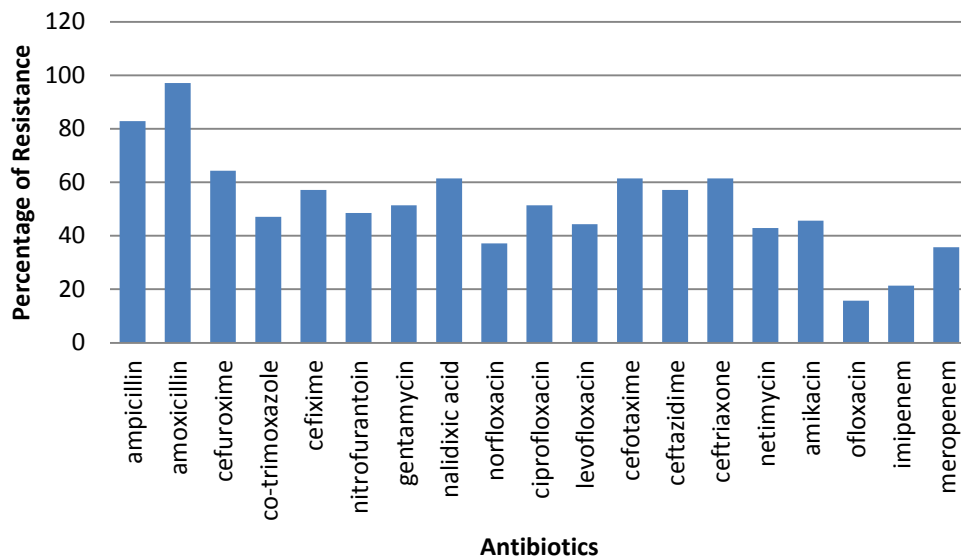


Figure 3. Overall antibiotic resistance profile of UTI pathogens.

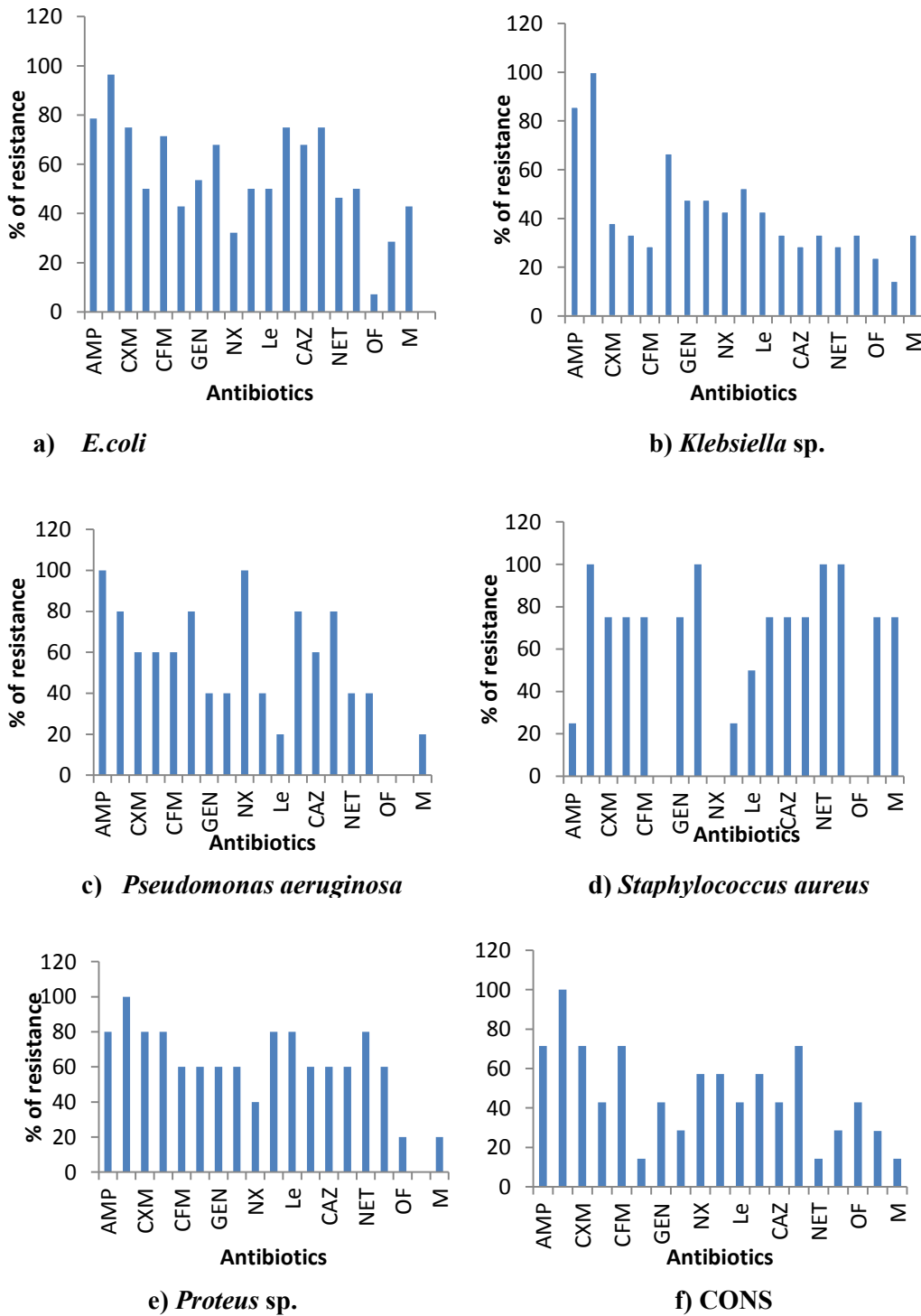


Figure 4 Antibiotic resistance profiles of the different isolates

Table 1. List of antibiotics used in the study

Antimicrobial Agent	Symbol	Disc potency (μg)
Ampicillin	AMP	10
Amoxicillin/Clavulanic acid	AMX	20+10
Cefuroxime	CXM	30
Co-trimoxazole	COT	5
Cefixime	CFM	5
Nitrofurantoin	NIT	300
Gentamycin	GEN	10
Nalidixic acid	NA	30
Norfloxacin	NX	10
Ciprofloxacin	CIP	5
Levofloxacin	Le	5
Cefotaxime	CTX	10
Ceftazidime	CAZ	30
Ceftriaxone	CTR	30
Netimycin	NET	30
Amikacin	AK	30
Ofloxacin	OF	5
Imipenem	IPM	10
Meropenem	M	10

Table 2. Morphological and Biochemical Characteristics

Sample	GS	CAT	OXI	MR	VP	IND	CIT	URE	COA	LAC	Isolate
U1	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U2	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U3	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U4	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U5	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U6	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U7	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U8	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U9	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U10	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U11	+	+	+	-	-	-	+	-	-	-	<i>Pseudomonas</i>
U12	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U13	+	+	+	-	-	-	+	-	-	-	<i>Pseudomonas</i>
U14	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U15	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U16	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U17	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U18	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U19	+	+	+	-	-	-	+	-	-	-	<i>Pseudomonas</i>
U20	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U21	-	+	-	+	-	-	+	+	-	-	<i>Proteus</i>
U22	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U23	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U24	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U25	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U26	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U27	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U28	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U29	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U30	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U31	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U32	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U33	+	+	-	+	+	-	+	+	+	+	<i>S.aureus</i>
U34	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>

U35	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U36	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U37	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U38	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U39	-	+	-	+	-	-	+	+	-	-	<i>Proteus</i>
U40	+	+	-	+	+	-	+	+	-	+	<i>CONS</i>
U41	+	+	+	-	-	-	+	-	-	-	<i>Pseudomonas</i>
U42	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U43	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U44	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U45	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U46	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U47	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U48	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U49	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U50	+	+	-	+	+	-	+	+	+	+	<i>S.aureus</i>
U51	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U52	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U53	-	+	-	+	-	-	+	+	-	-	<i>Proteus</i>
U54	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U55	+	+	-	+	+	-	+	+	+	+	<i>S.aureus</i>
U56	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U57	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U58	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U59	+	+	+	-	-	-	+	-	-	-	<i>Pseudomonas</i>
U60	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U61	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U62	-	+	-	+	-	-	+	+	-	-	<i>Proteus</i>
U63	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U64	-	+	-	+	-	-	+	+	-	-	<i>Proteus</i>
U65	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U66	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U67	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>
U68	-	+	-	-	-	-	+	+	-	+	<i>Klebsiella</i>
U69	+	+	-	+	+	-	+	+	+	+	<i>S.aureus</i>
U70	-	+	-	+	-	+	-	-	-	+	<i>E.coli</i>

Conclusion

This study indicated that *Escherichia coli* was the most prevalent uropathogen in pregnant women followed by *Klebsiella* sp., Coagulase negative *Staphylococcus*, *Pseudomonas aeruginosa*, *Proteus* sp. and *Staphylococcus aureus*. Ofloxacin was found to be the most effective drug. It is clear that MDR is quite prevalent among UTI pathogens isolated from pregnant women.

Important considerations when prescribing antimicrobial therapy especially to pregnant women include obtaining an accurate diagnosis of infection; understanding the difference between empiric and definitive therapy. Recognizing the adverse effects of antimicrobial agents on the host is very important. This study clearly indicates the need for better or alternate drugs for treatment of UTI among pregnant women.

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THE IDEA OF AUTHENTICITY: A PHILOSOPHICAL DISCUSSION IN EXISTENTIALIST FRAME

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Abstract

The present paper attempts to delineate the concept of 'authenticity' in the existentialist frame of thought. Authenticity is related to the notions of 'realness' or 'trueness to origin'. This is the idea of 'being oneself' or 'being true to oneself'. This concept has great significance in the field of existentialism. This article bases its discussion on how the existentialist thinkers Kierkegaard, Heidegger, Sartre and Nietzsche explain the very need of being authentic.

Keywords: Authenticity, Existentialism, Dasein, Intentionality, Thrownness

Introduction

Existentialism is emerged as a reaction to the ever-existing systems in philosophy and aims at to overcome these criticisms. The most striking feature of existentialism is the problem of 'human existence'. The concern of existentialism is the divergent and subjective existential issues of the human individual. Here, human being is the actual, concrete, particular existing individual. Soren Kierkegaard has come to be regarded as the very trunk of the tree of existentialism. In existentialistic philosophy, Kierkegaard, Marcel and Jaspers are theists, whereas, Sartre and Heidegger are non-theists. There is a

great divergence of views amongst the so called existential philosophers. Behind the difference, certain points of similarity can easily be observed.

‘Authenticity’ is the main concept discussed in existentialism. Authenticity means true to one’s own personality, spirit, or character. Authentic existence is also grounded predominantly in possibility, whereas inauthentic existence is grounded predominantly in actuality. Authentic existence is aware of the meaning of existence, whereas the inauthentic is not. The existentialist’s concept of self-estrangement is virtually equivalent to what is called inauthenticity. The existentialist cannot accept that life’s ‘communal character’, such as the playing of ‘social roles’, is even approximately the whole story about human existence. Authenticity and sincerity are fundamentally opposed. It is not a moral authority. Michael Kernis and Brian Goldman defined “authenticity as the unimpeded operation of one’s true or core self in one’s daily enterprise” (Wright, 2008).

According to Sartre; “authenticity does not denote ‘objective qualities’ such as the notions like sincerity and honesty. The terms ‘sincerity’ and ‘honesty’ are applicable to an individual whose inner convictions and commitments are congruent with that individual’s behavior. They differ from ‘authenticity’, which cannot be said to apply to any such correspondence, since correspondence presumes a static subject, while authenticity requires an incessant movement of becoming, self-transcendence and self-creation” (Golomb, 1995). Authenticity is a more strenuous moral experience than “sincerity”; but it is not a ‘moral authority’, for it is contrary to the nature of authenticity to tell others what to do. Authenticity is the mastery of one who freely creates the pathos of authenticity and tries to express and live it in one’s own way.

Kierkegaard's concept of authenticity

Kierkegaard's concept of authenticity is reliant on an individual finding authentic faith and becoming true to oneself. He wanted to create a quality of life, a pattern of life, which would be true for him and would enable him to be true to himself. The creation of authentic life is an existential vocation. According to him, new world presents challenges for an individual in society trying to live authentically. Kierkegaard held that, authenticity is formed by a kind of correlation between what of commitment and how of committing oneself. He interprets religion as a tradition that is passively accepted by individuals, without the inclusion of authentic thought. Kierkegaard tries to maximize and sharpen the distinction between man and God in order to make religious faith the most authentic and authoritative thing imaginable. This gap is infinite; because it is man who made so. For him 'authentic faith can be achieved by 'facing reality, making a choice and then passionately sticking with it' (Kristoffer, 2012). According to the ethical stand point, universal always has supreme importance than the particular. The paradox of faith is that; the particular becomes higher than the universal by virtue of its passionate relation to the absolute. Kierkegaard suggests, "one must make an active choice to surrender to something that goes beyond comprehension, a leap of faith into the religious" (Kristoffer, 2012).

The goal of Kierkegaard's philosophy is that, in order to achieve authenticity, one must face reality and form his own opinions of existence. Kierkegaard's authenticity develops through giving supreme priority to particular individual. Kierkegaard says any historical importance attached to his writings would derive from his 'category of single individual'. Kierkegaard's primary aim was the liberation of the individual from the absolute idealism of Hegel. His most important aspect of thinking is subjectivism. According to him,

choice is intensively personal. For him, the term existence implies the subjective, inward, particular existence of the individual. The emphasis of Kierkegaard was always on the individual. For him, existence means the self-conscious existence of the concrete subject or the individual. Thus, the term is reserved for the individual human being. In other word; “man alone is existing in the strict sense of the term”.

Kierkegaard explains existence as the quality of an individual- the quality of active participation in an act. He insists that, we must look inward and find out the truth within us. Kierkegaard’s work on authenticity and his suggestion for us is that, each of us is to “become what one is”. Kierkegaard criticizes modern society as causing ‘in-authenticity’. He rejected the view that, a human being should be regarded as an object, as a substance with certain essential attributes. He insisted on others to becoming what one is; and develops a true commitment towards oneself. As a theistic existentialist, Kierkegaard considered this ultimate commitment was his defining relation to God.

Heideggerian concept of authenticity

The great existentialist thinker Martin Heidegger is concerned with how we can understand being in the world and the experience of it. He asserts that, the inauthentic person is precisely the one who lives under the dictatorship of the ‘they’, the anonymous others. For him, inauthentic existence is not characteristic of a passing social condition ‘of which, perhaps more advanced stages of human culture might be able to rid themselves’. Authentic existence cannot replace inauthentic life ‘in the they’. It can only be a modification of the ‘they’, through which people do not float above falling everydayness but somehow come to grips with or ‘seize upon’ it. Heidegger’s phenomenological approach is primarily aimed at the interpretation of being. He calls this being as

Dasein. Because, according to him, collective noun cannot explain the particular individual. Every man is different from another man; because, he exists in a particular world created by his concerns and cares. So, Dasein is the apt term to explain particular man. For him, real existence is always personal existence. The existential philosophy insists on the uniqueness of the concrete individual.

Heidegger refers to human being first finding himself situated in a world of facticity. The notion of facticity is acknowledgement that parameters within which human possibility or freedom reside is delimited. Within this facticity, there is freedom. This duality exists at each and every moment of our existence and bears upon our potentiality for being authentic. The concept of authenticity according to Heidegger starts from the inquiry about the notion of authentic Dasein. “To be authentic Dasein, therefore, is to grasp that one cannot become authentic as an ontic entity among entities, as a static being, but only as the asking, searching Becoming, that is, as a transcendent consciousness, whose projected internationalities becomes authentic only by anticipation” (Golomb, 1995b). For Heidegger, in-authenticity is a kind of Being- for- the world; which is completely fascinated by ‘the world and by the Dasein- with of others’. According to Heidegger, ‘when Dasein’s the particular being or entity, own most potentiality- for- being is hidden from it’, this alienation closes off Dasein from its authenticity’.

Heidegger employs, nor with his insistence that the in authenticity of life ‘in the they’ is, within limits, something should we can, and presumably resist and modify. Neither is it inappropriate to invoke a terminology of ‘loss of self’ and in-authenticity. To ‘lose one’s self, for Heidegger, is for the ‘they’ to have taken hold of one’s own most possibilities of being. According to Heidegger, for being authentic requires a kind of shift in attention and engagement, a

reclaiming of oneself, from the way we typically fall into our everyday ways of being. By authenticity, Heidegger means a clear and focused listening to one's unique capabilities and potentialities. Thus, Dasein authentically understands itself. Authenticity will bring unique and special moment in Dasein's existence. If Dasein is authentic, it possesses what is truly one's own. Dasein has possibilities that it can choose to pursue or not. As opposed to authentic Dasein, inauthentic Dasein is Dasein which has lost its possibilities. Dasein is inauthentic most of the time. To avoid inauthenticity requires a resistance to Dasein's own tendencies; Dasein must refuse to accept the possibilities offered to it. As recognition of the limits of Dasein's possibilities, anxiety include recognition of one possibility; that is death. In order to avoid confronting death and its role in each Dasein's life, das man presents death as an uninteresting, universal, and ultimately trivial fact. Confronting one's own death is different from the awareness of it and which makes Dasein authentic. Inauthentic Dasein is fleeing its own possibilities, especially death and trying to forget them by taking on das man's publicly available possibilities as its own. Hence, authentic Dasein can describe as the rejection of inauthenticity. Heidegger also refers to authentic Dasein's state as 'Being- towards- death'.

According to Heidegger, Dasein is the only being that can raise the question of its own being and is concerned with its own being; only Dasein can understand itself in terms of its existence, in terms of its possibility to be itself or to not be itself. On Heidegger's view, there is something peculiar about a creature that is capable of not being itself, of being inauthentic. He argues that, Dasein tends to fall foul from authentic existence; like a reliance on various form of psychological determinism, a conception of a particular future as inevitable; and a conception of ourselves as having an essence or nature. Heidegger argues that, a structural feature of Dasein is characterized by what he

calls its fallenness. On this account, fallenness and immersion among the crowd are considered to be inauthentic, but at the same time all of us are fallen and Heidegger hence denies making negative evaluation of inauthentic life. Heidegger suggests that, authenticity and in-authenticity are two basic modes of Being of Dasein, and not self- chosen possibilities. Heidegger's various discussions of authenticity suggest that, our lives are meaningful on account of that which might be, or even what might have been, more than on account of that which currently is.

Sartrean concept of authenticity

Jean- Paul Sartre is the first thinker who is considered as most intimately associated with the notion of authenticity. Sartre's authenticity is the 'self-recovery of being' which is lost during self-estrangement. According to Sartre, 'My Being- for- others; is a fall towards objectivity and this fall is an alienation'. He insisted that, each of us acknowledges what we are doing with our lives right now. The inauthentic person, is living a lie. He focused on "inauthentic existence as a way to avoid the paradoxical problem of appearing to provide prescriptions for a mode of living that rejects external dictation" (Baird and Walter, 2008). Sartrean authenticity is grounded in a factual truth about the human condition even though this entails owning the way one intends to live the uncertainties of one's future. Sartre admitted having borrowed the term 'authenticity' from Heidegger. And though Heidegger insisted that the word and its converse, 'inauthentic' carried no moral significance, Sartre did not believe it. Instead the term 'authenticity' Sartre prefers the more anthropological notion of 'bad faith'. The related expressions 'good faith' and its converse 'bad faith' are Sartrean hallmarks that Sartre denied carried moral significance, though Heidegger asserted that, they obviously did. "Lack of authenticity is considered in existentialism to be bad faith" (Golomb,1995c)

Each was unwilling to admit the moral uses to which these terms so easily lent themselves whatever their originator's respective intentions were.

The existentialist's holds that; human beings exist in concrete situations. This means that, we are not disembodied spirits floating above human and material universe. According to Sartre, 'facticity' denotes the givens of our situation such as our race and nationality, our limitations and talents. 'Transcendence' or the reach that our consciousness extend beyond these givens, denotes the taken of our situation, namely how we face up to this facticity. Transcendence functions like the 'intentionality' of consciousness; if we understand the term in a dynamic sense. Sartre admits that, the expression 'situation' is ambiguous in the sense that, one cannot measure off the precise contribution of what is given and what is taken in each situation. What Heidegger calls our 'immersion' in the everyday world necessarily involves these two aspects- facticity and transcendence. Recalling the essentially temporal dimension of human existence, one can describe this role of facticity and transcendence as our ecstatic past and future respectively. Heidegger is the source of this threefold account of our ecstatic temporality, namely, the past as facticity or 'thrownness', the future as 'ek-sistence' or 'standing-out', and the present as immersion in the flood of our everyday concerns.

Of these three dimensions; that of the future as the possible is more important. We are the creatures of 'possible'. Existential anguish is our experience of the possible as the locus of our freedom. Being for Heidegger is not timeless and he reveals the temporal horizon in which being occurs. Sartre is immediately intent on underscoring our responsibility for the necessarily ambiguous situation in which we live. The mantra of Sartrean humanism is that, we can always make something out of what we have been made into because we always transcend our facticity.

To develop the distinction between the authentic and the inauthentic, Heidegger discusses the moods of fear and anxiety as representative of two different ways in which we can face our past. He suggests that, there are two main inauthentic modes of understanding death- indifference and fear- and these ways of apprehending death are labelled as 'inauthentic', because they do not fully recognize what it means to exist. Heidegger's famous quote is that, 'Death, as the end of Dasein, is Dasein's own most possibility'. It is clear that, Heidegger's account of an authentic attitude towards death excludes the possibility of seeking to immerse ourselves in some transcendent figure, such as God, or the promise of salvation. For him, an authentic apprehension of death tends to result in anxiety, bearing in mind that anxiety must be distinguished from fear, as fear relates to the possibility of external things harming us; anxiety is the trepidation before our many and varied possibilities. The experience illuminates that, death is not chosen by us; but is thrown or forced upon us. Hence, Heidegger thinks that, in anxiety we authentically apprehend death.

We all know we are going to die; but we do not know exactly when we are going to die. In this regard, Heidegger suggests that, the 'they-self' avoids an authentic comprehension of death by manipulating the indefiniteness of the time of death. It is important to note that, when Heidegger comments that, "no one else can die for me", in the sense of living in anticipation of death for me. The idea of anticipating death is crucial to his account of an authentic and resolute apprehension of death, as well as for meaningfully organizing our lives and inspires them with an individual significance beyond 'average everydayness'

For Heidegger, the resolute acceptance of one's being unto death that funnels our otherwise scattered concerns into the realization of what it means to be. This is another way of experiencing our contingency. Even if we believe in

the personal immortality, the entry into that is not free of risk. Sartre claims, my death is 'unrealizable' because it lies just beyond the threshold of my experience. He too links authenticity with the unity of a life. In this case, however, it is the self- defining choice or project that brings the multiplicity of our concerns into a whole and invites our authentic embrace.

Sartre argues that, our original choice is our futile pursuit of being consciously self- identical. The quest for identity is a collision course with our consciousness as non- self- identical. Most of us act as if we could attain the solidity and identity of things; that we could be conscious things. This is the impossible ideal of divinity, he protests, and our pursuit of it expresses an inauthentic flight from the anguish of our own freedom. In Sartre's dramatic phrase, 'we are condemned to be free'. The existentialist view of the human being is that, he or she is permeated with contingency, a general 'Nausea'. Like the Heideggerian concept of personal morality or the Nietzschean 'free spirit' concept, who courageously welcomes the infinite repetition of the past, the authentic individual, on Sartre's account, is the one who embraces this contingency and lives it fully.

Authenticity thus is also containing moral evaluations. In keeping one's promise, one act in accordance with duty; and if he keeps it because it is his duty, he also acts morally; because he is acting for the sake of duty. But, existentially, there is still a need for further evaluation to make. In keeping one's promise for the sake of duty, his moral act becomes inauthentic, if he does so because that is what 'one' does. In keeping one's promise for the sake of duty, he can do the same thing authentically if; acting this way is something he chooses as his own, something to which, apart from its social sanction he commits himself. Similarly, doing the right thing from a fixed and stable character- which virtue ethics considers a condition of the good- is not beyond

the reach of existential evaluation: such character may simply be a product of one's tendency to 'do what one does', including feeling 'the right way' about things and be taking oneself in appropriate ways as one is expected to do. The norm of authenticity refers to a kind of 'transparency' with regard to one's situation, a recognition that I am a being who is responsible for who I am. In choosing in the light of this norm, one can be said to recover oneself from alienation, from one's absorption in the anonymous 'one-self' that characterizes one in his everyday engagement in the world. Authenticity thus indicates a certain kind of integrity- not that of a pre- given whole, an identity waiting to be discovered, but that of a project to which one can either commit oneself or else simply occupy for a time, in-authentically drifting in and out of various affairs.

Nietzsche's concept of authenticity

Nietzsche's thought has a positive aspect, because his primary philosophic concern is not merely to proclaim his atheistic position, but his aim was to erect an existential ethics on the basis of death of God position. The ideal of authenticity implies to be oneself or to be truly. Nietzsche holds the view that; authentic way of life does not imply something like a true self that is unique to everyone. In contrast, for Nietzsche the ideal of an authentic life is rather a question of how we are doing something and especially of carrying out or performing one's own life. Nietzsche tries to resolve the connection between acting and intending and he rejects the orientation of acting at external goals. Hence, acting authentically and trying to achieve an end, which is external to the act of carrying out one's own life is a hopeless understanding. There are two seemingly contradictory models of authenticity are in Nietzsche's thought. The first model emphasizes that; one becomes authentic, if one manages to manifest complex fully in one's lifetime. The second model emphasize that, the search

for authenticity is seen as the wish to reflect one's own indeterminacy by spontaneous choice of one out of the many possible ways of life.

The command 'know thyself' means to know one's own instinctual desires, being aware of one's hidden wishes and of one's genuine character. It also recommends living in a well- functioning and authentic manner. Nietzsche ultimately rejects the aesthetic solution and corrects it by proposing a concept of existence stripped of veils and self- deception. Nietzsche says that, 'human nature is like a thing dark and veiled' (Nietzsche and Zimmern, 1997). Although potentially creative and powerful, man is afraid of expressing oneself freely, fully and uniquely, and hides behind various dogmas. Thus, he prefers empty generalizations to his own remarkable, peculiar particularity. Nietzsche's this unmasking method, which attempts to free human individuality from such masks. For Nietzsche, becoming one's true self is a perpetual movement of self-overcoming, a free creation of one's own perspectives.

To search for authenticity is the only alternative left after 'the death of God'. Nietzsche's ultimate objective is to make possible a creative and authentic life in a world without dogmatic beliefs. Nietzsche's philosophy is to be regarded as a means to entice us to form our authenticity. Nietzsche's teaching on power is not an induction or an experimental hypothesis. Apart from the method of unmasking, it clearly contains an explicative dimension. This dimension is expressed in Nietzsche's description of power. From the positive, it is taken to be authentic and from the negative, it is taken as inauthentic. The negative power of one with a feeble sense of selfhood expresses itself not spontaneously but derivatively. One who possesses genuinely positive power, the really authentic self needs neither the approbation of his surroundings nor the rewards and medals. This is the man who 'becomes what he is' without deviously manipulating his surrounding or deriving his

sense of potency and selfhood from transcendental ideologies or political banners.

Nietzsche does not posit power against morality, but proposes an active morality of positive power that expresses courageous creativity. He was not searching for new esoteric values; he sought to re-activate authentic modes of living. Nietzsche, in his genealogical method also tries to explain what accounts for the historical supremacy of the 'slave morality' over the 'masters' who exhibit genuine power and superior authentic moral capacity. Nietzsche's moral philosophy is meant to incite revolution in the human conduct by arousing our thirst for authentic selfhood. His 'herd' morality will help us to grasp the conditions required for establishing authentic patterns. Nietzsche says, one must avoid "herding animal morality" (Nietzsche and Zimmern, 1997). Only an individual who possesses an abundance of positive power and firm authentic selfhood is able to grant rights and freedom.

Authenticity means a state of integrity between the innermost self and its external manifestations, whatever their form and content. Nietzsche point out that, the powerful and authentic man is not identical with an omnipotent and absolutely perfect God. Because; there is no upper limit to power, and there is no optimum for authenticity. There is no power and authenticity without society, and their essential manifestations are impossible apart from any social context. Actually, there is no absolute authentic power exists. Powerful and authentic individuals need each other, society and culture as the vital framework within which they create themselves; hence it is needed. The society with authenticity as a general norm either be destroyed or would destroy that authenticity, which would be manifested precisely in those individuals who attempted to overcome its ethics and exhibited the spirit of revolt. Hence, the search for authenticity cannot be materialized without society.

Only the individual who strives to attain authentic life is able to feel whether he or she has been successful. Nietzsche's basic idea of the 'transfiguration of all values' is not as radical abolition of the inauthentic ethic, but as a gradual approximation to authenticity. Nietzsche is describing the transitory sentiments and mental states of the individual, 'the true pathos of every period of our life', containing, among others, 'the pathos of nobility and distance' and 'the yes- saying pathos'. Thus Nietzsche occasionally identifies the 'will to power' with pathos. The central notion of Nietzsche's philosophy is not the will, but the feeling of power. The phrase 'will to power' does not express an ontological principle referring to some entity underlying the phenomenon of pathos. If Nietzsche used the expression 'the pathos of power' or 'authenticity' instead of 'the will to power', it might have seemed more consistent. Nietzsche rejects the negative types of power as detrimental and destructive to his ideal of the pathos of authenticity. The attempt 'to become who you are' must be carried out alone, through one's own mental resources. Nietzsche says, "it is essential to be strong and original enough to initiate opposite estimates of value, to trans value and invert eternal valuations" (Kristoffer, 2012). The more efficiently power is uncovered and reactivated, the greater the likelihood that the individual will preserve through the more advanced stages, being able to withstand both the test of skepticism and the reality looming at every step on the road to authenticity. The commonality of Kierkegaard and Nietzsche's existential philosophies is "the responsibilities they place on the individual to take active part in the shaping of one's beliefs and then to be willing to act on that belief" (Abulof, 2017).

By concluding, authenticity defines a condition on self- making. Thus, to be authentic can be thought as a way of being autonomous. In choosing 'resolutely'- in committing oneself to a certain course of action; a certain way

of being in the world- one have given oneself the rule that belongs to the role I come to adopt. In contrast, an inauthentic person merely occupies such a role, he may do so “irresolutely”; without commitment. Existentialism locates the singularity of existence and identifies what is irreducible in the first- person stance. Authenticity does not hold out some specific way of life as a norm; that is; it does not distinguish between the projects that one might choose. Instead, it governs the manner in which one is engaged in such projects; either as ‘one’s own’ or as ‘what one does’ transparently or opaquely.

What existentialists offer us in the long run is more an ethical style than a moral content. They may counsel us how to live; but do not offer us any moral recipes. For Nietzsche, there are altogether no moral facts. If there were any universal moral values, they would be the same for everybody. Nietzsche rejects the claim, there is no natural history of morality. Though he gave importance to each and every particular individual, he rejects the so called ‘Universal Morality’. Sartre likened moral choice to the construction of a work of art in the sense that; neither art; nor moral choice were subject to strict rules, freedom constitutes the ultimate value for the existentialists just as authenticity is their primary virtue. The content of existential choice is freedom itself made concrete by the embrace of its radical contingency, its lack of self- coincidence. The real requirement of an individual’s freedom is that; it pursues what one calls ‘an open future’ by seeking to extend itself by means of the freedom of others. Freedom in the concrete sense means the maximization of other’s possibilities as well as my own. On this account, it would be ‘inauthentic’ to leave others in slavery or in a state of oppression.

So, while existential authenticity does have content, namely the willing of freedom both for oneself and for all others, the meaning of that freedom has yet to be analyzed. Authenticity extends the message: “don’t merely know thself-

be thyself'. The possibility of authenticity is a mark of one's freedom, and it is through freedom that existentialism approaches questions of value, and has led to many of its most recognizable doctrines.

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(s,Q) INVENTORY SYSTEMS WITH POSITIVE SERVICE TIME AND LEAD TIME WITH COXIAN-2 ARRIVALS AND SERVICES UNDER N-POLICY

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Abstract

In this paper, an (s, Q) inventory- queueing model with positive service time and lead time is considered. Inter arrival time and service time are assumed to follow Coxian-2 distribution. Lead time is exponential and there is only one server. N-policy is adopted during lead time. The problem is modelled as a continuous time Markov chain and is analysed using matrix geometric method. Several performance measures are obtained and convexity of cost function is established numerically.

Key Words: Coxian distribution, local purchase, N-policy, inventory

Introduction

The first work on inventory with positive service time was carried out by Sigman and Simchi-Levi (1992), which involved M/G/1 queue with inventory, and was closely followed by Berman et al., 1993 in which the demand and service rates are deterministic and constant. For detailed reports on inventory systems with positive service time, one may refer the survey paper by Krishnamoorthy et al., (2011). N-policy was first introduced in 1963 by Yadin and Naorin queueing literature to minimize the total operational cost in a cycle. Krishnamoorthy et al., (2006) used N-policy in (s, S) inventory system with

positive service time, where the server, once become idle, waits till N customers accumulate to begin the next cycle of service. The concept of local purchase was introduced in (s, S) inventory system by Krishnamoorthy and Raju in a series of papers (1998 a and b), involving models with negligible service time. Krishnamoorthy et al., (2014) considered N -policy in (s, Q) inventory systems with positive service time and lead time, where they arrive at a product form solution for the system state distribution, which owed to a local purchase of items. Important works on Coxian distribution can be viewed in Cox(1955), Gelenbe and Mitrani(1985), Yao and Buzacott(1985), Botta et al.,(1987) and Bertsimas and Papaconstantinou (1988). Tijms(2007) compared an $M/ Cox_2/1$ and $M/D/1$ and showed that Cox_2 can be a very good approximation to deterministic service.

In this paper, an (s, Q) inventory system with service time, in which N -policy is adopted during lead time is considered. The reorder level is s and ordering quantity is fixed as $Q = S-s$.

Replenishment lead time follow exponential distribution with parameter γ . It is assumed that the inter-arrival time has Coxian-2 distribution with parameters $(b, \lambda_1, \lambda_2)$ where $\lambda_1 \geq \lambda_2$. The arrival mechanism is as follows: An arriving customer first goes through phase 1 for an exponentially distributed time with parameter λ_1 and gets into the system with probability $1-b$, or goes through a second phase with probability b . The sojourn times in phases are independent exponentials with means $1/\lambda_1$ and $1/\lambda_2$ respectively, that is, the arrival mechanism is consisting either of only one exponential stage with mean $1/\lambda_1$ (with probability $1-b$) after which the arrival is admitted to the system, or of two successive independent exponential stages with means $1/\lambda_1$ and $1/\lambda_2$ respectively, after which absorption occurs.

It is also assumed that the service time has Coxian-2 distribution with parameters (θ, μ_1, μ_2) where $\mu_1 \geq \mu_2$. The service mechanism is as follows: A customer first goes through phase 1 to get his service completed with probability $1 - \theta$, or goes through a second phase with probability θ . The sojourn times in two phases are independent exponentials with means $1/\mu_1$ and $1/\mu_2$ respectively, that is, the service mechanism is consisting either of only one exponential stage with mean $1/\mu_1$ (with probability $1 - \theta$) after which the service is completed, or of two independent exponential stages with means $1/\mu_1$ and $1/\mu_2$ respectively, after which the service is completed, the probability of second stage of service being θ .

In this model, N-policy is adopted during lead time as follows: As and when the inventory level drops to $s - N$ (where $s \geq N$) during a lead time, an immediate local purchase of $Q + N$ units is made, by cancelling the order that is already placed. It is assumed that supply of items is instantaneous in local purchase, and at a higher cost. This idea of local purchase is used in Saffari et al., (2013) to obtain product form solution for arbitrarily distributed replenishment time.

Model Formulation and Analysis

Let $X(t)$ = Number of customers in the system at time t ,
 $I(t)$ = Inventory level at time t ,
 $Z_1(t)$ = Phase of the inter-arrival time in progress at time t ,
 $Z_2(t)$ = Phase of the service time in progress at time t .
 \tilde{Y} = $\{(X(t), Z_1(t), I(t), Z_2(t)), t \geq 0\}$ is a continuous-time stochastic process with state space

$$A_2 = \begin{bmatrix} & & & & J_3 & & & & \\ & & & & & & & & \\ & J_3 & & & & & & & \\ & & \ddots & & & & & & \\ & & & J_3 & & & & & \\ & & & & & & & & \\ & & & & & & & & \\ & & & & & & \ddots & & \\ & & & & & & & J_3 & \\ & & & & & & & & \end{bmatrix} \text{ where } J_3 = \begin{bmatrix} (1-\theta)\mu_1 & \\ & \mu_2 \end{bmatrix}$$

A_0, A_1, A_2 are square matrices of order $4(Q+N)$, B_0 is of order $2(Q+N) \times 4(Q+N)$, B_1 is order $2(Q+N)$ and B_2 is of order $4(Q+N) \times 2(Q+N)$.

Steady-State Analysis

Let $A = A_0 + A_1 + A_2$ be the generator matrix. Then A is a square matrix of order $4(Q+N)$ and we can find the following Stability Condition:

Theorem 1: The process under study is stable iff

$$\lambda_1(1-b) \sum_{j=s-N+1}^s \sum_{z_2=1}^2 \phi_{1,j,z_2} + \lambda_2 \sum_{j=s-N+1}^s \sum_{z_2=1}^2 \phi_{2,j,z_2} < \mu_1(1-\theta) \sum_{j=s-N+1}^s \sum_{z_1=1}^2 \phi_{z_1,j,1} + \mu_2 \sum_{j=s-N+1}^s \sum_{z_1=1}^2 \phi_{z_1,j,2} \dots(1)$$

Proof:

Since the process under consideration is level-independent quasi-birth-death process, it is stable iff

$$\Phi A_0 \bar{e} < \Phi A_2 \bar{e} \dots\dots\dots (2)$$

(Neuts (1981), where Φ is the steady-state distribution of the generator matrix A. Substituting A_0 and A_2 in the above equation, we get the required result after some algebra.

Theorem 2: When the stability condition holds, the steady-state probability vector

$$\pi \text{ which is partitioned as } \pi = (\pi^{(0)}, \pi^{(1)}, \pi^{(2)}, \dots) \text{ where each}$$

$$\pi^{(i)} = (\pi^{(i,1,s-N+1,1)}, \pi^{(i,1,s-N+1,2)}, \pi^{(i,1,s-N+2,1)}, \pi^{(i,1,s-N+2,2)}, \dots$$

$$\pi^{(i,1,S,1)}, \pi^{(i,1,S,2)}, \pi^{(i,2,s-N+1,1)}, \pi^{(i,2,s-N+1,2)}, \dots, \pi^{(i,2,S,1)}, \pi^{(i,2,S,2)}),$$

where $i \geq 1$ and

$$\pi^{(0)} = (\pi^{(0,1,s-N+1)}, \pi^{(0,1,s-N+2)}, \dots, \pi^{(0,1,S)},$$

$$\pi^{(0,2,s-N+1)}, \pi^{(0,2,s-N+2)}, \dots, \pi^{(0,2,S)})$$

is given by $\pi^{(i)} = \pi^{(0)} R^i, \quad i = 0, 1, 2, \dots$

The matrix R is the minimal non-negative solution of the matrix-quadratic equation

$$R^2 A_2 + R A_1 + A_0 = O \text{ and the vector } \pi^{(0)} \text{ is obtained by solving}$$

$$\pi^{(0)}(B_1 + R A_2) = \mathbf{0} \text{ and } \pi^{(0)}(B_0 + R A_1 + R^2 A_2) = \mathbf{0} \text{ subject to the}$$

$$\text{normalizing condition } \pi^{(0)}(\mathbf{I} - R)^{-1} \mathbf{e} = 1 \text{ (Neuts, 1981).}$$

Proof. Since Markov process is regular, the stationary probability distribution exists

and is given by $\bar{\pi} \tilde{A} = \bar{0}$ and $\bar{\pi} \bar{e} = 1$

$$\bar{\pi} \tilde{A} = \bar{0} \implies$$

$$\pi^{(0)} B_1 + \pi^{(1)} B_2 = 0 \dots\dots\dots (3)$$

$$\pi^{(0)}B_0 + \pi^{(1)}A_1 + \pi^{(2)}A_2 = 0 \dots\dots\dots (4)$$

$$\pi^{(i)}A_0 + \pi^{(i+1)}A_1 + \pi^{(i+2)}A_2 = 0 \dots\dots\dots (5)$$

where $i = 1, 2, \dots$.

In order to express the solution in a recursive form, we assume that

$$\pi^{(i)} = \pi^{(0)}R^i, \quad i = 0, 1, 2, 3, \dots \quad (6)$$

where the spectral radius of R is less than 1, which is ensured by the stability condition given by (1).

(6) in (3) \Rightarrow

$$\pi^{(0)}(B_1 + RB_2) = \mathbf{0} \dots\dots\dots (7)$$

(6) in (4) \Rightarrow

$$\pi^{(0)}(B_0 + RA_1 + R^2A_2) = \mathbf{0} \dots\dots\dots (8)$$

(6) in (5) \Rightarrow

$$\pi^{(0)}R^i(A_0 + RA_1 + R^2A_2) = \mathbf{0},$$

where $i = 1, 2, 3, \dots$.

That is, $\pi^{(i)}(A_0 + RA_1 + R^2A_2) = \mathbf{0}, \dots\dots\dots (9)$

where $i = 1, 2, 3, \dots$.

Since (9) is true for $i = 1, 2, 3, \dots$, we get

$$R^2A_2 + RA_1 + A_0 = \mathbf{0} \dots\dots\dots (10)$$

Hence R is a solution of the matrix-quadratic equation (10).

Also we have $\bar{\pi} \bar{e} = 1$ which is the normalising condition, from which

we get $\pi^{(0)}(I - R^{-1})\bar{e} = 1 \dots\dots\dots (11)$

$\pi^{(0)}$ is obtained by solving (7) and (8) subject to (11). Hence the Theorem.

System Performance Measures

- (a) Expected inventory held in the system,

$$E(I) = \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \sum_{j=s-N+1}^S \sum_{z_2=1}^2 j \pi^{(i,z_1,j,z_2)} + \sum_{z_1=1}^2 \sum_{j=s-N+1}^S j \pi^{(0,z_1,j)}$$

- (b) Mean waiting time of customers in the system,

$$W_S = \left(\frac{1}{\lambda_1} + b \frac{1}{\lambda_2} \right) L$$

where $L = \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \sum_{j=s-N+1}^S \sum_{z_2=1}^2 i \pi^{(i,z_1,j,z_2)}$ is the expected number of customers in the system.

- (c) Mean reorder rate

$$R_r = (1-\theta) \mu_1 \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \pi^{(i,z_1,s+1,1)} + \mu_2 \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \pi^{(i,z_1,s+1,2)}$$

- (d) Mean local purchase rate

$$R_{LP} = (1-\theta) \mu_1 \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \pi^{(i,z_1,s-N+1,1)} + \mu_2 \sum_{i=1}^{\infty} \sum_{z_1=1}^2 \pi^{(i,z_1,s-N+1,2)}$$

Cost Analysis

Now we obtain a cost function. Let the various costs involved in the model be as given below:

C_H : Inventory holding cost per unit item per unit time.

C_S : Fixed set up cost per unit order, under natural purchase.

C_C : Cost per unit order cancelled.

C_W : Cost of waiting time per customer per unit time.

C_{LP} : Cost per unit order under local purchase.

C_{NP} : Cost per unit order under natural purchase.

$$TEC = C_H E(I) + (C_S + C_{NP} Q) R_r + C_{LP} (Q + N) R_{LP} + C_C R_{LP} + C_W W_S$$

Numerical Analysis

Case 1. Analysis of TEC and certain performance measures as functions of N.

Input Data:

$$s = 8, S = 20, b = 0.3, \theta = 0.6, \lambda_1 = 23, \lambda_2 = 20, \mu_1 = 25, \mu_2 = 24, \gamma = 20, \\ C_H = 0.5, C_S = 1000, C_C = 16, C_W = 1200, C_{LP} = 35, C_{NP} = 30.$$

Table 1 shows that as N increases, TEC values decrease, reach a minimum at $N = 7$ and then increase. Hence it is numerically verified that TEC function is convex with respect to N.

Table 2 shows that mean reorder rate R_r is a convex function in N. Also we get that as N increases, both $E(I)$ and RLP are monotonically decreasing.

Case 2. Analysis of TEC and certain performance measures as functions of S.

Input Data:

$$N = 5, s = 8, b = 0.3, \theta = 0.6, \lambda_1 = 23, \lambda_2 = 20, \mu_1 = 25, \mu_2 = 24, \gamma = 20, \\ C_H = 0.5, C_S = 1000, C_C = 16, C_W = 1200, C_{LP} = 35, C_{NP} = 30.$$

Table 3 shows that as S increases, TEC function is monotonically decreasing.

Table 4 shows that as S increases, R_r and R_{LP} are monotonically decreasing and $E(I)$ is monotonically increasing.

Case 3. Analysis of TEC and certain performance measures when (N, s, S) varies simultaneously.

Input Data:

$$b = 0.3, \theta = 0.6, \lambda_1 = 23, \lambda_2 = 20, \mu_1 = 25, \mu_2 = 24, \gamma = 20, \\ C_H = 0.5, C_S = 1000, C_C = 16, C_W = 1200, C_{LP} = 35, C_{NP} = 30.$$

Table 5 shows that as (N, s, S) values increase simultaneously, TEC values decrease first, reach a minimum at the values (9, 15, 32) of (N, s,S)and then start increasing. Hence it is numerically verified that TEC function is convex.

Table 6 shows that as (N, s, S) values increase simultaneously, R_{LP} is monotonically decreasing but $E(I)$ and R_r are monotonically increasing.

Table 1. Effect of N on TEC

N	TEC
1	2902.7886
2	2727.6583
3	2655.2768
4	2626.3241
5	2615.6430
6	2612.3043
7	2611.6755
8	2611.8947

Table 2. Effect of N on $E(I)$, R_r and R_{LP}

N	$E(I)$	R_r	R_{LP}
1	14.2486	1.5993	0.8086
2	13.9919	1.5985	0.4089
3	13.7986	1.6145	0.2086
4	13.6711	1.6313	0.1062
5	13.5937	1.6442	0.0539
6	13.5495	1.6530	0.0273
7	13.5253	1.6587	0.0137
8	13.5126	1.6621	0.0069

Table 3. Effect of S on TEC

S	TEC
20	2615.6430
21	2490.8471
22	2383.7080
23	2290.7326
24	2209.2922
25	2137.3705
26	2073.3955
27	2016.1232

Table 4. Effect of S on E(I), R_r and R_{LP}

S	E(I)	R_r	R_{LP}
20	13.5937	1.6442	0.0539
21	14.0954	1.5193	0.0498
22	14.5968	1.4120	0.0463
23	15.0980	1.3189	0.0432
24	15.5991	1.2373	0.0406
25	16.1001	1.1652	0.0382
26	16.6009	1.1011	0.0361
27	17.1016	1.0436	0.0342

Table 5. Effect of simultaneous variation of (N, s, S) on TEC

(N, s, S)	TEC
(5, 11, 28)	2138.8705
(6, 12, 29)	2131.8418
(7, 13, 30)	2129.0491
(8, 14, 31)	2128.1484
(9, 15, 32)	2128.0742
(10, 16, 33)	2128.3515
(11, 17, 34)	2128.7727

Table 6. Effect of simultaneous variation of (N, s, S) on E(I), R_r and R_{LP}

(N, s, S)	E(I)	R_r	R_{LP}
(5, 11, 28)	19.1001	1.1652	0.0382
(6, 12, 29)	20.0545	1.1697	0.0193
(7, 13, 30)	21.0289	1.1725	0.0097
(8, 14, 31)	22.0151	1.1742	0.0049
(9, 15, 32)	23.0077	1.1752	0.0025
(10, 16, 33)	24.0039	1.1757	0.0012
(11, 17, 34)	25.0019	1.1761	0.0006

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HISTORY OF DISABILITY: PARADIGM SHIFT FROM *DISABILITY TO DIFFERENTLY ABLED*

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Abstract

The paper tries to address the issue of disability and its socio-cultural definitions to concentrate on the concerns of disabled people. The objective here is to enhance and rehabilitate the disabled people in the society. The research article theorizes a paradigm shift from “disabled” to “differently abled.” To accomplish the hypothesis major definitions of disability are revamped and critiqued with substantial arguments. The United Nations’ definition is inadequate to define the abilities of the disabled. It works on a different rubric. The article traces the trajectory of disability across various cultures. The shift from disabled to differently abled is enabled through diverse engagements and interventions across the terrains of agency.

Keywords: Disability, Overmedicalizing, Dehumanizing, Impairment and Differently abled

The question of how we should define disability is not merely the beginning of an analytic exercise. We encounter the problem of definition as soon as we take an interest in disability. Questions of definition arise in countless practical situations, influence social policies, and determine outcomes that profoundly affect the lives of people with disabilities. The definitions of disability officially accepted by government bureaucracies and social service agencies determine people's legal and practical entitle-

ment to many forms of assistance, where assistance is available. Socially accepted definitions of disability determine the recognition of disability by friends, family members, and co-workers. Recognition of a person's disability by the people s/he is closest to is important not only for receiving their help and understanding when it is needed, but for receiving the acknowledgement and confirmation of her/his reality, so essential for keeping a person socially and psychologically anchored in a community. Definitions of disability are important to those who are organizing people with disabilities for political purposes, for example, to press for fuller recognition of their rights, for increased accessibility to public places, or for better opportunities to work. There have been struggles within political groups of people with disabilities, especially in recent years, to include more categories of people.

Definitions of disability affect people's self-identity. Recognizing yourself as disabled and identifying with other people who are disabled and learning about their experiences can all contribute to understanding and interpreting your own experiences, and to knowing that you are not alone with problems that you may have believed were unique to you. But being identified as disabled also carries a significant stigma in most societies and usually forces the person so identified to deal with stereotypes and unrealistic attitudes and expectations that are projected on to her/him as a member of this stigmatized group.

The United Nations Definitions

The United Nations definition of disability is widely used and tends to be favoured by disability activists and other advocates of greater opportunities for people with disabilities. It offers the following definitions

of distinctions among impairment, disability, and handicap:

Impairment: Any loss or abnormality of psychological, physiological, or anatomical structure or function. Disability: Any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. Handicap: A disadvantage for a given individual, resulting from an impairment or disability, that limits or prevents the fulfillment of a role that is normal, depending on age, sex, social and cultural factors, for that individual.

Handicap is therefore a function of the relationship between disabled persons and their environment. It occurs when they encounter cultural, physical or social barriers which prevent their access to the various systems of society that are available to other citizens. Thus, handicap is the loss or limitation of opportunities to take part in the life of the community on an equal level with others. (UN 6-7)

I believe that discussion of how disability should be defined is essential for clarifying our understanding of disability and, ultimately, for formulating policies.

To accomplish the re-definition of disability, we try to trace the history of disability, establishing explicit connections between the social context in which people have lived and the ways in which disability has or has not been identified and addressed as a social problem. The central thesis is that changing social and political perspectives on poverty during the seventeenth and eighteenth centuries, coupled with the development of increasingly medicalized interpretations of disability during the nineteenth and twentieth centuries, contributed to increasing segregation and stigmatization of persons with disabilities. However, a related thesis is that the congregation of people with

similar disabilities for treatment and services also made possible the development of group identities, which ultimately facilitated the rise of political activism in the modern era.

Impairment and Disability

Throughout history, disability has existed at the intersection between the particular demands of a given impairment, society's interpretation of that impairment, and the larger political and economic context of disability. The contrast between disability and impairment is very important here. Disability exists as it is situated within the larger social context, while impairment is a biological condition. Davis (2000) has succinctly described the relationship between disability and impairment as follows:

Disability is not so much the lack of a sense or the presence of a physical or mental impairment as it is the reception and construction of that difference ...impairment is a physical fact, but a disability is a social construction. For example, lack of mobility is an impairment, but an environment without ramps turns that impairment into a disability ... a disability must be socially constructed; there must be an analysis of what it means to have or lack certain functions, appearance and so on. (56)

Davis notes that disability was not constituted as a social category prior to the eighteenth century, even though impairments were no doubt quite prevalent in the general population.

Antiquity

Prehistory

Individuals with physical impairments have been part of the social order since well before, the evolution of humans. There is also anthropological

evidence of impaired members living in prehistoric subhuman primate groups. Berkson (1993) describes a published description of an adult Neanderthal male with severe arm and head injuries incurred at an early age. He accommodated the injury by using his teeth to hold objects. Berkson also uncovered research documenting the fact that disabling arthritis and other chronic impairments were common in Neanderthals. Thus, the presence of impairments among subsequent prehistoric *Homo sapiens* should not surprise us.

The Old Testament

Documentation of the treatment and life experiences of people with impairments during the earliest periods of recorded history is extremely limited. Edicts about disability offer some insight into prevailing attitudes, but the messages that they convey are mixed. The Old Testament commanded, "Thou shalt not curse the deaf nor put a stumbling block before the blind, nor maketh the blind to wander out of the path" (Leviticus 19: 14). Daniels (1997) argues that this Hebraic command in Leviticus is the first attempt by any nation to legislate for the protection of the deaf. Daniels further asserts that deaf persons without speech were viewed as children under Hebrew law and provided with the same protections as children.

People were also reminded about their responsibilities toward one another with the injunction that "there will always be poor people in the land. Therefore, I command you to be openhanded toward your brothers and toward the poor and needy in your land" (Deuteronomy 15:11). In contrast, the Old Testament also warned, "If you do not carefully follow His commands and decrees ... all these curses will come upon you and overtake you: the, Lord will afflict you with madness, blindness and contusion of mind. At midday, you will grope around like a blind man in the dark"(Deuteronomy 28:15,28-29).These

paradoxical statements reflect competing attitudes toward disability. While society seems to have recognized a charitable obligation to people with disabilities, disability was also perceived as a punishment meted out by God. The belief that illness was inflicted by an angry deity or by a supernatural power was widespread among ancient peoples. The Old Testament also supports the notion that people with disabilities were classified with prostitutes and menstruating women as unclean and were thereby prohibited from making sacrifices as priests. According to Stiker (1997), people with disabilities were allowed to otherwise participate in religious observances. The early Christian church, however, held that faith came from hearing, and therefore the deaf were necessarily without faith in the eyes of the church.

In records dating back to 2000 B.C.E., the births of children with congenital impairments were used to predict future events for a community. In the Babylonian region, ancient Semitic Chaldean diviners of the future maintained a list of birth deformities and the specific prophetic meanings each foretold. The manifestation of disability was viewed as a portent of things to come (Warkany, 1959).

Ancient Greece and Rome

In the midst of this society beset by endemic impairment, the Greeks and Romans had varied interpretations of persons with such conditions. Babies born with congenital deformities were often regarded as signs that their parents had displeased the gods. However, public support was available to individuals whose impairments precluded them from working. In some exceptional situations, having an impairment was not a barrier to attaining power. The Roman Emperor Claudius had significant congenital deformities, and Sparta, elected a short statured man as their king. In any case, care for persons with

impairments would have been reserved for those few who were wealthy enough to afford it - disability for the vast majority of Greeks and Romans would have increased the extent to which they were marginalized and excluded from society and living in deprived economic conditions (Garland, 1995).

Surviving historical and literary accounts have indicated that prosthetic devices were used by persons who sustained injuries during battle or had congenital limb malformations. Herodotus recounts a warrior amputating his own foot to free himself and escape his impending execution. In 479 B.C.E., this warrior supported himself fighting on the battlefield by using a wood prosthesis. In a tomb dating to 300 B.C.E., a skeleton was found with an artificial lower right leg. This prosthesis was made of bronze, indicating that its owner was a person of some wealth. Early Roman law chiefly protected the property rights of people with disabilities. Persons who were designated as intellectually deficient in early Roman times were provided with guardians to assist in the management of their affairs.

Interpreting disability in antiquity is difficult in that the time span considered is vast, and, competing attitudes toward disability are evident at many points. Writings from the Old Testament suggest paradoxical attitudes, which exhorted society to be generous and kind toward individuals with impairments, while also declaring that impairment was a mark of the wrath of God. Ancient Greece and Rome offer similarly complex interpretations of impairment. The killing of newborns with congenital impairments existed in some form throughout Greece and Rome, and society clearly perceived the birth of a child with congenital anomalies as the mark of the anger of the Gods. However, the provision of pensions to soldiers injured on the battlefield was also a part of ancient Athenian life, and citizens with impairments were widely known to have worked at different trades.

Middle Ages

In the fourth to sixth centuries A.C.E., monastically inspired hospices for blind persons were established in what is now Turkey, Syria, and France. These hospices were organized as refuges for people with disabilities within existing religious enclaves. Bishop Nicholas cared for persons with intellectual disabilities in a hospice in southern Turkey during the fourth century, and the Belgian village of Gheel initiated the support of persons with mental disabilities in family care settings in the thirteenth century. The latter community provided vocational opportunities in a community setting that included an infirmary and a church centered around the shrine of St. Dymphna (Rumbaut, 1972). By the sixth century A.C.E., institutions to segregate people with Hansen's disease (leprosy) were developing sporadically. Germany and Italy had hundreds of these facilities by the early Middle Ages.

Demonology

Many disabling conditions, including intellectual disability, mental illness, deafness, and epilepsy, were thought to have supernatural or demonological causes during the medieval period. The devil was believed to cause epilepsy. Belief in demonic possession as a primary etiology of mental illness led to attempted cures based on religious ideas about exorcism. Attempts to cure people with disabilities from early medieval times reflect supernatural beliefs in the abilities of magic and religious elements. For instance, Anglo-Saxons offered the following antidote to mental illness: "A pleasant drink against insanity. Put in ale hassock, lupine, carrot, fennel, radish, betony, water-agrimony, marche, rue, wormwood, eat's mint, elecampane, enchanter's nightshade, wild teazle... He will soon be better" (Russell, 1980:45).

Interest in persecuting witches developed gradually, culminating in the craze that began in 1450 (Russell, 1980). During the Middle Ages, the first heresy executions occurred in France in 1022, and thousands of so-called witches were subsequently executed (Russell, 1972). Persecution was frequently led by the Catholic Church, although Protestant European countries also followed papal orders regarding the execution of witches. Pope Innocent IV authorized the seizure of heretics' goods, their imprisonment, torture, and execution (Russell, 1980). In 1484, Pope Innocent VIII declared war on witches (Russell, 1980). While it is acknowledged that disabled persons were among those who were persecuted, the extent to which this occurred is not known.

Early modern period through the eighteenth century

Renaissance and the Scientific Method

In the fourteenth through sixteenth centuries, beginning primarily in Italy, humanism in art was accompanied by advances in the anatomical and physiological study of hearing, vision, and the human body by Versalius, da Vinci, William Harvey, and others. During the Renaissance, voluntary beatings of the head were employed to treat people with many mental diseases, including depression, paralysis, and intellectual disability (Bromberg, 1975). Physicians would also bore holes in the head or purge persons with mental disabilities to release the "stones" or "black bile" thought to cause illness (Gilman, 1982). Treatment for epilepsy included the ingestion of a mountain gnat's brain or the still-warm gall of a dog killed at the moment of the seizure. One treatment of deafness consisted of frying earthworms with goose grease and dropping the solution into the food. While these endeavors to cure illness and disability seem fantastic by today's standards, they focused on biological etiologies and treatments and therefore signified a change in the prevailing beliefs that the

causes of disability and illness were supernatural. Cures during this period were related to primitive understandings of anatomical functions and to physicians' abilities to intervene to address bodily difference and dysfunction.

The English statesman and philosopher Francis Bacon believed that the supernatural and speculative philosophies of the Middle Ages and Renaissance had contributed nothing to the advancement of knowledge. He was impressed with the revolutionary discoveries of Copernicus and Galileo, who, for the first time, had proven certain characteristics of the universe. He was impressed with Marco Polo's travels and with the invention of gunpowder. Bacon introduced the notion of science as *systematic study*: He called for experiments to be conducted based on the collection of empirical data (Bacon, 1605). The secrets of nature could be revealed, he argued, by the systematic observation of its regularities. In 1605, Bacon published *The Advancement of Learning, Divine and Humane*. In it, he refuted the notion of divine punishment as a cause of mental illness. He suggested four lines of inquiry that would guide psychological research for the next 300 years: studies of mental faculties and the interaction of body and mind, individual case studies, anatomical inquiry and postmortem studies, and the interaction between society and the individual (Bacon [1605] 1900).

Poverty and Disability

A profound change in attitudes toward poverty occurred across Europe during the thirteenth through seventeenth centuries that would have an impact on people with disabilities. Poverty traditionally had been associated with followers of Jesus in the Christian European countries, and beggars represented a means for almsgivers to please God (Spierenburg, 1984). Ideas about the changing perception of poverty, from a necessary and even blessed state to a

curse, began to slowly evolve from the thirteenth century. By the sixteenth century, this transformation was more or less complete, and poor people were deemed suspect. This metamorphosis of attitudes resulted in the eventual development of incarcerating facilities for the poor, particularly for people with mental illness (Spierenburg, 1984). As previously noted, begging was outlawed in the streets of Paris in 1657, further marginalizing people with disabilities and separating them from what had been an important source of income for centuries.

During the early modern and Renaissance periods, a complex relationship existed between community support, religious and medical institutions, and family resources in coping with mental disability. While the implementation of the English Poor Law was distinguished by the provision of relief in the community, on the Continent, the provision of public welfare "was usually within the context of structures likely to produce a sense of social stigma and alienation. Continental institutions are thus seen as compulsory and segregated from the outside world, and characterized by day-to-day procedures inherently dehumanizing" (Cavallo 91). During the early modern period in Italy, for example, there is evidence that people with disabilities sought admission to hospitals for the poor in large numbers and were thereby subject to stigmatization. The relationship between poverty and disability during the medieval period is also significant. The chances of living to adulthood averaged just 50 percent during the medieval period. In thirteenth-century France, Italy, and England, tax records indicate that as much as 75 percent of the population was too poor to pay taxes and was particularly susceptible to dire consequences if they became disabled (Farmer, 1998).

Philosophical Enlightenment

The Enlightenment or Age of Reason is a cultural historian's term for revolutionary changes in thinking that began in Europe in the seventeenth century. The Enlightenment represented the intellectual platform for the rise of contemporary Western civilization and drew heavily from the contributions of Francis Bacon, Isaac Newton, and John Locke. Two themes in Enlightenment thinking are related to changes in the care and treatment of people with disabilities. First, a "sensationalist" theory of knowledge laid the foundation for bold new psychological and educational interventions by arguing that experience and reason—rather than innate ideas and divine punishment—were the sources of all knowledge and that social and environmental modification could thus improve humans and society by manipulating society and the environment. The second Enlightenment idea of importance to people with disabilities was the growing belief in the merits of natural science to advance the species (Edwards, 1996).

In 1656 in Paris, the great "Hopital General," France's charitable hospital, was formed as a single, semi-judicial administrative entity out of several existing establishments, including the Salpetriere and the Bicetre (mental hospitals for women and men, respectively) and several smaller general hospitals. The first public charity hospital in France had opened in Lyons in 1612 and functioned in an analogous manner (Foucault, 1965). Confinement no doubt accelerated in Paris with the enactment of the aforementioned edict in 1657 that prohibited begging.

Thus, *poverty*, *disability*, and the *inability to work* came to rank prominently among the major problems of the city. The soon to emerge "sensationalist" philosophies of the Enlightenment, however, provided the

moral imperative and the tools for new and constructive interventions with the interconnected problem of disability and poverty (Winzer, 1986).

The intellectual revolution of the Renaissance and Enlightenment contributed to fundamental changes in the relationships between humans, society, and God. For the first time, people were deemed to be capable of intervening in what had been perceived to be the immutable natural order: a belief that society and human beings could be perfected. This revolution in thinking stimulated extensive efforts to develop treatment interventions for people with disabilities, including the deaf, blind, and people with mental disabilities, and it led to the ascendancy of a professional class of physicians, educators, and caretakers. The medicalization and professionalization of disability reinforced the development and proliferation of institutions and schools across Europe and subsequently in North America. The trend toward institutionalization would gain greater momentum during the nineteenth and twentieth centuries.

The nineteenth century

Educational Developments

Residential schools for deaf and blind students grew rapidly during the nineteenth century, as did institutionalized segregation of people with mental illness and intellectual disability. Therapeutic advances occurred for people with speech impairments, and controversy developed regarding two competing philosophies for educating deaf persons: oralism and manualism. Schools for children with physical disabilities opened somewhat later in Europe. The first school designed exclusively for children with physical disabilities was opened in 1832 in Bavaria by John Nepinak. Schools subsequently opened in other parts of Germany, France, England, Switzerland, and Italy. Denmark established the first programme of industrial training for children with physical

disabilities. A program of segregation in workshops became common in European schools by the middle of the nineteenth century. In 1829, Louis Braille published an explanation of his embossed dot code, which was an improvement on a system developed by Barbier in 1808.

Conclusion

After the seventeenth century, medical science and the rise of custodial residential institutions undermined the self-determination of people with disabilities during a period of rapid and continuous urbanization and industrialization in the West. It did this by overmedicalizing what was, in large measure, a social, educational, and economic problem, separating many disabled people from their families, communities, and society at large. This socially sanctioned segregation reinforced negative societal attitudes toward human difference and, eventually, special public classes and rehabilitation centers-also facilitated the development empowered group identities that ultimately led to political activism.

Assertive political activism by people with disabilities and their families emerged primarily the late twentieth century, and, in the United States, it draws considerable strength from the example of the civil rights movement for people of colour. People with disabilities have shared a history that has often been oppressive and include abuse, neglect, sterilization, stigma, euthanasia, segregation, and institutionalization. Disabled people, who have survived by relying on tenacity and resourcefulness and on support provide in different measures by family, friends, and local communities are currently struggling to claim identity. At the close of the twentieth century, the foundation was gradually established in the West for a new era based on civil rights, social participation, and a cross-disability perspective.

As researchers, we need to mount a series of rigorous, comparative, recurring empirical studies to monitor the growth of public-sector resource and service commitments for disability programs in every country of the world in which it is possible to do so. These recurring studies need to assess the allocation of resources on a nationwide basis for disability programs so that all the nations of the world can be held accountable for their commitments to disabled people and their families. Such studies would permit the priority that a nation assigns to disability to be evaluated over time and to be compared to other nations with similar levels of wealth. The information generated in such studies would be useful in program planning, and, by identifying the leaders and the laggards among the nations of the world, it would be immensely useful to disability advocates seeking to influence public policy on behalf of their constituencies. Several international organizations should be approached to sponsor this research, including the World Bank, the United Nations, the European Union, the Pan American Health Organization, and the World Health Organization. In the United States, the National Institute on Disability and Rehabilitation Research (NIDRR) should also consider launching one or more international rehabilitation research and training centers. These centers would focus on significantly expanding educational and research links on disability between and among the developed and developing nations of the world.

Disability is emerging globally. Studying the representation of disability in literature and art is an important and relatively unexplored research frontier in disability studies. It is a relatively recent rubric that seeks to group research that focuses upon the historical, political, social and professional meanings associated to disability and disabled populations. It is a frontier with the potential to yield a richer understanding the history of disability, with lived experience and perspective at the center of analysis rather than at the periphery.

The work of Allen Thiher (1999), Robert Garland (1995), Rosemarie Garland Thomson (1997), David Mitchell (2000), and Sander Gilman (1988, 1995) exemplifies this approach, and significant growth in research on disability and the humanities can be expected over the next decade. This scholarship will contribute greatly to the develop knowledge base on the history of disability and human diversity.

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A COMPARATIVE INVITRO ANTIMICROBIAL STUDY OF MAHAMANJISHTADI KWATH AND INGREDIENTS

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Abstract

Screening of Ayurvedic formulations for antimicrobial property leads to development of less expensive antimicrobial agents with improved safety and efficacy. Mahamanjishtadikwath is a polyherbal formulation used for treating skin diseases. *Rubia cordifolia*, *Cassia fistula* bark, *Acacia catechu* heartwood and *Azadirachta indica* bark are ingredients of kwath. The present study compared the antimicrobial efficacy of water, ethanol and methanol extract of kwath and individual ingredients against human pathogenic bacteria *Staphylococcus aureus*, *Proteus mirabilis*, *Escherichia coli* and *Klebsiella pneumoniae*. Microtitre plate based antibacterial assay was used to determine the Minimum Inhibitory Concentration (MIC). Kirby-Bauer diffusion method was used to determine the antibacterial activity. Results showed that kwath extracts exhibited strong antibacterial activity against all tested microorganisms. Antimicrobial activity of individual ingredient extracts was found to be high against Gram positive organism especially ethanol extract. *R. cordifolia* exhibited high level of antimicrobial activity, whereas *A. catechu* heartwood showed least activity.

Keywords: Mahamanjishtadikwath, *Rubia cordifolia*, *Cassia fistula*, *Acacia catechu*, *Azadirachta indica*, antimicrobial activity.

Introduction

Antibiotic resistance is a serious and growing phenomenon in contemporary medicine and has emerged as one of the pre-eminent public health concerns in 21st century. Herbal medicines are anticipated to protect us from infections as they are considered as better alternatives for existing and emerging antimicrobial drug resistant pathogens. Herbal antimicrobial agents act either by killing or restricting the bacterial growth through. Ayurveda is a 5,000-year-old system of natural healing that has its origins in the Vedic culture of India. The current study deals with the antimicrobial potentials of Mahamanjishtadi kwath, a polyherbal product. Mahamanjisthadi Kwath (Text-Sahasrayogam) comprises of 43 herbal ingredients and has following therapeutic uses –treatment of Psoriasis, skin care, promotion skin health and complexion, pacifying Pitta, as a blood purifier, immunomodulator, neurodermatoses, rheumatoid disease, oedema of feet, numbness and disorders of lipid metabolism.

In recent years, there has been a growing interest in researching and developing new antimicrobial agents from various sources to combat microbial resistance. Therefore, a greater attention has been paid to antimicrobial activity screening and evaluating methods. Recently, many researchers have focused on the investigation of plant and microbial extracts, essential oils, pure secondary metabolites and new synthesized molecules as potential antimicrobial agents (Mabona et al., 2013). The current study deals with the determination of invitro antimicrobial activity of Mahamanjishtadi Kwath and its four ingredients namely, *Rubiocordifolia* (poovath), *Cassia fistula* bark (konnatholi), *Acacia catechu* heart wood (karingaalikathal) and *Azadirachta indica* bark (veppinholi).

Materials and Methods

Test strains

The strains used in the study *Staphylococcus aureus* -NCIM 5345, *Proteus mirabilis*-MTCC 425, *Klebsiella pneumoniae*-MTCC 432, *Escherichia coli*-NCIM 2068 were purchased from NCIM (National Collection of Industrial Microorganisms), Pune and MTCC (Microbial Type Culture Collection), Chandigarh.

Whole kwath extract preparation

Ten millilitres of Mahamanjishtadi kwath (Table 1) was concentrated over a hot plate to get a thick mass which served as the concentrated kwath and this was then reconstituted with 5 ml methanol or ethanol to get methanol or ethanol extract respectively.

Individual ingredient extract preparation

The following 4 ingredients of the kwath *Rubia cordifolia*, *Azadirachta indica* bark, *Acacia catechu* heart wood and *Cassia fistula* bark (Figure 1) were also studied individually for their antibacterial activity.

For this study 10 g of ingredient was weighed in round bottom flask and refluxed with water and filtered till the colour disappeared. The filtrates were collected in a beaker and placed over hotplate till it was reduced to 5 ml. Procedure was repeated with methanol and ethanol instead of water to get methanol and ethanol extract respectively.



Figure 1. Mahamanjishtadikwa and ingredients

Table 1. Ingredients of Mahamanjishtadikwa

Aadalodakaveru	Kodithoova	Thrikolpakkonnan	Ungintholi
Amruthpacha	Konnatholi	Thippali	Vayambu
Brahmi	Kudakapalayari old	Cheruthekk	Vengakaathal
Chukku	Kudakappaalatholi	Thaannikkathodu	Veppintholi
Iruveli	Manjal dry	Sathaavari	Vizhaalari
Kaarkokilari	Maramanjaltholi	Chundaveru	Neermathalatholi
Kadukkathodu	Muthanga	Poovath	Visalamoolam
Kadukurohini	Liquid preservative	Perumkurumpaveru	Kottam
Kandakaari	Naruneendikizhangu	Perumaratholi	Karpooramsp
Karingaalikathal	Nelikkathodu	Parpadakappullu	Murukintholi
Kayyunyam	Paadakizhangu	Padavalam	Koduvelipacha

Determination of Minimum Inhibitory Concentration (MIC)

The microtitre plate based antibacterial assay for the determination of MIC of samples was carried out as per the Satyajit et al., 2007.

Preparation of test strains

A single colony of the test strain was transferred into a 100 ml Mueller Hinton Broth (MHB) in conical flask, capped and incubated overnight at 35°C. After 12-18 hours of incubation, the broth was centrifuged. The supernatant was discarded and the pellet was resuspended in sterile saline and centrifuged again at 4000 rpm for 5 minutes. This was repeated until the supernatant was clear. The pellet was then resuspended in 20 ml of sterile normal saline, and was labelled as Bs. The optical density of Bs was recorded at 500 nm, and serial dilutions were carried out until the optical density was in the range of 0.5-1.0.

Preparation of the Resazurin solution

The resazurin solution was prepared by dissolving a 0.015 mg granule in 100 ml sterile distilled water.

Preparation of microtitre plate

The wells 1A-1H served as 'Negative control'. It contained 110 µl MHB. The wells from 2A-2H second was regarded as 'Positive control' (It contained different concentrations of antibiotic solution. 100 µl antibiotic solution was added 2A and it was serially diluted to 2H). The third set of cells from 3A-3H was labelled as 'Growth control'. It contained 100 µl MHB and 10 µl Bs. The remaining wells were used for determining MIC of sample. For this 100 µl of appropriate sample (kwath extracts/ individual ingredient extracts) was added aseptically to specific well mixed well and serially diluted upto well H (Table 2). Then 10 µl of microbial suspension was added to each of these wells

and mixed well. The plates were covered and incubated. After incubation, 10 μ l of resazurin dye was added and further incubated. Colour change was observed and recorded.

Table 2. Details of dilutions performed and well number

Well number	Dilution (μ l)
A	100
B	50
C	25
D	12.5
E	6.25
F	3.13
G	1.56
H	0.78

Invitro antibacterial assay: Well diffusion method

A loopful of bacterial culture was inoculated into 5 ml nutrient and incubated at 37°C for 18 hours. The inoculum concentration was measured compared with 0.5 McFarland turbidity standards and the cell density was adjusted to get around 1.5×10^8 cfu/ml using UV-spectrophotometer. Then the plates were swabbed evenly with the bacterial culture. After 20 minutes, wells were made on the plates with the help a sterile Cork borer (8mm diameter) and around 100 μ l extracts were added to the wells. The antibiotic solution served as Positive control. Methanol /ethanol/water served as the Negative control for respective extracts. All the plates were incubated. After incubation the diameter of zone of inhibition was measured using HiMedia Zone size checking scale and the results were compared (Tarun et al., 2012; Gaurav et al., 2010).

Results

The MIC studies revealed that all the extracts of concentrated kwath showed some degree of inhibitory activity against all the pathogens. It was also noted that Gram positive skin pathogen is more susceptible than Gram negative organisms (Table 3-7, Figure 2). The concentrated kwath and its ethanol extract (3.13 μ L) inhibited the skin pathogen *S. aureus* the greatest. The results indicated that ethanol extracts of individual ingredients are more active.

R. cordifolia, *C. fistula* bark showed antimicrobial activity against *S. aureus* and *P. mirabilis*. Whereas, the antimicrobial activity of *A. catechu* heartwood and *A. Indica* bark was restricted to Gram positive organism (Table 8-12 and Figure 3-5). Among all the extracts of *R. cordifolia*, the methanolic extract exhibited highest inhibitory activity against *S. Aureus* (22mm). Ethanol extract and methanol extract of *C. fistula* were effective in inhibiting the growth of both *S. aureus* and *P. mirabilis* respectively. *A. catechu* extracts did not inhibit any of the microorganisms used in this study. Only the methanol extract of *A. Indica* bark showed inhibitory action.

The polyherbal formulation shows sensitivity towards all the tested microorganisms. The *R. cordifolia* was the ingredient with highest antimicrobial activity and the least activity was exhibited by *A. catechu* heartwood.

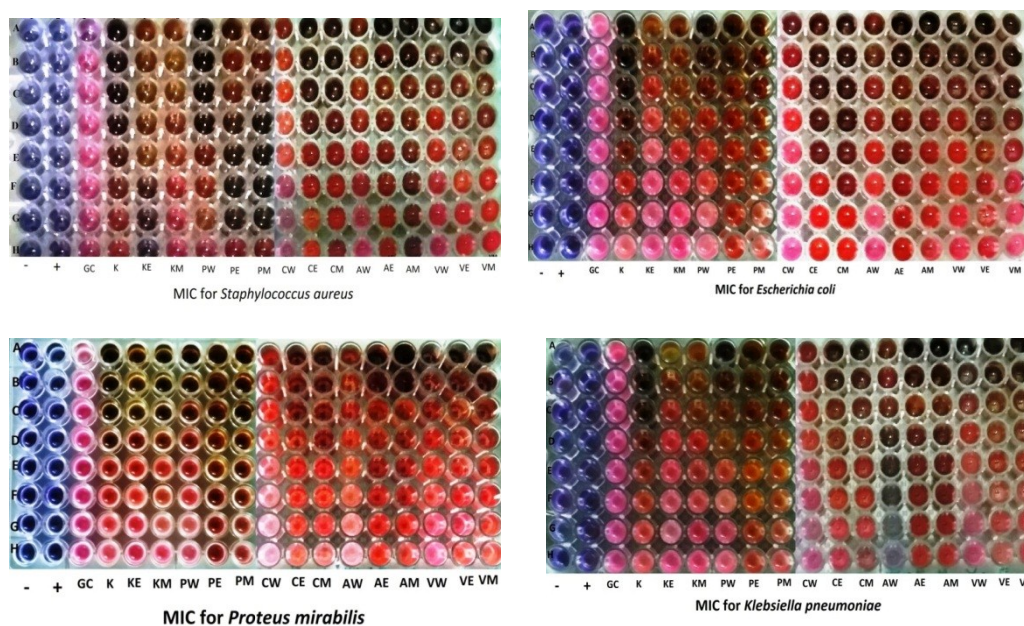


Figure 2. Determination of MIC of Kwath and its individual ingredients against pathogens

((-)Negative control, (+) Positive control, GC – growth control, K- concentrated kwath, KE-ethanol extract of kwath, KM- methanol extract of kwath, PW- water extract of kwath *Rubia cordifolia*, PE- ethanol extract of *Rubia cordifolia*, PM- methanol extract of *Rubia cordifolia*, CW- water extract of *Cassia fistula* bark, CE- ethanol extract of *Cassia fistula* bark, CM- ethanol extract of *Cassia fistula* bark, AW- water extract of *Acacia catechu* heart wood, AE- ethanol extract of *Acacia catechu* heart wood, AM- ethanol extract of *Acacia catechu* heart wood, VW- water extract of *Azadirachta indica* bark, VE- ethanol extract of *Azadirachta indica* bark, VM- ethanol extract of *Azadirachta indica* bark)

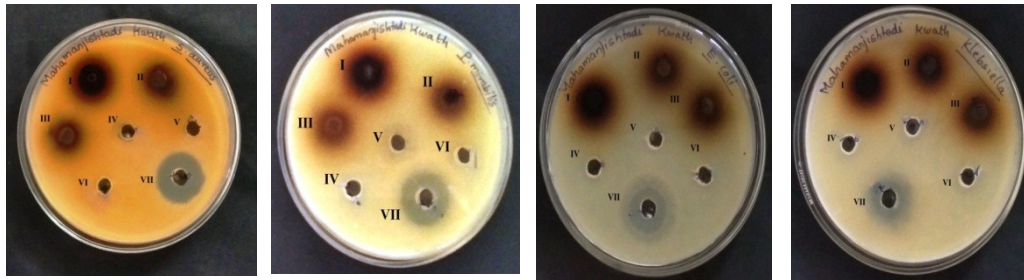
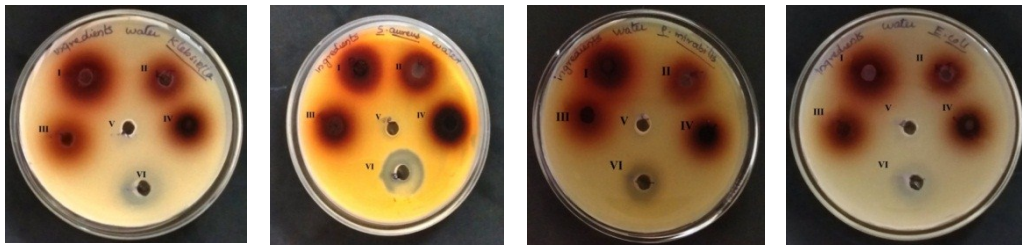
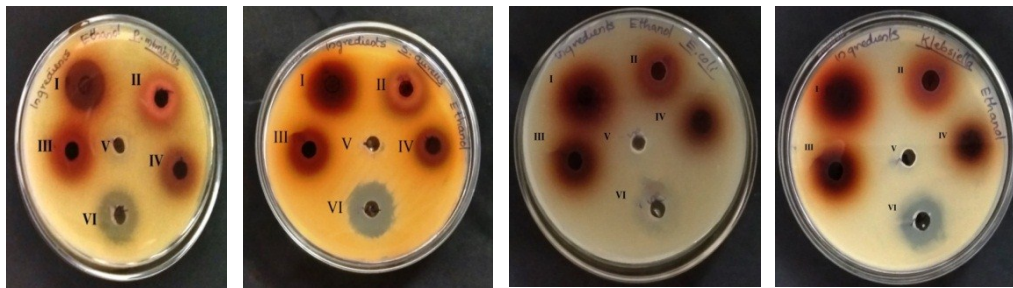


Figure 3. Invitro antibacterial assay of kwath and its extracts against pathogens (Well I-Concentrated kwath, II-ethanol extract, III- methanol extract, IV- methanol control, V-ethanol control, VI-water, VII-positive control)



a) *Klebsiella* sp. b) *S.aureus* c) *P.mirabilis* d) *E.coli*

Figure 4 Invitro antibacterial assay of water extract of the different ingredients (I- *Rubia cordifolia*, II- *Cassia fistula* bark, III- *Acacia catechu* heart wood, IV- *Azadirachta indica* bark, V-Negative Control, VI- Positive control)



a) *Staphylococcus aureus* b) *Proteus mirabili* c) *Escherichia coli* d) *Klebsiellapneumoniae*

Figure 5. Invitro antibacterial assay of ethanol extract of the different ingredients (I- *Rubia cordifolia*, II- *Cassia fistula* bark, III- *Acacia catechu* heart wood, IV- *Azadirachta indica* bark, V-Negative Control, VI- Positive control)

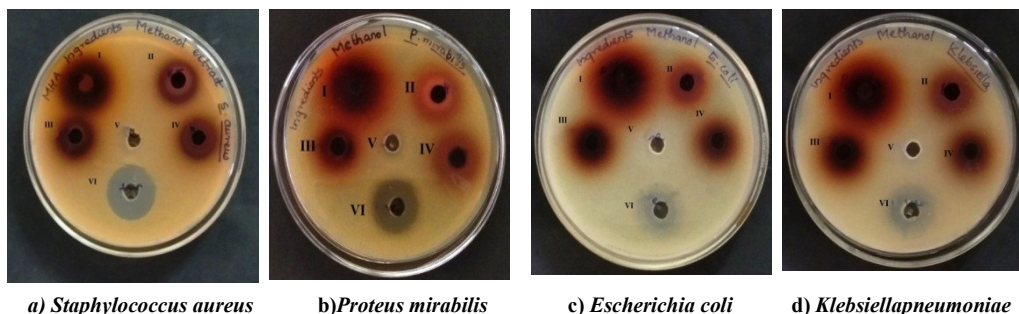


Figure 6. In vitro antibacterial assay of methanol extract of the different ingredients (I- *Rubia cordifolia*, II- *Cassia fistula* bark, III- *Acacia catechu* heart wood, IV- *Azadirachta indica* bark, V- Negative Control, VI- Positive control)

Table 3. Determination of MIC of kwath and its extracts

Organisms	MIC of Kwath		
	Concentrated	Well Ethanol extract	Methanol extract
<i>S.aureus</i>	F	F	C
<i>P.mirabilis</i>	D	C	C
<i>K.pneumoniae</i>	D	C	C
<i>E.coli</i>	E	D	D

Table 4. Determination of MIC of *Rubia cordifolia*

Organisms	MIC of <i>Rubia cordifolia</i>		
	Water extract	Well Ethanol extract	Methanol extract
<i>S.aureus</i>	D	G	G
<i>P.mirabilis</i>	B	E	E
<i>K.pneumoniae</i>	D	G	E
<i>E.coli</i>	D	G	G

Table 5. Determination of MIC of *Cassia fistula*

Organisms	MIC of <i>Cassia fistula</i> bark		
	Well		
	Water extract	Ethanol extract	Methanol extract
<i>S.aureus</i>	C	E	D
<i>P.mirabilis</i>	D	D	D
<i>K.pneumoniae</i>	D	F	D
<i>E.coli</i>	C	E	F

Table 6. Determination of MIC of *Acacia catechu*

Organisms	MIC of <i>Acacia catechu</i> heart wood		
	Well		
	Water extract	Ethanol extract	Methanol extract
<i>S.aureus</i>	C	E	G
<i>P.mirabilis</i>	B	D	D
<i>K.pneumoniae</i>	G	D	D
<i>E.coli</i>	B	D	C

Table 7. Determination of MIC of *Azadirachta indica*

Organisms	MIC of <i>Azadirachta indica</i> bark		
	Well		
	Water extract	Ethanol extract	Methanol extract
<i>S.aureus</i>	C	D	D
<i>P.mirabilis</i>	C	D	D
<i>K.pneumoniae</i>	B	D	D
<i>E.coli</i>	C	E	D

Table 8. Invitro antimicrobial assay

Organism used	Antimicrobial activity of kwath									
	Concentrated		Ethanol extract		Methanol extract		Gentamicin		Negative control	
	ZI	INF	ZI	INF	ZI	INF	ZI	INF	ZI	INF
<i>S.aureus</i>	15	S	17	S	12	R	20	S	NIL	R
<i>P.mirabilis</i>	11	R	11	R	13	I	17	S	NIL	R
<i>K.pneumoniae</i>	-	R	14	I	13	I	17	S	NIL	R
<i>E.coli</i>	13	I	13	I	11	R	17	S	NIL	R

Table 9. Invitro antimicrobial assay *Rubia cordifolia*

Organism used	Antimicrobial activity of <i>Rubia cordifolia</i>									
	Water extract		Ethanol extract		Methanol extract		Gentamicin		Negative control	
	ZI	INF	ZI	INF	ZI	INF	ZI	INF	ZI	INF
<i>S.aureus</i>	16	S	18	S	22	S	20	S	NIL	R
<i>P.mirabilis</i>	14	I	19	S	16	S	17	S	NIL	R
<i>K.pneumoniae</i>	-	R	-	R	-	R	17	S	NIL	R
<i>E.coli</i>	-	R	-	R	-	R	17	S	NIL	R

Table 10. Invitro antimicrobial assay *Cassia fistula*

Organism used	Antimicrobial Activity of <i>Cassia fistula</i> bark									
	Water extract		Ethanol extract		Methanol extract		Gentamicin		Negative control	
	ZI	INF	ZI	INF	ZI	INF	ZI	INF	ZI	INF
<i>S.aureus</i>	17	S	16	S	16	S	20	S	NIL	R
<i>P.mirabilis</i>	14	I	-	R	16	S	17	S	NIL	R
<i>K.pneumoniae</i>	-	R	-	R	-	R	17	S	NIL	R
<i>E.coli</i>	-	R	-	R	-	R	17	S	NIL	R

Table 11. Invitro antimicrobial assay *Acacia catechu*

Organism used	Antimicrobial activity of <i>Acacia catechu</i> heart wood									
	Water extract		Ethanol extract		Methanol extract		Gentamicin		Negative control	
	ZI	INF	ZI	INF	ZI	INF	ZI	INF	ZI	INF
<i>S.aureus</i>	12	R	12	R	11	R	20	S	NIL	R
<i>P.mirabilis</i>	-	R	-	R	-	R	17	S	NIL	R
<i>K.pneumoniae</i>	-	R	-	R	-	R	17	S	NIL	R
<i>E.coli</i>	-	R	-	R	-	R	17	S	NIL	R

Table 12. Invitro antimicrobial assay *Azadirachta indica*

Organism used	Antimicrobial activity of <i>Azadirachta indica</i> bark									
	Water extract		Ethanol extract		Methanol extract		Gentamicin		Negative control	
	ZI	INF	ZI	INF	ZI	INF	ZI	INF	ZI	INF
<i>S.aureus</i>	15	S	13	S	16	S	20	S	NIL	R
<i>P.mirabilis</i>	-	R	-	R	-	R	17	S	NIL	R
<i>K.pneumoniae</i>	-	R	-	R	-	R	17	S	NIL	R
<i>E.coli</i>	-	R	-	R	-	R	17	S	NIL	R

ZI (mm) –Zone of inhibition, INF -Inference, S –Sensitive, R-Resistant

Discussion

Hussain et al., (2011) investigated the invitro antimicrobial activity of polyherbal formulation. The Polyherbal formulation showed average zone of inhibition that ranged from 9-12 mm. The Mahamanjishta dikwath ethanol extract showed 17 mm zone size against *S. aureus*. The present study revealed that the use of organic solvents in the preparation of plant extracts provides more consistent antibacterial activity as compared to aqueous extracts. This finding was also supported by several workers (Gareja et al., 2005; Al-Bayati et al., 2008) that water extracts of plants do not have much activity against

bacteria. Walter et al., (2011) carried out a study on Mahamanjishta dikwath. The study was carried out using ethanol, methanol and aqueous extracts. The study reveals that kwath had good antimicrobial activity. Synergetic activity of polyherbs and presence of bioactive compounds influences the antimicrobial activity. Synergism often results from components of one herb aiding the other, improving the total efficacy (Neeraj 2016).

Yazan et al., 2016 in a study with *Rubia cordifolia* root found that the methanol extract showed antibacterial activity against all the three Gram-positive bacteria (*Bacillus subtilis*, *Enterococcus faecalis* and *Staphylococcus aureus*) and four Gram-negative bacteria (*Acinetobacter baumannii*, *Enterobacter aerogenes*, *P. mirabilis* and *P. aeruginosa*) and showed antifungal activity against *Candida albicans*. While, *R. cordifolia* root methanol extract did not show antibacterial activity against three Gram-negative bacteria (*E. coli*, *K. pneumonia* and *Salmonella enteritidis*). The current study shows that methanol extract is more active towards skin pathogens except *Proteus mirabilis*. Ethanol extract (19mm) shows good activity than methanol extract (16mm). Gram negative organisms showed resistance to all extracts. It is worthy to note that a study by Mariselvam et al., 2013 found that the silver nano-particles prepared by using *R. cordifolia* plant root water extract showed antibacterial effect to *P. aeruginosa* and *Vibrio parahaemolyticus*. It seems that the antibacterial compounds extracted from *R. cordifolia* cannot pass the outer membrane of the Gram-negative bacteria. The study concluded that the differences between the cell envelope of Gram-positive and Gram-negative bacteria made the access of the fractionated antibacterial compounds more restricted in Gram-negative bacteria.

Zeeshan et al., 2013 undertook a study with *Cassia fistula* bark, among all the 20 extracts 6 extracts were found to possess good activity against the

organisms *Candida albicans*, *E coli*, and *S aureus* at a concentration of 0.5mg/ml. The current study found that extract at 2 mg/ml concentration could inhibit Gram positive skin pathogen.

Jayshree et al., 2009 studied the resin part of *Acacia catechu*. Antimicrobial testing demonstrated excellent results with the petroleum ether extract against *Pseudomonas aeruginosa* (10 µg/mL), followed by the aqueous extract against *Bacillus subtilis* (20 µg/mL) and the chloroform extract against *Staphylococcus aureus* (30 µg/mL). The antibacterial and antifungal potential of leaf extracts of *A. catechu* is due to its high terpene contents. The extract of *A. catechu* is effective both in Gram-positive and Gram-negative bacteria as well as against fungus *C. albicans* (Bhawna et al., 2010). In the present study, the *A. catechu* heart wood extract exhibited the least antimicrobial activity when compared to other ingredients.

Reddy et al., 2013 compared the antimicrobial efficacy of aqueous extracts of leaf, bark and seeds of *A. indica* against human pathogenic bacteria (*Staphylococcus aureus*, *Enterococcus faecalis*, *Proteus mirabilis* and *Pseudomonas aeruginosa*) and fungi (*Aspergillus fumigatus* and *Candida albicans*). Antimicrobial activity of bark extract was found to be moderate on bacteria and fungi (effective at 1000 and 2000µg/ml). The results suggest that aqueous extracts of *Azadiracht aindica* leaf and bark exhibit high antimicrobial activity. In the present study, it is the methanol extract that exhibited antimicrobial activity (16mm) towards *S. aureus*.

Conclusion

The studies on Mahamanjishtadi kwathrevealed the potent therapeutic action of herbal classical formulation. The invitro antimicrobial study showed that the classical formulation had potent antimicrobial activity against almost all

the tested bacterial strains and can be very well used for curing skin diseases. A comparative antimicrobial study of water, ethanol and methanol extract indicated that antimicrobial activity varies with each extract and organisms used. Gram positive bacteria are most sensitive than gram negative bacteria towards extracts. The skin pathogens, *S.aureus*, and *P. mirabilis* were susceptible to individual ingredient extract but *E.coli* and *Klebsiella pneumoniae* were found to be resistant.

Today herbal medicines are gaining more interest in the therapeutic field. Investigation on antimicrobial potential of kwath, *Rubia cordifolia*, *Cassia fistula* bark, *Acacia catechu* heart wood and *Azadiracht aindica* bark will help in the formulation of new drug. The current research only reveals the basic facts. Further research must be needed for conformation. New formulations of kwath or ingredients shall awake the pharmaceutical industry and may serve as cure for several other diseases.

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നാടകചരിത്രത്തിലെ സമീപനവിചാരം

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മലയാളനാടകചരിത്രത്തിലെ സ്ത്രീയുടെ പങ്ക് അന്വേഷിക്കുന്ന സജിതമാത്തിലിന്റെ 'മലയാളനാടക സ്ത്രീചരിത്രം' അതുവരെ പുറത്തിറങ്ങിയ നാടകചരിത്രങ്ങളിൽ നിന്നും വ്യത്യസ്തമാകുന്നത് സമീപനങ്ങളിൽ വന്ന പുതുമകൊണ്ടാണ്. ചരിത്രത്തിന്റെ നൈരന്തര്യം, ചരിത്രത്തിന്റെ ആഖ്യാനരീതി, ഉപാദാനം, ചരിത്രത്തിന്റെ വിവരണസ്വഭാവം, സ്ത്രീകർതൃത്വത്തെ കുറിച്ചുള്ള പുരുഷനിർണയത്തിന്റെ പ്രശ്നവൽക്കരണം, പുരുഷൻ നിർമ്മിച്ച സ്ത്രീത്വം തുടങ്ങിയവയെ സംബന്ധിച്ച് ഏറെ വ്യത്യസ്തമായ ചരിത്രരചനാരീതി ശാസ്ത്രം മുന്നോട്ടുവയ്ക്കുന്ന സജിതയുടെ ചരിത്രം സാമ്പ്രദായികചരിത്രരചനായുക്തികളെ പൊളിച്ചെഴുതുന്നു.

സൂചകപദങ്ങൾ ചരിത്രാഖ്യാനം, ബദൽ രീതിശാസ്ത്രം, ചരിത്രവിജ്ഞാനീയം, ഉപാദാനം, സ്ത്രീകർതൃത്വം, ഇതിവൃത്തനിർമ്മിതി, സ്ത്രീകർതൃത്വരൂപങ്ങൾ, ആൺകോയ്മ, ലിംഗരാഷ്ട്രീയം

ആമുഖം

128 വർഷത്തെ മലയാളനാടക ചരിത്രത്തിലെ സ്ത്രീയുടെ പങ്ക് അന്വേഷിച്ചുകൊണ്ട് 2010-ൽ പുറത്തിറങ്ങിയ സജിതമാത്തിലിന്റെ 'മലയാളനാടക സ്ത്രീചരിത്രം' നിലനിൽക്കുന്ന വ്യവസ്ഥാപിത പുരുഷക്കോയ്മകളെയെല്ലാം അസ്വസ്ഥപ്പെടുത്തിക്കൊണ്ട് വന്ന ചരിത്രാഖ്യാനമാണ്. 'അസാധാരണമായ ഒരു ചരിത്രപുസ്തകം' എന്ന് അവതാരികയിൽ ഉദയകുമാർ ഇതിനെ വിശേഷിപ്പിക്കുന്നതിനു പിന്നിൽ നിരവധി ഘടകങ്ങൾ ഉണ്ട്. ലിംഗപരമായ രീതിശാസ്ത്രങ്ങളെ പൊളിച്ചെഴുതി, അതുവരെയുള്ള നാടകചരിത്രത്തിലെ ഭാഗിക കാഴ്ചകളെ- സ്ത്രീഭാഗധേയത്തെ പ്രശ്നവൽക്കരിച്ചുകൊണ്ട്, സ്ത്രീകർതൃത്വത്തെ

സംബന്ധിച്ച സാമ്പ്രദായിക ധാരണകളെ മാറ്റി പ്രതിഷ്ഠിച്ച് സജിത സ്ത്രീചരിത്രം രേഖപ്പെടുത്തുന്നു.

അതുവരെയുള്ള എല്ലാ നാടകചരിത്രങ്ങളും നാടകചരിത്രത്തിലെ സ്ത്രീയുടെ പങ്കിനെക്കുറിച്ച് നിശ്ശബ്ദതപാലിക്കുന്നു. ‘ചരിത്രത്തിലുടനീളം സ്ത്രീക്കു കല്പിച്ചു നൽകിയ നിശബ്ദതയാണ്’ ഈ മലയാളനാടക സ്ത്രീചരിത്രത്തിന്റെ അന്വേഷണത്തിനു കാരണമായതെന്നു സജിത പറയുന്നുണ്ട്. ആദ്യകാലനാടകചരിത്രത്തിൽ സ്ത്രീകളുടെ പേരുകൾ പോലും ഒരിടത്തും പരാമർശിച്ചു കാണുന്നില്ല. രേഖപ്പെടുത്തിയതാകട്ടെ അശ്രദ്ധയോടെ തെറ്റായിട്ടും. ജി.ശങ്കരപിള്ളയുടെ മലയാളനാടകസാഹിത്യചരിത്രം ആദ്യകാല സ്വതന്ത്രനാടകരചനകളെ രേഖപ്പെടുത്തിയവയിൽ സുഭദ്രാധനഞ്ജയം : തോട്ടയ്ക്കാട്ട് മാധവിയമ്മ (1891) എന്ന് രേഖപ്പെടുത്തിയിരിക്കുന്നു (2005 (80), 27). തോട്ടയ്ക്കാട്ട് ഇക്കാവമ്മയുടെ സുഭദ്രാർജ്ജുനത്തെയാണ് ഇങ്ങനെ അശ്രദ്ധയോടെ തെറ്റായി രേഖപ്പെടുത്തിയിരിക്കുന്നത്. ഇത് പല നാടകചരിത്രങ്ങളിലും ആവർത്തിക്കുന്നു. നാടകചരിത്രത്തിൽ സ്ത്രീകൾക്ക് എന്തു കാര്യം? എന്ന സ്വാഭാവിക ചോദ്യം ഉൾച്ചേർന്ന അശ്രദ്ധ ആധുനിക കാലത്തെ സ്ത്രീയെ പരിചയപ്പെടുത്തുന്നതിലും കാണാനാവും (സജിത മാത്തിൽ; 2010, 21). ആദ്യകാലത്തെ പ്രസിദ്ധ സ്ത്രീനാടകരചനകൾ പോലും ഒഴിവാക്കിയതെന്തുകൊണ്ടാവും എന്ന് സജിത ചോദിക്കുന്നുണ്ട്. പ്രഖ്യാതകൃതികൾക്കും പ്രതിഭാസമ്പത്തുള്ള ഗ്രന്ഥകാരന്മാർക്കും കാലാകാലങ്ങളിലുള്ള പ്രവണതകൾക്കുമിടയിൽ സ്ത്രീരചനകൾ നിശബ്ദമായെന്നും അതുകൊണ്ട് തന്നെ അതുവരെ ചരിത്രകാരന്മാർ സ്വീകരിച്ച മാനദണ്ഡങ്ങൾക്ക് ഒരു ബദൽ മാനദണ്ഡം ഈ ചരിത്രകാരി സ്ഥാപിക്കുന്നു. രണ്ടുതരത്തിലുള്ള അന്വേഷണങ്ങളാണ് ഇവിടെ ആവശ്യമായി വരുന്നത്. നിലവിലുള്ള നാടകചരിത്രത്തെ വിമർശനാത്മകമായി സമീപിക്കുക, ഉളിഞ്ഞു നിൽക്കുന്ന സ്ത്രീസാന്നിധ്യത്തിന്റെ മറ്റൊരു ചരിത്രം എഴുതുക. ഈ രണ്ടു വഴിയിലൂടെയുള്ള സഞ്ചാരമാണ് ഈ പുസ്തകം (2010, 227).

വ്യവസ്ഥാപിത ചരിത്രാഖ്യാനം കൃത്യതയോടെ പാലിച്ചുവരുന്ന ലിംഗ, വരേണ്യ യുക്തികളെ, നിയമങ്ങളെ മലയാളനാടക സ്ത്രീചരിത്രം ഒരേ സമയം ചോദ്യം ചെയ്യുകയും ഒരു ബദൽ രീതിശാസ്ത്രം അവതരിപ്പിക്കുകയും ചെയ്യുന്നുണ്ട്. പൊതുവിൽ ചരിത്രവിജ്ഞാനത്തെയും നാടകചരിത്രത്തെയും സംബന്ധിച്ചു നിലനിൽക്കുന്ന പല വ്യവസ്ഥാപിത ധാരണകളെയും സജിത അട്ടിമറിക്കുന്നുണ്ട്.

1. ചരിത്രത്തിന്റെ നൈരന്തര്യം

സ്ത്രീരംഗകലകളുടെ ചരിത്രത്തിൽ പലപ്പോഴും നഷ്ടപ്പെടുന്നത് ഈ തുടർച്ചയാണ്. ഓരോ തവണയും പുതുതായി തുടങ്ങുക എന്ന ദുർവിധി സ്ത്രീകൾക്കുണ്ടാകുന്നത് ചരിത്രം അവളുടെ മുൻകൈകളെ വേണ്ട രീതിയിൽ ദൃശ്യമാക്കാത്തതുകൊണ്ടാണ് (സജിത, 2010, 27). ചരിത്രാഖ്യാനം സംഘടിതവും കൃത്യമായ തുടർച്ചകളോടു കൂടിയതുമാകണമെന്ന നിയമങ്ങൾ സ്ത്രീചരിത്രത്തിൽ സാധ്യമാകില്ല. കാരണം ആധികാരികമായ ചരിത്രാഖ്യാനങ്ങളിലെ, രേഖകളിലെ പുറതള്ളപ്പെട്ട സ്ത്രീകളെ, സ്ത്രീകളുടെ ഇടങ്ങളെ കണ്ടെത്തുക പ്രയാസകരമാണ്. “ആധികാരികമായ രേഖകളിൽ നിന്നു തന്നെ പുറംതള്ളപ്പെട്ട ഒരു ചരിത്രമാണ് പലപ്പോഴും വീണ്ടെടുക്കേണ്ടി വരുന്നത്. നഷ്ടപ്പെട്ട ഒരു ലോകത്തിന്റെ പുനർനിർമ്മാണത്തിലൂടെയല്ല, വർത്തമാനകാലത്തിൽ നിന്നുണ്ടാകുന്ന ചോദ്യങ്ങൾക്കും സമരങ്ങൾക്കും സ്വന്തമായൊരു ഭൂതകാലമുണ്ടാക്കിയെടുക്കാനുള്ള ആധുനിക പരിശ്രമങ്ങളിൽ നിന്നാണ് ഇങ്ങനെയൊരു ചരിത്രം ഉടലെടുക്കുന്നത് (ഉദയകുമാർ, 2010:10, 11). അതുകൊണ്ട് ഉത്തരങ്ങൾ നൽകുന്നതിനേക്കാൾ മുർച്ചയുള്ള ചോദ്യങ്ങൾ കൊണ്ട് വിടവുകൾ സൃഷ്ടിക്കുന്ന രീതിയാണ് സജിതയുടെ ചരിത്രാഖ്യാനത്തിൽ കാണുന്നത്. വിടവുകളെ ചരിത്രാനുഷ്ഠനങ്ങൾക്കുള്ള വലിയ ചോദ്യങ്ങളായി പലയിടങ്ങളിലും നിലനിർത്തുന്നുണ്ട്. മലയാളത്തിൽ ആദ്യമായി അഭിനയിച്ചെന്നും പുരുഷവേഷം കെട്ടിയെന്നും സജിത രേഖപ്പെടുത്തുന്ന തോട്ടക്കാട്ട് ഇക്കാവമ്മയെക്കുറിച്ചുള്ള വിവരണത്തിൽ ചരിത്രത്തിലെ വിടവുകളെ നിലനിർത്തിക്കൊണ്ടുള്ള പ്രസക്തമായ പല ചോദ്യങ്ങളുമുണ്ട്.

1. എന്തുകൊണ്ടാവും അവർ സ്ത്രീവേഷം കെട്ടാതിരുന്നത്?
2. പുരുഷവേഷം സമൂഹമദ്ധ്യത്തിലെ തന്റെ സ്ത്രീത്വത്തെ മറയ്ക്കാൻ അവർ ഉപയോഗിച്ചതാകുമോ?

പുരുഷനായി സ്വയം മറച്ച ഇക്കാവമ്മയിൽ നിന്നും ചരിത്രം മുന്നോട്ടു പോയത് സ്ത്രീവേഷം കെട്ടിയാടിയ നടന്മാരുടെ സംഗീതനാടകലോകത്തേക്കാണ് (പുറം 50).

2. ഉപാദാനം

ചരിത്രം ആധികാരികമായ രേഖകളെ മാത്രം ഉപാദാനമാക്കുകയാണ് പതിവ്. സവിശേഷമാറ്റം ലിഖിതരേഖകളെ പൊതുരംഗവും രാഷ്ട്രീയവും എഴുത്തും കൈയടിക്കിയിരുന്ന പുരുഷാധിപത്യത്തിന്റെ അടയാളങ്ങൾ മാത്രം രേഖപ്പെടുത്തുന്ന ചരിത്രസാമഗ്രികൾ സ്ത്രീചരിത്രത്തിനു പര്യാപ്തമാവില്ല എന്നു പ്രഖ്യാപിച്ചുകൊണ്ട് സജിത സ്ത്രീകളുടെ ചരിത്രത്തിനു കൂടുതലായും ഉപാദാനമാക്കുക അനുഭവങ്ങളും വാമൊഴികളുമാണ്. സ്ത്രീചരിത്രത്തിന് പങ്കാളികളുടെ അനുഭവങ്ങളോളം അവരുടെ തന്നെ മൊഴികളോളം ഓർമ്മകളോടും ആധികാരികതയും വിശ്വാസ്യതയും തെളിവുകളും മറ്റു ലിഖിതസാമഗ്രികൾക്കുണ്ടാകില്ലെന്ന നിലപാടാണ് ഇവിടെ ചരിത്രകാരി പുലർത്തുന്നത്. അതുകൊണ്ടുതന്നെ നാടകത്തിലെ നടന്മാരുടെയും സംവിധായികകളുടെയും കാഴ്ചകളിൽ നിന്നും അനുഭവങ്ങളിൽ നിന്നും ചരിത്രവിവരണങ്ങൾ തേടുന്നു സജിത.

3. ചരിത്രത്തിന്റെ ആഖ്യാനരീതി

അനുഭവങ്ങളെയും വാമൊഴികളെയും ചരിത്രവൽക്കരിക്കുന്നതിലൂടെ ആഖ്യാനത്തെ സംബന്ധിച്ച വരേണ്യമൂല്യസങ്കല്പങ്ങളെ സജിത അലോസരപ്പെടുത്തുന്നുണ്ട്. മാത്രമല്ല എഴുത്തുഭാഷയിലെ വരേണ്യമായ പല മാന്യതകളെയും ലംഘിച്ചുകൊണ്ട് പല ചെറിയ സംഭവങ്ങളെയും ചരിത്രമുഖത്തെത്തിക്കുന്നു. വാമൊഴികളെ അതേപടി ചരിത്രകാരി രേഖപ്പെടുത്തിക്കൊണ്ട് കാലങ്ങളായി ചരിത്രാഖ്യാനത്തിൽ ചരിത്രകാരൻ പുലർത്തുന്ന ആഖ്യാന അധികാരത്തെ തകർക്കുന്നു. പങ്കാളികളുടെ ഭാഷ്യം അതേപടി ചരിത്രമായി മാറുന്നു.

ചില സംവിധായകർ നന്നായിട്ട് പറഞ്ഞു തരും. ചിലർ ഒന്നും പറഞ്ഞു തരില്ല. ചെയർ ഇട്ട് ഒരേ ഇരിപ്പ് ഇരിക്കും, എന്നിട്ട് ഏറ്റവും പ്രായം ചെന്നവർ എന്ത് തെറ്റ് കാണിച്ചാലും ഒന്നും പറയില്ല. നമ്മളെപ്പോലുള്ള ചെറുപ്പക്കാർ അഭിനയിച്ചാൽ എപ്പോഴും കുറ്റം പറയും എന്നാൽ ഒന്നു പറഞ്ഞുതരുമോ? അതുമില്ല (പുറം 159).

ആർത്തവദിവസങ്ങളിൽ അമ്പലങ്ങളിലെ ഊട്ടുപുരയിലൊക്കെയായിരിക്കും വിശ്രമിക്കുവാൻ ഇരിക്കേണ്ടിവരുന്നത്. ദൈവത്തോട് ക്ഷമിക്കണം എന്നു പറയും. അല്ലാതെ എന്തു പറയുവാൻ. (പുറം 150)

4. ചരിത്രത്തിന്റെ വിവരണസ്വഭാവം

ചരിത്രരചനയെ സാധ്യമാക്കുന്നത് കുറേയധികം വിവരങ്ങളുടെ വിന്യാസമാണ്. എന്നാൽ സജിതയുടെ ചരിത്രരചന ചരിത്രസാമഗ്രികളുടെ ഒരു വൻശേഖരമെന്നതിൽക്കവിഞ്ഞ് വിമർശനസ്വഭാവവും അപഗ്രഥനസമീപനവും പുലർത്തുന്നു. അതുകൊണ്ടാണ് പ്രതിബന്ധങ്ങളില്ലാത്ത വിവരണങ്ങൾക്കു പകരം തടസ്സം സൃഷ്ടിച്ചുകൊണ്ട് ചില വിമർശനചോദ്യങ്ങൾ പ്രത്യക്ഷപ്പെടുന്നത്.

സ്ത്രീകൾക്ക് നാടകാവതരണം അപ്രാപ്യമായിരുന്ന കാലത്ത് സ്ത്രീകൾ മാപാത്രങ്ങളെ തനിമയോടെ അവതരിപ്പിച്ച ഓച്ചിറ വേലുക്കുട്ടി എന്ന നടൻ പിൻക്കാല നാടകലോകത്ത് വിസ്മൃതിയിലാഴുന്നുണ്ട്. “നാടകചരിത്രത്തിൽ നിന്ന് സ്ത്രീ വിസ്മൃതയാകുന്നതുപോലെ അദ്ദേഹവും നാടകചരിത്രത്തിന്റെ ഗൗരവ പരിഗണനയിൽ വന്നില്ല. നാല്പതോളം വർഷക്കാലം നാടകരംഗത്ത് സജീവമായി പ്രവർത്തിച്ച ഈ നടൻ 49-ാമത്തെ വയസ്സിൽ മരിച്ചപ്പോൾ അധികം നാടകപ്രവർത്തകരും അറിഞ്ഞതേയില്ല. നാടകപ്രവർത്തനകാലം മുഴുവൻ സർഗാത്മകമായ കഴിവുകളാൽ നാടകലോകത്ത് പ്രകീർത്തിക്കപ്പെടുകയും എന്നാൽ വ്യക്തിപരമായ ജീവിതത്തിലും നാടക കമ്പനിക്കകത്തും നിരന്തരമായ കലഹത്തിലേർപ്പെടുകയും ചെയ്തതിന്റെ പിന്നിൽ സ്ത്രീപാർട്ടു കാരനു നൽകിയ രണ്ടാം പദവി കാരണമായിട്ടുണ്ടോ? (പുറം 54).

പല സന്ദർഭങ്ങളിലും വിലയിരുത്തലുകളും അപഗ്രഥനങ്ങളും സജിത നടത്തുന്നുണ്ട്. ഇടതുപക്ഷപ്രസ്ഥാനവുമായി ബന്ധപ്പെട്ട നാടകങ്ങളെക്കുറിച്ചുള്ള വിവരണത്തിൽ പുരുഷമേൽക്കോയ്മയുടെ സ്വരങ്ങളെ കണ്ടെത്തി വിമർശിക്കുന്നുണ്ട്. പ്രസ്ഥാനത്തിലെ നാടകപ്രവർത്തകരായ പുരുഷന്മാരിൽ നിന്നും വേണ്ടത്ര പരിഗണന ലഭിക്കാതിരുന്ന നടികളുടെ ചിന്തകളും സജിത പങ്കുവെക്കുന്നത് ഈ പശ്ചാത്തലത്തിലാണ്. രാഷ്ട്രീയനാടകങ്ങളുടെ ഇതിവൃത്തവിശകലനം നടത്തുമ്പോൾ സ്ത്രീത്വത്തെ അടക്കിനിർത്തുന്ന നമ്മളൊന്നു എന്ന നാടകത്തിന്റെ നാടകകൃത്തിന്റെ മനോഭാവത്തെ വരെ ചൂഴ്ന്നിറങ്ങി ചോദ്യം ചെയ്യുന്നത് ഇങ്ങനെയാണ്.

ഒരു പെൺകുട്ടിയെന്ന നിലയിൽ ആമിന നാടകത്തിലുടനീളം അനുഭവിക്കുന്ന പുരുഷ നിയന്ത്രണങ്ങൾക്കു വിധേയമായ അവസ്ഥയെ മറികടക്കാനുള്ള യാതൊരു ശ്രമവും നാടകകൃത്തിന്റെ ഭാഗത്തുനിന്നുണ്ടാകുന്നില്ല.

പരസ്പരം ഇടഞ്ഞുനിൽക്കുന്ന ഒറ്റയൊറ്റയായ നിരവധി ചെറിയ ജീവിതാനുഭവങ്ങളെ ചേർത്തുവെച്ച് അവയിൽ അപഗ്രഥനവും വിമർശനവും ഉൾച്ചേർത്താണ് ഈ ചരിത്രാഖ്യാനം നിർവ്വഹിക്കപ്പെട്ടിരിക്കുന്നത്.

5. നാടകചരിത്രം - നാടകസാഹിത്യചരിത്രം

നാടകത്തിന്റെ ചരിത്രം യഥാർത്ഥത്തിൽ ആരുടെ ചരിത്രമാണ് എന്ന വലിയൊരു സമസ്യ ഈ ചരിത്രകാരി മുന്നോട്ടുവെക്കുന്നുണ്ട്. നാടകത്തെ സാഹിത്യമായി കണ്ട് എഴുത്തുകാരുടെ ചരിത്രങ്ങൾ ഒരു വശത്ത് നിരക്കുമ്പോഴാണ് സജിത മഠത്തിൽ അഭിനയിക്കുന്നവരുടെ ഒരു ബദൽചരിത്രം തീർക്കുന്നത്. അത് ഇതുവരെയും ഒരു ചരിത്രത്തിലും ഭാഗമാക്കാത്തവരുടെ ചരിത്രമാണ്. എല്ലാ കലാ, സാംസ്കാരിക പുരോഗമനങ്ങളുടെയും കുത്തവകാശക്കാരനായ പുരുഷനല്ല സ്ത്രീയാണ് ഈ ചരിത്രത്തിന്റെ കേന്ദ്രമാകുന്നത്. നാടോടിക്കലകൾ, ക്ലാസിക്കൽ കലകൾ, നാടകരചനകൾ, അവയുടെ ഇതിവൃത്തം, നടികൾ, രംഗവേദി, രംഗപാഠങ്ങൾ, അണിയറകൾ, തൊഴിലിടങ്ങൾ, സദാചാരപ്രശ്നങ്ങൾ, ആരോഗ്യപ്രശ്നങ്ങൾ, ശാരീരികാവസ്ഥകൾ, പ്രേക്ഷകർ, സംവിധായകർ, അനുഭവങ്ങൾ, നാടകകളരികൾ, സംഗീതം തുടങ്ങി നാടകബാ

ഹൃദയം കലാബാഹുവുമായ പല വിഷയങ്ങളും നാടകചരിത്രത്തിന്റെ ഭാഗമാകുന്നു. നാടകത്തെക്കുറിച്ചും നടികളെക്കുറിച്ചുമൊക്കെയുള്ള വ്യവസ്ഥാപിത ധാരകളെയൊക്കെ തിരുത്തിയെഴുതുന്നു ഈ ചരിത്രകാരി.

ഇതിനു പുറമെ സ്ത്രീത്വത്തെയും സ്ത്രീസൗന്ദര്യത്തെയും കുറിച്ച് സമൂഹത്തിൽ പരസ്പരം മല്ലടിച്ചു നിൽക്കുന്ന ധാരണകൾ, തൊഴിലിനെപ്പറ്റിയുള്ള ഭിന്നസങ്കല്പങ്ങൾ, അതും സ്ത്രീസ്വത്വവുമായുള്ള ബന്ധത്തെപ്പറ്റി ഉയർന്നുവന്ന പുതിയ ചിന്തകൾ, നിത്യജീവിതത്തിന്റെ ഭിന്നസ്ഥലങ്ങളുമായി സ്ത്രീയും പുരുഷനും ഇടപെടുന്ന രീതിയെ സംബന്ധിക്കുന്ന നിബന്ധനകൾ ഇങ്ങനെ പഴയരീതിയിൽ നോക്കുകയാണെങ്കിൽ കലാബാഹുവെന്നു തോന്നുന്ന എത്രയോ ഘടകങ്ങൾ നാടകത്തിന്റെ സ്ത്രീചരിത്രത്തിനു പരമപ്രധാനമായിത്തീരുന്നു വെന്ന് ഈ പുസ്തകം വ്യക്തമാക്കുന്നുണ്ട് (ഉദയകുമാർ 2010, പുറം 9).

6. സ്ത്രീകർതൃത്വം - പുരുഷനിർണയത്തിന്റെ പ്രശ്നവൽക്കരണം

സ്ത്രീകർതൃത്വത്തെ സംബന്ധിക്കുന്ന സാമ്പ്രദായിക ധാരണകൾ മാറ്റി സമൂഹത്തിലെ പലതരം കുട്ടായ്മകളിൽ പങ്കെടുക്കുന്ന സാംസ്കാരികമൂലധനത്തിന് അവകാശിയായി നിൽക്കുന്ന, സ്ത്രീയെ ചരിത്രത്തിൽ പ്രതിഷ്ഠിക്കുകയാണ് ഇതിന്റെ ഉദ്ദേശ്യം എന്ന് ഉദയകുമാർ മലയാള നാടക സ്ത്രീചരിത്രത്തെക്കുറിച്ച് അതിന്റെ അവതാരികയിൽ രേഖപ്പെടുത്തിയിരിക്കുന്നു (7)

പരാമർശിക്കപ്പെടാതെ പോയ നിരവധി സ്ത്രീത്വങ്ങളെ ചരിത്രത്തിൽ കൊണ്ടുവരുന്നു. ഒപ്പം പുരുഷമേൽക്കോയ്മയുടെ സ്ത്രീത്വനിർണയത്തെ ചോദ്യം ചെയ്യുന്നു.

7. സ്ത്രീകർതൃത്വരൂപങ്ങൾ

നാടകപാരമ്പര്യത്തിൽ സ്ത്രീകർതൃത്വങ്ങൾ അദ്യശ്യരാണ്. നാടൻകലകൾ മുതൽ ക്ലാസിക്കൽ കലകൾ വരെയുള്ള കലാമേഖലയിലെ അടയാളപ്പെടുത്താതെ പോയ സ്ത്രീത്വങ്ങളെ, സ്ത്രീസാന്നിധ്യത്തെ രംഗത്തേക്കു കൊണ്ടുവരുന്നു. മറ്റു നാടകചരിത്രങ്ങളിൽ അപ്രസക്തരായ പല സ്ത്രീത്വങ്ങളുടെയും പ്രസക്തിയെ അടിവരയിട്ടുറപ്പിക്കാൻ ചരിത്രകാരി ശ്രമിക്കുന്നു.

കുട്ടിക്കുഞ്ഞിത്തങ്കച്ചിയുടെ നാടകരചനയും തോട്ടക്കാട്ട് ഇക്കാവമ്മയുടെ പുരുഷവേഷവും ചരിത്രം അവഗണിച്ചെങ്കിലും സജിത ഇവരുടെ പ്രാധാന്യത്തെ കുറച്ചുകാണുന്നില്ല. പുരുഷനായി സ്വയം മറച്ച ഇക്കാവമ്മയിൽ നിന്നും ചരിത്രം മുന്നോട്ടുപോയത് സ്ത്രീവേഷം കെട്ടിയാടിയ നടന്മാരുടെ സംഗീതനാടകലോകത്തേക്കാണ്. അങ്ങിനെ മലയാളനാടകചരിത്രത്തിന്റെ പ്രധാന ഏടായ മലയാള സംഗീതനാടകത്തിന്റെ അവതരണ ഭാഷയ്ക്ക് പുതിയ മുഖം കൊടുത്തുകൊണ്ടാണ് സ്ത്രീയുടെ രംഗപ്രവേശം (പുറം 50).

പത്രപ്രസൂതിലൂടെ രംഗത്തെത്തിയ പള്ളൂരുത്തി ലക്ഷ്മിയെന്ന നടിയെ സജിത അടയാളപ്പെടുത്തുന്നുണ്ട്. പത്രപ്രസൂതി വായിച്ച് നാടകമഭിനയിക്കാൻ ഒരു നടി എത്തുന്നു. അവൾ ആ കാലത്തെ വിദ്യാഭ്യാസവും പുതിയ വായനാപരിചയമുള്ളവളുമാണ്, സംഗീതാധ്യാപികയാണ്. ഇതിനെല്ലാം പുറമെ ഒരു കലാകാരി എന്ന സ്വന്തം വ്യക്തിത്വത്തിൽ അഭിമാനിക്കുന്നവളും, അതിനെ തടസ്സപ്പെടുത്തുന്ന സാഹചര്യത്തെ നിഷേധിച്ച് ഇറങ്ങിപ്പുറപ്പെട്ടവളുമാണ് (പുറം 59). തുടർന്ന് രാഷ്ട്രീയ, പ്രൊഫഷണൽ നാടകങ്ങളിലെയും സ്ത്രീനാടകവേദിയിലെയും നിരവധി കലാകാരികളെ സജിത അടയാളപ്പെടുത്തുന്നു.

8. പുരുഷൻ നിർമ്മിച്ച സ്ത്രീത്വം

നാടകത്തിലെ നടിയുടെ രംഗഭാഷ നിർമ്മിച്ചത് പുരുഷനാണ്. സ്ത്രീയെ കുറിച്ച് പുരുഷൻ നിർമ്മിച്ച സൗന്ദര്യശാസ്ത്രസങ്കല്പങ്ങളും ഭാവസങ്കല്പങ്ങളും ഒത്തിണങ്ങുന്ന വിധം സ്ത്രീയായി അരങ്ങത്തെത്തിയ ഓച്ചിറ വേലുക്കുട്ടിയാണ് നാടകത്തിലെ നായികമാരുടെ പാഠപുസ്തകമാകുന്നത്. സ്ത്രീയുടെ ശാലീനതയേക്കാൾ ശാലീനത ഉൾക്കൊണ്ടു കൊണ്ട് അഭിനയിക്കുന്ന ഓച്ചിറ വേലുക്കുട്ടി എന്ന നടൻ മലയാള നാടകവേദിയിലെ പുരുഷനിർമ്മിത സ്ത്രീരംഗഭാഷയുടെ അടിസ്ഥാനമായി മാറുന്ന കാഴ്ചയാണ് പിന്നീട് കാണുവാനാകുക. ഇവിടെ ശാലീനത ഒരു മൂല്യവും വിശ്വാസവുമായി തീരുന്നു. അത് നാടകഭാഷയിലൂടെ പുരുഷനിർമ്മിതമായ സ്ത്രീയാഥാർത്ഥ്യമായി മാറുകയും ചെയ്യുന്നു (പുറം 55). ഇവിടെ ചരിത്രകാരി പുരുഷനിർമ്മിതമായ സ്ത്രീത്വത്തെ വളരെ

കൃത്യമായി കണ്ടെത്തി വിമർശിക്കുന്നു. നാടകരംഗത്തെ ഈ സ്ത്രീത്വസങ്കല്പം നാടകത്തിന്റെ വളർച്ചയുടെ ഘട്ടങ്ങളിൽ നായികമാർ, സംവിധായകർ, പ്രേക്ഷകർ തുടങ്ങിയവർ കൃത്യമായി പാലിച്ചു വരുന്നതിനെയും വിമർശനബുദ്ധിയോടെ സജിത അവതരിപ്പിക്കുന്നുണ്ട്. മാവേലിക്കര പൊന്നമ്മ വേലുക്കുട്ടിയവതരിപ്പിച്ച ‘വാസവദത്ത’യെ അവതരിപ്പിച്ചപ്പോൾ ‘ഞാൻ വേലുക്കുട്ടിയായി...പിന്നെ വാസവദത്തയായി....’ എന്നു എഴുതിയിട്ടുണ്ട് (57) ഇതിനെ സജിത അപഗ്രഥിക്കുന്നത് ഇങ്ങനെയാണ്.

ഇവിടെ നടീ തന്ത്രപരമായി നടത്തുന്ന ചില ഇടപെടലിലൂടെ, ആശാന്റെ അഭിനയത്തിൽ നിന്നകുറച്ച് കൊണ്ടും തന്റെ മനസ്സിലെ സ്ത്രീത്വ സങ്കല്പങ്ങളെ ഇഴചേർത്തും പുതിയ ഒരു രംഗഭാഷ രൂപപ്പെടുത്തുന്നു. വേലുക്കുട്ടി ആശാമാരിൽ മനസ്സുറപ്പിച്ച മലയാളപ്രേക്ഷകനെ ചോദ്യം ചെയ്യാത്ത തൃപ്തിപ്പെടുത്തുക എന്ന ചിന്തയിൽ നിന്നുകൂടി രൂപപ്പെട്ടുവരുന്ന അഭിനയരീതി കൈക്കൊള്ളുകയും ചെയ്യുന്നു (57).

ഇടതുപക്ഷ രാഷ്ട്രീയ നാടകങ്ങളിലെ സ്ത്രീത്വത്തെ പഠനവിധേയമാക്കുമ്പോൾ ഇതിവൃത്തത്തിലും രംഗത്തും നിർമ്മിക്കപ്പെട്ട പുതിയ സ്ത്രീത്വത്തിൽ സജിത ഊന്നൽ കൊടുത്തിരിക്കുന്നു. നിങ്ങളെന്നെ കമ്മ്യൂണിസ്റ്റാക്കി, പാട്ടുബാക്കി, നമ്മളൊന്ന് തുടങ്ങിയ നാടകങ്ങളെയൊക്കെ ഇത്തരത്തിൽ പഠിക്കുന്നുണ്ട്. നാടകങ്ങളിലെ രാഷ്ട്രീയരംഗങ്ങളേക്കാൾ പ്രേമരംഗങ്ങൾക്ക് പ്രാധാന്യം നൽകിക്കൊണ്ടുള്ള സ്ത്രീകർത്യത്വത്തെ മെനയുകയാണ് ആൺകോയ്മ.

‘നിങ്ങളെന്നെ കമ്മ്യൂണിസ്റ്റാക്കി’ എന്ന നാടകത്തിലെ രംഗസൂചനകളിലൂടെ ‘മാല’ എന്ന സ്ത്രീത്വത്തെ രൂപപ്പെടുമ്പോൾ വളരെ സൂക്ഷ്മമായി ചരിത്രകാരി വിശകലനം ചെയ്യുന്നുണ്ട്. ജന്മിയോടുള്ള ഇടപെടലിൽ നിന്നും വ്യത്യസ്തമാണ് സഖാക്കളോടുള്ള ഇടപെടലെന്ന് മാലയുടെ പതിനൊന്നു ക്രിയകളെ സൂക്ഷ്മമായി തരംതിരിച്ചുകൊണ്ട് അപഗ്രഥിക്കുന്നു. നാടകകൃത്ത് പുരുഷനിർമ്മിതമായ ഒരു സ്ത്രീമാതൃകയെ അവതരിപ്പിക്കുന്നു എന്നാണ് ചരിത്രകാരിയുടെ നിഗമനം.

“ഏതുതരം വർഗവൈരുദ്ധ്യങ്ങൾക്കുള്ളിലും സ്ത്രീശരീരം പുരുഷാധി കാരത്തിന്റെ ദൃഷ്ടിപരിധിക്കുള്ളിൽ അവന്റെ ഉപബോധ ലൈംഗിക തൃഷ്ണ കളെ തൃപ്തിപ്പെടുത്തുന്ന ഒരു സാന്നിധ്യമാണ്. സ്ത്രീയുടെ സത്തയെ സംബന്ധിക്കുന്ന ഈ പാഠഭൂശ്യവ്യവഹാരങ്ങൾ സാമൂഹികബന്ധങ്ങളിലൂടെ സ്ത്രീമാതൃകയെ രൂപപ്പെടുത്തുന്നു. ആൺകോയ്മയുടെ ഉൽപ്പന്നങ്ങളായ ഈ സ്ത്രീസ്വത്വത്തെ സ്ത്രീകൾ ആന്തരവൽക്കരിക്കുക മാത്രമല്ല ചെയ്യുന്നത്, മറിച്ച് പുരുഷാധിപത്യ മൂല്യങ്ങളാൽ നിയന്ത്രിക്കപ്പെടുന്ന രാഷ്ട്രീയ സാംസ്കാരിക സ്ഥാപനങ്ങളോടൊപ്പം ഇത്തരം സ്ത്രീമാതൃകകളുടെ നിർമ്മാണ പ്രക്രിയയിൽ അവർ പങ്കെടുക്കുകയും ചെയ്യുന്നു” എന്ന M.C. Donal ന്റെ വാക്യം ഇവിടെ സജിത മാത്തിൽ ഉദ്ധരിക്കുന്നു.

“ഇതിവൃത്തനിർമ്മിതിയിൽ എഴുത്തുകാരന്റെ പ്രത്യയശാസ്ത്ര നിലപാടുകളും ലോകവീക്ഷണവും പ്രതിഫലിക്കും. മറ്റൊരർത്ഥത്തിൽ പരിചിതമായ ഒരു സംഭവത്തെയോ അനുഭവത്തെയോ ഒരു ലോകവീക്ഷണത്തിന്റെയും പ്രത്യയശാസ്ത്രനിലപാടിന്റെയും പശ്ചാത്തലത്തിൽ പുനർവ്യാഖ്യാനിക്കുകയോ പുന:സൃഷ്ടിക്കുകയോ ആണ് നാടകകൃത്ത് ചെയ്യുന്നത്. ഈ പുനർനിർമ്മിതി ഉൾക്കൊള്ളുന്ന സങ്കല്പങ്ങൾ പുരുഷാധിപത്യപരമായിരിക്കുന്നുവെന്നതാണ് പൊതുവെ നാടകചരിത്രം നൽകുന്ന സൂചനകൾ” (158) ഈ വാക്കുകളിലൂടെ പുരുഷൻ ആവിഷ്കരിച്ച നാടകത്തിലെ സ്ത്രീത്വത്തെ ആൺകോയ്മയുടെ മൂല്യങ്ങൾ പ്രവർത്തിക്കുന്നതായി കണ്ടെത്തി അതിനെ വിമർശിക്കുകയാണ് ചെയ്യുന്നത്.

ഉപസംഹാരം

ചുരുക്കത്തിൽ മലയാളനാടക സ്ത്രീചരിത്രത്തെ പ്രസക്തമാക്കുന്ന പ്രധാന ഘടകങ്ങൾ ഇവയാണ്.

1. പുരുഷകേന്ദ്രീകൃത വ്യവസ്ഥാപിതചരിത്രരീതിശാസ്ത്രത്തിനു ബദൽ മാതൃകയായി നിൽക്കുന്നു.

2. പുരുഷനിർമ്മിതമായി നിലനിൽക്കുന്ന സ്ത്രീകർതൃത്വത്തെ പ്രശ്ന വൽക്കരിക്കുന്നു, പ്രതിരോധിക്കുന്നു.
3. അദ്യശ്യരായി നിൽക്കുന്ന സ്ത്രീത്വത്തെ,സ്ത്രീത്വ ഇടങ്ങളെ വീണ്ടെടുക്കുന്നു.
4. ലിംഗരാഷ്ട്രീയത്തെ ചോദ്യം ചെയ്യുന്നു.
5. ചരിത്രമെഴുത്തിൽ നിലനിൽക്കുന്ന ആൺകോയ്മയെ അതിന്റെ സൗന്ദര്യശാസ്ത്രസങ്കല്പങ്ങളെ, ആഖ്യാനയുക്തികളെ പൊളിച്ചെഴുതുന്നു.

ശ്രമസൂചി

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IFRS – A PARADIGM SHIFT IN INDIAN ACCOUNTING

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Abstract

Each country has its own set of rules and regulations for accounting and financial reporting. Indian accounting standards (Ind AS) are a set of Accounting Standards which are converged with IFRS. This study discuss about the major changes after adopting IFRS in India. India did not adopt IFRS, but converged to it by making changes into Indian Accounting Standards (IAS) and by setting up new standards Ind AS. The implementation of Ind AS has four stages and each stage covers different section of enterprises. According to this study the key impacting areas of application of Ind AS are preparation of financial statements, contract with customers, lease and preference shares. Once a company opts to follow Ind AS, it shall be required to follow the Ind AS for subsequent financial years. This study deals with the impact of IFRS adoption in India.

Keywords-IFRS, Ind AS, comprehensive income, retrospective basis

Introduction

Accounting is the language of business. The organization communicates to its interested persons, such as suppliers, creditors, management, government etc. through their financial statements. Accounting measures the results of an organization's economic activities and conveys this information to variety of persons. The modern field of accounting was established by the Italian Mathematician Luca Pacioli in 1494. There are different branches of accounting

such as Financial Accounting, Cost Accounting and Managerial Accounting. Financial Accounting mainly focuses on the reporting of financial information of an organization through financial statements. These financial statements are prepared in accordance with the Generally Accepted Accounting Principles (GAAP).

GAAP refers to the rules or guidelines adopted, for recording and reporting of business transactions, in order to bring uniformity in the preparation and presentation of financial statements. Accounting principles, concepts and conventions are commonly known as Generally Accepted Accounting Principles. The following can be said as limitations of GAAP

- It is based on Historical Accounting.
- While it allows the personal judgment it will lead to misleading conclusions.
- Various principles are in conflict with one another.

The objectives of the present study are

- To develop an idea about the IFRS and Ind AS
- To discuss the stages of implementation of IFRS in India.
- To analyze the key impact areas after adopting Ind AS.
- To develop an awareness about the first adoption of Ind AS.

Accounting Standards

Accounting standards are written, policy documents issued by expert accounting body or government or other regulatory authorities covering the

aspects of recognition, measurement, treatment, presentation and disclosure of accounting transactions in the financial statements.

The main purpose of formulating accounting standard is to standardize the diverse accounting policies. Accounting standards ensure transparency in the maintenance of books of accounts. It provides a definite structure of uniform guidelines.

Indian Accounting Standards

Indian accounting standards are the accounting standards adopted by companies in India and issued under the supervision of Accounting Standard Board.

In order to bring uniformity, transparency, consistency, comparability and correctness in accounting results, The Accounting Standard Board (ASB) has been set up by Council of the Institute of Chartered Accountants of India (ICAI) on 22nd April 1977. The primary duty entrusted with ASB is the formulation of accounting standards for India. The Council of ICAI has issued 32 accounting standards till date. Among these, five accounting standards stand withdrawn. As on 1st July 2017, 27 mandatory accounting standards are applicable to business entities in India. Ind AS are the new set of accounting standards notified by the Ministry of Corporate Affairs on February 19, 2015.

IFRS – International Financial Reporting Standards

International Financial Reporting Standards (IFRS) are principle based globally accepted standards issued by the International Accounting Standards Board (IASB). IFRSs are designed as a common global language for business affairs so that financial statements are comparable across international

boundaries. The adoption of IFRS, comparisons of financial statements of different companies operating in different countries become easy. Many European countries shifted to IFRS as early as 2005. In subsequent years, many other countries either adopted IFRS or converged to IFRS.

IFRS in India

In order to harmonize the existing accounting standards with IFRS, new Indian Accounting Standards (Ind AS) have been introduced in 2011. As per the notification of Ministry of Corporate Affairs on 16th February 2015, Ind AS has come into force on the 1st day of April 2015.

India has not adopted IFRS standards. India has adopted Indian Accounting Standards (Ind AS) that are based on substantially converged with IFRS Standards as issued by IASB. An appendix to each Ind AS explains ‘the major differences, if any, between’ Indian Accounting Standards (Ind AS) and the corresponding IFRS Standards.

Implementation Phases

PHASE I- Mandatory for Accounting Period on or after 1st April 2016

- Companies whose equity and/or debt securities are listed or in the process of listing on any stock exchange in India or outside India and having a net worth of 500 crore or more.
- Unlisted companies having a net worth of 500 crore or more.
- Holding, subsidiary, Joint venture or Associate Companies of companies mentioned above.

PHASE II-Mandatory for Accounting Period on or after 1st April, 2017

- Companies whose equity and/or debt securities are listed or in the process of listing on any stock exchange in India or outside India and having a net worth of less than 500 crore.
- Unlisted companies having a net worth of 250 crore or more but less than 500 crore and not covered in any of the other categories.
- Holding, subsidiary, Joint venture or Associate Companies of companies mentioned above.

PHASE III- Mandatory for Accounting Period on or after 1st April, 2018

- Scheduled commercial banks [excluding Regional Rural Banks (RRBs)]. All India Term Lending Refinancing Institutions (Exim Bank, NABARD NHB and SIDBI) and Insures/ Insurance Companies.
- NBFCs having net worth of ₹ 500 crore or more.
- Holding, subsidiary, Joint venture or Associate Companies of Scheduled Commercial Banks.

PHASE IV-Mandatory for Accounting Period on or after 1st April, 2019

- NBFCs whose equity and/or debt securities are listed or in the process of listing on any stock exchange in India or outside India and having a net worth of less than 500 crore.
- NBFCs that are unlisted companies having a net worth of 250 crore or more but less than 500 crore and not covered in any of the other categories.
- Holding, subsidiary, Joint venture or Associate Companies of companies mentioned above.

Voluntary adoption

- Any company comply with Ind AS from 1st April 2014 and comparative information required for the period ending 31st March 2015.
- Once a company opts to follow Ind AS, it shall be required to follow the Ind AS for subsequent financial years.
- Scheduled Commercial Banks (excluding RRBs)/NBFCs/Insurers shall not be allowed to voluntarily adopt Ind AS.

Key Impact Areas

Statement of Comprehensive Income

The financial performance is presented in the statement of comprehensive income, which consists of statement of Profit and Loss and statement of other comprehensive income (as similar as Profit and Loss Appropriation). It follows fair value approach, not historical value approach. The impact or unrealized profit (such as profit on revaluation of assets and liabilities) after calculating fair value must be recorded to either Profit and Loss Account or through Comprehensive Income Statement.

Preference Shares

Before converging to IFRS companies recorded Redeemable Preference shares as share capital in Balance sheet, but by adopting Ind AS redeemable Preference Shares comes under the heading 'Loans and Advances' as term loans, as they are repayable after some specified period. As an impact redeemable preference shares becomes debt from equity and it will affect the debt equity ratio of the company.

IFRS 15- Revenue from contract with customers

This standard focused on expected revenue.

Expected Revenue = Contracted Revenue – Discounts, offers ec.

Contracted revenue refers to those revenue stated in the contract. If you giving something free, reduce the revenue to that extend.

Example: sale of a car with guarantee of free service for a particular period. Then cost of service also included in the sales value. So from sales value allocate the amount of service which provide freely.

There are five steps in this standard;

- Identify the contract with the customers (single or multiple)
- Identify the performance obligation in the contract (one or multiple obligation)
- Determine the transaction price (total consideration for the contract)
- Allocate the transaction price to the various performance obligations
- Recognize revenue (at the point in time or over time)

In previous standards the goods and services bundled but now allocate the revenue between goods and services.

IFRS 16- Leases

Applicable only from 1st January 2019.

Definition of Leases: “Any contract or a part of contract, hat conveys the right to use an asset for a period of time in exchange of consideration.”

- Capitalize the lease asset as per this standard.

- Shown in Balance Sheet – asset side as right to use and liability side as lease obligation.
- Right to use:
 - Lease liability + Initial direct cost + Prepayment ie advances or token money + estimated restore or dismantle cost – any incentives received.
- Lease Liability:
 - Fixed Payment + Variable lease payments + Residual value guarantee + purchase option exercise price + payment for terminating the lease
- In Profit and Loss Account :
 - Depreciation on lease assets
 - Interest paid on lease liability

IFRS 1 (Ind AS 101) – First time Adoption of Indian Accounting Standards

This Standards sets out the procedures that an entity must follow when it adopts IFRS for the first time as the basis for preparing its general purpose financial statements.

Companies follow Ind AS on a retrospective basis ie all changes must be done from the date of existence of the company.

Objectives:

- To provide a good starting point accounting according to the Ind AS.
- To make Financial Statements transparent and comparable
- The cost of conversion does not exceed the benefit

First IFRS Financial Statement

The first IFRS financial statements contains three Balance Sheet, two Statement of Profit and Loss, two Statement of Cash flow and two Statement of Changes in Equity.

In India after adopting IFRS, previous year 2017-2018 and current year 2018-2019.

Three balance Sheet : on 1st April 2017 (for the changes up to the date of transition)

On 31st March 2018 (the previous year, comparative Period)

On 31st March 2019 (current year, first IFRS Statements)

Two Statements of Profit and Loss : On 31st March 2018 (the previous year, comparative Period)

On 31st March 2019 (current year, first IFRS Statements)

Two Statements of Cash Flow: On 31st March 2018 (the previous year, comparative Period)

On 31st March 2019 (current year, first IFRS Statements)

Two Statement of changes in Equity: On 31st March 2018 (the previous year, comparative Period)

On 31st March 2019 (current year, first IFRS Statements)

Listed Companies require interim/quarterly Financial Statements. IFRS will be applicable from quarter ending 30th June 2018 for listed companies.

Steps

- Recognize IFRS Assets and Liabilities
- Remove non IFRS Assets and Liabilities
- Apply Ind AS in measuring all recognized Assets and Liabilities
- Adjust opening Retained Earnings
- Comply with latest IFRS
- Presentation of IFRS Financial Statements

Give reconciliation for Profit and Loss and Equity because companies are resetting the previous year's Balance Sheet.

Exceptions and Exemptions on Retrospective application

Mandatory for Government Loans, Estimates, De-recognition of Financial Instruments, Hedge Accounting, Non - controlling interest, Impairment of Financial Assets, Embedded Derivatives, Classification and measurement of Financial Assets

Optional for Business Combination, deemed Loss, Insurance Contract, Leases, Non- current asset held for sale and discontinued operations, Revenue from contract with customers and Joint Arrangements

Conclusion

Each country has its own set of rules and regulations for accounting and financial reporting. Indian accounting standards (Ind AS) are a set of Accounting Standards which are converged with IFRS. We can say that Ind AS has only 1% difference from IFRS and India is a Ind AS Complying Country not IFRS complying Country. Now India have two sets of accounting standards

ie existing accounting standards under Companies (Accounting Standards) Rule, 2006 and IFRS converged Indian Accounting Standards (Indian AS). Indian AS are named and numbered in the same way as the corresponding IFRS. IFRS conversion offers companies an opportunity to improve their business. It improves the comparability of financial reporting and financial performance. For the better understanding of Ind AS one must be expert in IAS (Previous Indian Accounting Standards), IFRS and the Interpretations on the Standards. The effect of adopting IFRS will depend on each individual organization's circumstances and business practices.

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A SYSTEMATIC STUDY ON BREAST RECONSTRUCTION AMONG BREAST CANCER PATIENTS

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Abstract

Breast cancer has become the most common cancer among women in urban India (34% of all cancers). Surgery is a main modality of treatment for breast cancer. Surgical removal of the large cancerous breast tissue leaves a deformity in the operated breast, which usually requires reconstruction to achieve symmetry. Sometimes, the breast has to be removed completely, and then, reconstruction is optional. The outcome of the reconstruction can vary, depending on the type of autologous tissue used for reconstruction and the type of surgery done. In the present study, we compare the outcome of various methods of breast reconstruction used, in terms of duration of hospital stay and the complication rates. Similar comparison has been done between the primary surgery- Breast-conserving surgery (BCS) and Mastectomy.

Keywords: Breast Reconstruction, Mastectomy, BCS, WLE, DIEP, TRAM

Introduction

Cancer is the uncontrolled growth of abnormal cells anywhere in the body. Abnormal cells are termed as cancer cells, or malignant cells. These cells can infiltrate normal body tissue. Cancer tissues are identified by the name of the tissue that the abnormal cells originated from. Breast cancer is a malignant tumour arising from the breast tissue. The majority of breast cancers affect the glandular part, usually arising from the ducts or lobules. It has become the most

common cancer among women in urban India (34% of all cancers) (Raina et al., 2005).

The choice of treatment of breast cancer depends on the type and stage of the disease. Surgery is the main modality of treatment for breast cancer. An American surgeon, William Halsted performed the first radical mastectomy in 1892, and found this method to be the best treatment of breast cancer. The axillary lymph nodes and both the pectoralis major and minor were excised *en bloc*, and the defect was reconstructed with a skin graft. It should be noted that when Halsted began the radical mastectomy era, breast cancer was basically incurable. Radical mastectomy, therefore, became the therapy of choice. Nevertheless, some women refused this treatment due to the postoperative deformity of the chest. In the early 1930s, the modified radical mastectomy was introduced. The pectoralis major was spared, but all the skin was excised, and the defect was still reconstructed with a skin graft. In the 1950s and later on, many studies compared the results of radical mastectomy and modified radical mastectomy, and found no difference in cure rates. Later research showed no difference in cure rates between modified radical mastectomy and lumpectomy with radiotherapy, thus paving the way for breast-conserving surgery.

Breast-conserving surgery (BCS) involves removal of the cancer with some surrounding healthy tissue while leaving as much normal breast tissue as possible. The draining lymph nodes are also removed. The amount of the breast tissue to be removed depends on the size, location and stage of the tumour. The reconstruction can be done either immediately while doing the primary resection of the tumour or as a delayed procedure at a later stage. Many patients are opting for immediate breast reconstruction especially in high volume centres (Dragun et al., 2012).

The important factor in deciding the type of reconstruction is the need of post-operative radiotherapy and whether it is unilateral or bilateral (Habermann et al., 2016). A multi- speciality approach involving the oncologist, oncosurgeon, radiation oncologist as well as the reconstructive surgeon has always proven to be much more ideal in the decision making for the patient.

The trends in reconstruction initially started off with autologous tissue but recently there has been a shift towards prosthetic implants. But still the autologous tissue is preferred for reconstruction most of the time. There are various options available for autologous tissue like fasciocutaneous and musculocutaneous flaps. The outcome of the reconstruction can vary, depending on the type of autologous tissue used for reconstruction and the type of mastectomy done for primary resection. Breast conservation surgery is enough for some cancers. It involves removing only a part of the breast involved by the tumour. This part is usually reconstructed with a Latissimus dorsi flap (LD). Mastectomy means removing the whole breast. This is required in some cancers. Reconstruction is usually by Deep Inferior Epigastric Artery Perforator flap, which is a free flap (DIEP) or Transverse Rectus Abdominus Myocutaneous flap (TRAM) flap, which is a pedicled flap, taken from the abdomen. LD flaps can be used to reconstruct defects after Breast Reconstruction Surgery or reconstruction after mastectomy of small breasts. The amount of Indian data available, regarding the type of flap reconstruction and their complication, is relatively less. In the present study, we compare the outcome of various methods of breast reconstruction used, in terms of duration of hospital stay and the complication rates. Similar comparison has been done between the primary surgery- BCS and Mastectomy.

Materials and methods

In this study, patients at Amrita Institute of Medical Sciences, Kochi who has underwent Breast reconstruction after primary resection of breast during past 3 years (2015-2017), were selected.

Data types such as age, type of primary resection, type of reconstruction, duration of their hospital stay, complications and management of complications were collected from hospital records. Data of 39 patients were collected and evaluated.

Statistical analysis

Statistical analysis was done using IBM SPSS version 20.0 software. Categorical variables are expressed using frequency and percentage. Continuous variables are presented by mean and standard deviation. To test the statistical significance of complication rates between mastectomy and reconstruction and BCS and reconstruction, Chi square test was used. To test the statistical significance of the difference in the mean of duration of hospital stay between mastectomy and reconstruction and with BCS and reconstruction, Mann Whitney U test was used. To test the statistical significance of the difference in the mean of duration of hospital stay between all three types of reconstruction, Kruskal Wallis test was used.

Results and Discussion

Data from 39 patients who underwent breast reconstruction after primary resection were collected and evaluated. The mean age of patients were 46.18 ± 10.34 years. Patients who underwent breast reconstruction after mastectomy stayed in the hospital for 9.21 ± 2.81 days. For BCS patients ($n=8$), the duration of hospital stay was 7.38 ± 1.30 days and in mastectomy patients ($n=30$) it was

9.57±2.90 days. Mastectomy with reconstruction patients had to stay in the hospital for a longer duration ($P = 0.047$). This is significant.

Study conducted by Gumus (2011) in 76 patients reported the mean age of breast reconstruction as 48.55. Average length of hospital stays after Mastectomy and Breast Conservation surgery (BCS) was 6.96 and 4.78 days respectively. Both studies showed that patients who underwent BCS experienced short length of hospital stay. A short hospital stay following breast cancer surgery results in less wound pain, facilitates shoulder movement and allows recovery in a familiar home environment.

Among 39 patients, 8 patients (21.1%) underwent Breast Conservation Surgery (BCS) and 30 (78.9%) underwent mastectomy. One patient opted for delayed breast reconstruction. Among 39 patients, only 5 patients had complications after surgery.

All patients who underwent BCS were reconstructed with the LD flap.

Patients who underwent BCS and LD reconstruction had no complications, whereas four patients who underwent mastectomy and reconstruction experienced complications. But this difference did not reach statistical significance ($P = 0.560$). Dabbs and Fischer (2018) also found that the complication rate after Mastectomy with reconstruction as more (8.6%) than that of BCS with reconstruction (6.2%). Infection, wound dehiscence, and haematoma were the common complications.

Considering the type of reconstruction, the patients who underwent DIEP flap (60%) had more complications compared to other flap reconstruction such as LD Flap (none) and TRAM (18.2%). Statistically there is a significant difference ($P = 0.001$). Alderman (2002) reported that out of 54% patients who

underwent LD Flap reconstruction 5% patients had complications. 6% of TRAM flap reconstructed patients (out of 30) had complications. In their study only 16% opted for DIEP flap and 9% patients had complications. For LD flap, commonly used flap for reconstruction, complication rate was comparatively low. Types of reconstruction also showed significant difference in complication rate.

By analysing these results, we could find that for most of the patients who have undergone immediate reconstruction with LD flap the complication rate was comparatively low. Mild infection and fat necrosis were the most common complications. Most of the complications were resolved with Debridement + Vacuum Assisted Closure (VAC). Patient who underwent DIEP flap developed more complications and who underwent LD flap developed comparatively less complications. Patients who underwent Mastectomy with reconstruction developed more complications than those patients who underwent BCS with reconstruction. From our analysis it is found that there is a significant difference in the duration of hospital stay when comparing two types of resection with reconstruction ($P < 0.05$).

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If foreign, state the country of origin) | Yes, Indian |
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| 6. Chief Editor's Name | Dr. Anu Anto |
| (Whether citizen of India?) | Yes |
| | Assistant Professor, Department of Zoology,
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Ernakulam |
| 7. Name and address of individuals who
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Ernakulam
Kerala |

I, Dr. Anu Anto, hereby declare the particulars given above are true to the best of my knowledge.

Aluva,
01-09-2018

(Sd/-)
Dr. Anu Anto