

# DICO-BIOWEALTH OF ODISHA

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## Medico-Biowealth of Odisha

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## Evaluation of Medicinal Values of Selected Threatened Medicinal Plants Available in Bhubaneswar, Odisha

<sup>1</sup>Jyoti Prava Jena, <sup>1</sup>Latika Sahu, <sup>1</sup>Sanjeet Kumar, <sup>2</sup>Sakti Kanta Rath and <sup>2</sup>Chandi C Rath

### Abstract

Odisha is rich with floral diversity. Due to anthropological activities a number of plants got categorized under different lists of threatened species. Among them three plants were selected which were easily available in the urban areas of Bhubaneswar. These were *Saraca asoca*, *Celastrus paniculatus* and *Scindapsus officinalis*. The selected plants were collected from the urban areas and then kept for drying. The plant extracts were prepared using the Soxhlet apparatus. The survey revealed that *Saraca asoca* is used to get relief from the menstrual problems of female, *Celastrus paniculatus* is used in case of mental disorders and for relief from any type of body pain and *Scindapsus officinalis* is used to get relief from body pain. It was observed that the plant extract was rich in various secondary metabolites and the extract showed sound anthelmintic activity. Hence the present study highlights the importance of threatened plants.

**Keywords:** Threatened, Urban areas, Phytochemistry, Bioactive compounds

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### INTRODUCTION

Plants treasure a number of bioactive compounds. Starting from the simple grass to the complex tree, every plant has more or less medicinal values. Besides giving us oxygen, fruits, fire wood etc., they provide food and medicines. Plants contain a number of secondary metabolites (Trivedi 2009). Secondary metabolites are those compounds which are used by plants for purposes other than for growth and development. These secondary



# WOMEN EMPOWERMENT

## A Myth or A Reality

Prabhat Kumar Singh  
Amit Bhowmick

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# Women Empowerment in India: From Pre Independence to Post Independence Period

*Geetanjali Nalk*

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In every religion women are given a special place and every religion teaches to treat women with respect and dignity. Indian society consists of people belonging to almost all kinds of religious beliefs. The status of women in India has been subject to many great changes over the past few centuries, but somehow the society has so developed that various types of abuses, both physical and mental, against women have become a common practice. Custom, with pratha, practice of dowry, parda pratha, child marriage, dowry burning, sexual violence, sexual harassment at work place, rape, molestation and other varied kinds of discriminatory practices have become a part of physical as well as mental element. With the passage of time, from the ancient to medieval times to the promotion of women's rights, their history has been eventful.

Women constitute half of the world's population but India has the lowest sex ratio in the world. Hence, female's population has been declining. As far as their social status is concerned, in India, women are not considered equal to men. In the Western societies, women are considered equal and status with men in all walks of life.

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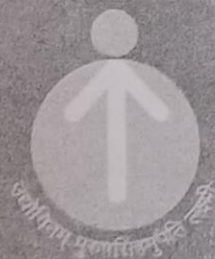
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## Women Entrepreneurship and its Sustainability: A Study into its Viability in Odisha

Sabat Kumar Digal

Sumitra Murmu  
Utkal University  
Bhubaneswar

### Abstract

*Educated and economically empowered women not only move the family but also the society and the nation forward. Realizing this inherent potential of women, the Governments at the centre and in the States have formulated many well-intentioned policies and have undertaken result-oriented initiatives like micro-entrepreneurship, micro finance, etc. but most of these seem to have yielded sub-optimal results. Various research studies and the review of policy outcomes give one an idea that the problems are multi-dimensional and approach is unidirectional. The solutions prescribed are constrained by diverse of factors. Therefore, a study was made in twelve Districts in the State of Odisha to assess the feasibility and sustainability of women entrepreneurship by commercially exploiting at least one abundantly or seasonally available product in each district to economically empower the women of the concerned district. Three years of study shows that this is not only feasible but also capable of addressing many loopholes in the previous policy initiatives. Therefore, it is suggested that at least one easily available product in each of the districts, may be commercially exploited which will result in making the women not only self-sufficient but also will empower them and promote micro-entrepreneurship.*

**Keywords:** women empowerment, sustainable entrepreneurship, one product in one district (OPOD), micro-entrepreneurship

It is never a cliché to say that the economically empowered woman (Adcroft, *et al*, 2004 and Bygrave and Hofer, 1991) have the potential to drive the family and the society forward. Though this was realized in many yet this, until very recently, never found its due place in action, except in papers or speeches or in armchair discourse. Women's ability (Aldrich and Waldinger, 1990) was looked down upon, undermined or not given due importance. But, despite the man made constraints, women have moved forward from the back walls of the house (Stephen, 2002) to the revolving chairs of the Board rooms. Today, they are as visible as men and, in many sectors, they dominate to the hilt. Despite upward movement and ever increasing dominance (Ardichvili, *et al* 2003 and Bergen and Soper, 2004), their number, though growing steadily, is minuscule and largely limited to few sectors (Baines, and Wheelock, 1998). As a result, their economic contribution to the family (Butel and Watkinns, 2004) and the nation (Baumol, 1994 and Becker, 1993) has never got its due recognition in India. And it's hardly noticed in the poor state like Odisha. The advent of the technological innovations (Briiderl and Preisendorfer, 1998) and socio-economic necessities (Blanchflower and Oswald, 1998) has brought about enormous changes in the attitude of the society towards the need for improved socio-economic status of the women and their role in nation building (Cohen, 1994). Economic opportunities for women have also increased significantly during the past few decades. Simultaneously women in India are also trying their best to become the meaningful part of the productive ventures (Kumar and Montgomery, 1997), and entrepreneurship is one of those ventures (Eckhardt and Shane, 2002 and Digal, 2013). But, their snail's pace of growth is indeed a cause of concern.

# Issues in Banking and Finance

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Dr. Ram Prahlad Choudhary

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**CORPORATE GOVERNANCE UNDER THE NEW  
COMPANIES ACT, 2013: A COMPARATIVE STUDY OF  
SIX TOP RANKING COMPANIES IN INDIA**

Mrs. Basuli Dasgupta\*  
Dr. Sabat Kumar Digal\*\*

**Abstract**

*Corporate Governance should not merely be at conceptual level. It has to be implemented for proper functioning of the organization. It majorly focuses on accountability, fairness, transparency, legal compliance and ethics and disclosure of relevant facts to the related parties. Each and every type of stakeholder has a right to know what is exactly going on inside the organization. Therefore, in the present context, experts recommend action based on these principles of corporate governance is expected to work better.*

*Critics state that it is highly ideal concept and practically just not possible to implement. Worldwide experience confirms that the Corporate Governance can be successfully implemented if there is sincere desire and commitment of the Board of Directors and well defined organizational structure, ensuring transparency in their functioning. As corporate governance is highly relative and qualitative in nature, it is quite impossible to interpret in a proper manner. Still new Companies Act, 2013 and revised listing agreement highlights few additional provisions with the belief for better implementation of corporate governance in practical environment.*

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# **Contemporary Issues and Challenges in Finance and Taxation**

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CHAPTER
7

## **Impact of Borrowings on Stock Prices: Evidence from Listed Manufacturing Firms in India**

**Sabat kumar Digal, Truptimayee Dash  
& Sakti Ranjan Dash**

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### **Introduction**

Stock prices of a firm depends upon a large number of factors. It may be demand and supply conditions of the market, risk perception of the investors , capital structure or the debt-equity proportion of the firm etc. Whether the debt capital or borrowings have any impact on stock prices or not that has been analysed in the study. The capital structure of a firm refers to the financing mix. The two principal sources of finance for a business firm are equity capital and debt capital or borrowings. Debt capital is contributed by the external creditors of a firm and is treated as a liability as there is an obligation to repay. Debt financing is regarded as leverage of a firm. The leverage can be operating or financial leverage .Debt financing is the financial leverage of the firm and is more sensitive for the solvency of the firm. The use of debt in capital structure is not inherently considered bad since it increases the available financing that can be used to support growth and expansion. The main purpose of using debt capital is that the firm is likely to generate superior revenues compared to its cost. Although, there is no optimal debt equity proportion, the key is that the firm should hold as much debt as it can manage and which does not adversely impact its financial flexibility.



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# ଶ୍ରୀଜଗନ୍ନାଥ ଚେତନାର ସ୍ଵପତି :

## କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ

ଡ. ସଂଗମିତ୍ରା ଭଞ୍ଜ

କବି ଚିନ୍ତାନ୍ତରାଳ ପ୍ରସୂତ କଳ୍ପନା ଯେବେ ଆବେଗପୂର୍ଣ୍ଣ ଶବ୍ଦଦ୍ଵାରା ସୁବିନ୍ୟସ୍ତ ହୋଇ ଝରିପଡ଼େ, ତାହା କବିତାର ରୂପ ପରିଗ୍ରହ କରେ । ମଧ୍ୟଯୁଗୀୟ ଓଡ଼ିଆ ସାହିତ୍ୟରେ କବିର ଏହି ଆବେଗାତ୍ମକ ଶାସ୍ତ୍ରୀୟ ରୂପଟି ଥିଲା କାବ୍ୟ । ମଧ୍ୟଯୁଗର କାବ୍ୟ ପରମ୍ପରା ଥିଲା ରୀତି-ରସାଣିତ, ଏଥିରେ ପ୍ରତିସ୍ପର୍ଦ୍ଧା ସାହିତ୍ୟ ନିର୍ମାଣର ଆଭିମୁଖ୍ୟ ଥିଲା ପ୍ରଚ୍ଛନ୍ନ । ଏହି ସମୟର ନୂତନ ପରମ୍ପରା ପ୍ରବର୍ତ୍ତକ, ପ୍ରତ୍ୟକ୍ଷ ରସବିଦଗ୍ଧ - ସର୍ବୋତ୍କୃଷ୍ଟ କାବ୍ୟକାର ରୂପେ କବିସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜ ସ୍ମରଣୀୟ । ସେ ଥିଲେ Literary Acrobat । ବେଦ-ଶାସ୍ତ୍ର-ପୁରାଣାଦିରେ ନିପୁଣ ଉପେନ୍ଦ୍ରଙ୍କ ଐଶ୍ଵାତ୍ଵଦର୍ଶୀ ପ୍ରତିଭା ଥିଲା ଅତ୍ୟୁତ । ବିନମ୍ରତାର ସହ ନିଜ ପ୍ରତିଭାର ସମୟ ଶ୍ରେୟକୁ ଅତି ଭାବପୂର୍ଣ୍ଣ ଶବ୍ଦରେ କହିଛନ୍ତି - “ରାମ ତାରକ ପରସାଦେ, ମୋହର କବିପଣ ଉଦେ ।” ‘ଶ୍ରୀରାମ’ ତାଙ୍କ ପାଇଁ ଥିଲେ ଆରାଧ୍ୟ ଏବଂ ‘ରାମ ତାରକ ମନ୍ତ୍ର’ ଥିଲା ତାଙ୍କ ବିସ୍ମୟକର କାବ୍ୟ ପ୍ରତିଭାର ଦିବ୍ୟ ଉତ୍ସ । ସେହି ମନ୍ତ୍ରର ଦିବ୍ୟ ଉତ୍ତରଣ ହେତୁ ସେ ବିଚିତ୍ର କବିତ୍ଵର ଅଧିକାରୀ ହେବା ସହିତ ଅସଂଖ୍ୟ କାବ୍ୟସୃଷ୍ଟି କରିବାରେ ସମର୍ଥ ହୋଇଥିବା ସ୍ଵୀକାର କରନ୍ତି -

“କୀରବର ପଦ ଉପଲକ୍ଷ୍ୟ ମୋର ନାମ  
 ବାରେ ବାରେ ସେବାରେ ମନାଇ ସାତାରାମ  
 ବିଚିତ୍ର କବିତ୍ଵ ମାର୍ଗେ ପ୍ରସରିଲା ବୁଦ୍ଧି  
 ବିଚରିଲି ରାମାୟଣ ଏ ମୋ ବଡ଼ ସିଦ୍ଧି ଯେ ।”

କବି ସମ୍ରାଟ ଉପେନ୍ଦ୍ର ଭଞ୍ଜଙ୍କ ଆଧ୍ୟାତ୍ମିକ ଆତ୍ମହାର ପକ୍ଷାତଭାଗରେ ଥିଲା ମଧ୍ୟଯୁଗୀୟ ପୃଷ୍ଠଭୂମିର ପ୍ରଭାବ । ୧୪୯୭ ଖ୍ରୀଷ୍ଟାବ୍ଦରେ ଉତ୍କଳର ଶ୍ରେଷ୍ଠ ଗଜପତି

*Singha Chy*

## ଜୀବନ ନଇର ସ୍ତୁଥ

ପ୍ରକାଶକ : ବିଷୁପ୍ରିୟାଓତା ଅଭିନୟନ କମିଟି

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*Singha*





# ସମାହିତ ଚେତନାର କବି ଡ. ବିଷୁପ୍ରିୟା ଓଡ଼ା

## ଡ. ସଙ୍ଗମିତ୍ରା ଭଞ୍ଜ

ସାଧାରଣ ମଣିଷ ଦୃଷ୍ଟିରେ ଯାହା ସାମାନ୍ୟ, କବି ଦୃଷ୍ଟିରେ ତାହା ଅନନ୍ୟ । ଯଦି କବି ଜଣେ ନାରୀ ତେବେ ଆହୁରି ଆବେଗପ୍ରବଣ - ସମ୍ବେଦନଶୀଳ ହୋଇଉଠେ ତା'ର କବିତା - ସଂସାର । ଚଳନ୍ତି ସାହିତ୍ୟଧାରାରେ ପ୍ରଫେସର ବିଷୁପ୍ରିୟା ଓଡ଼ା (୧୯୫୯) ଜଣେ ସମ୍ବେଦନଶୀଳ - ଦରଦୀ କବୟତ୍ରୀ । ସଂପ୍ରତି ଉତ୍କଳ ବିଶ୍ୱବିଦ୍ୟାଳୟର ସ୍ନାତକୋତ୍ତର ଓଡ଼ିଆ ଭାଷା - ସାହିତ୍ୟ ବିଭାଗରେ ବିଭାଗୀୟ ମୁଖ୍ୟ ରୂପେ ଅଧ୍ୟାପନା, ଗବେଷଣା, ସଂପାଦନା, ଅନୁବାଦ ସମାଲୋଚନା ତଥା ମୌଳିକ ପ୍ରବନ୍ଧ ରଚନା କ୍ଷେତ୍ରରେ ନିଜର ସ୍ୱାତନ୍ତ୍ର୍ୟ ପ୍ରତିଷ୍ଠା କରିପାରିଛନ୍ତି । ଦୀର୍ଘ ୩୫ବର୍ଷରୁ ଉର୍ଦ୍ଧ୍ୱ ସମୟଧରି ଓଡ଼ିଆ ସାହିତ୍ୟ କ୍ଷେତ୍ରରେ ତାଙ୍କର ଭୂମିକା ବେଶ୍ ପ୍ରଶଂସନୀୟ । ତାଙ୍କର ସାହିତ୍ୟିକ ଅବଦାନ ରୂପେ ରାୟରାମାନନ୍ଦ: ଶ୍ରୀଜଗନ୍ନାଥ ବଲ୍ଲଭ ନାଟକ - ଅନୁବାଦ ଓ ସମାକ୍ଷା, କାଳିନ୍ଦୀ ଚରଣକ କଥା ସାହିତ୍ୟ, କଥା ସାହିତ୍ୟର କଥନିକା, ବଡ଼ ମଣିଷ (ପ୍ରଥମ, ଦ୍ୱିତୀୟ ଓ ତୃତୀୟ ଭାଗ), ନାଟ୍ୟସୃଷ୍ଟି ଓ ନାଟ୍ୟଦୃଷ୍ଟି, କଥାଦୃଷ୍ଟି କଥାସୃଷ୍ଟି, ମୟୂରଭଞ୍ଜର ଜନଜାତି ଓ ଲୋକ ସାହିତ୍ୟ, ଇତ୍ୟାଦି ତାଙ୍କର ଗଭୀର ଅନୁଷ୍ଠାନବୋଧର ପରିଚାୟକ । 'ପାଦପଦ୍ମ' ତାଙ୍କ କବିତ୍ୱର ଏକ ସ୍ୱଚ୍ଛ ଆବେଗିକ ଫଳଗୁ ଧାରାଟିଏ । ଖଣ୍ଡିଏ ମାତ୍ର କବିତା ପୁସ୍ତକ ଭିତରେ ଅଖଣ୍ଡ ଜୀବନବୋଧର ନିରବ ଉଚ୍ଚାରଣ । ପ୍ରାୟ ୨୨ଟି କବିତାର ଏହି ସଂକଳନରେ କବିପ୍ରାଣର ଚିପୁଡ଼ା ଅନୁଭୂତି ଏବଂ ନିଗିଡ଼ା ଆବେଗ ମର୍ମିରିତ ହୋଇଛି । ସଂସ୍କୃତିତ ମୂଲ୍ୟବୋଧ ହିଁ ତାଙ୍କ ଆବେଗକୁ ନିୟନ୍ତ୍ରଣ କରିଥିବା ମନେହୁଏ । ଆବେଗର ଉଚ୍ଛ୍ୱସିତ ସ୍ତର କୁଆର ସୃଷ୍ଟି ନକରି ବେଶ୍ ପ୍ରଶାନ୍ତିରେ ସମାହିତ ହୋଇଥିବା ମନେହୁଏ । ଜୀବନ- ଜଗତ - କର୍ମକୁ ନେଇ ଡ. ଓଡ଼ାଙ୍କ ନିଛକ ଦର୍ଶନ ଅତ୍ୟନ୍ତ ହୃଦୟ । ଡ. ଓଡ଼ା "ପାଦପଦ୍ମ" କବିତା ଗୁଚ୍ଛରେ ଆଶାବାଦର ଗାୟତ୍ରୀ ଉଚ୍ଚାରଣରେ ତଲ୍ଲାନ ପୁଣି ସଂସାରର ସବୁ ଅସତ୍ତ୍ୱଳିତ ସ୍ଥିତାବସ୍ଥା ଭିତରେ ସତ୍ତ୍ୱଳିତ - ଶୃଙ୍ଖଳିତ ତଥା ସମାହିତ ଜୀବନ ମୂଲ୍ୟ ପ୍ରତି ଉନ୍ମୁଖ ମଧ୍ୟ । 'ପାଦପଦ୍ମ' ସଂକଳନରେ ରହିଛି ପାଦପଦ୍ମ, ନିବେଦନଟିଏ ପ୍ରଭୁଙ୍କୁ, ଅଭିମାନ, ତମେ ସୂର୍ଯ୍ୟସମ, ତୁମପାଇଁ, ସବୁକିଛି ଦେଇଦେବି, ଚକ୍ରବ୍ୟୁହ, ତୁମେ ଆସନି, ସୃଜନର ଆମନ୍ତ୍ରଣ, ସମର୍ପଣର ବେଳ, ଭାବନା, ବର୍ଷା, ବର୍ଷାପାଇଁ, ମାର୍ଗଶୀର, ଅସମାପିକା, ମୁଁ ଓଡ଼ିଆ ମାଆର ଝିଅ, ତୁମପାଇଁ, ନୂଆବର୍ଷ, ବାପା, ମୋ ପୁଅ ବଡ଼ ହେଉଛି, ସେ ମୋ ପୁଅ, ଚକୋଲେଟ, ବାତ୍ୟା ଓ ବନ୍ୟା ପାଇଁ ପଦେ, ଜହ୍ନ, ଜୀବନ, ଦୁହିତା, ବିଶ୍ୱାସ ଇତ୍ୟାଦି ଅନନ୍ୟ । ଇନ୍ଦ୍ରଜାଳ

Singhania Bharti

ସ୍ଵାଧୀନତା ପରବର୍ତ୍ତୀ  
ଓଡ଼ିଆ ନାଟକ ଓ ନାଟ୍ୟକାର

ସଂକଳନ ଓ ସଂପାଦନା  
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ସାରଳା ସାହିତ୍ୟ ସଂସଦ

ପ୍ରକାଶକ

ଶ୍ରୀ ବିଜୟ ଶଙ୍କର ପାତ୍ର  
ଓଡ଼ିଶା ବୁକ୍ ଷୋର  
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# ନାଟ୍ୟକାର ପ୍ରାଣବନ୍ଧୁ କର : ଏକ ମୂଲ୍ୟାୟନ

ଡ. ସଂଘମିତ୍ରା ଭଞ୍ଜ

ବୃହତ୍ତର ମାନବ ଜୀବନ, ବିବର୍ତ୍ତିତ ଯୁଗ ରୁଚି ଓ ପ୍ରକୃତିର ଶ୍ରେଷ୍ଠ ରମଣୀୟ ଅଭିବ୍ୟକ୍ତି ହେଉଛି 'ନାଟକ' । ଗୋଟିଏ ସମୃଦ୍ଧ ଜାତିର କଳାତ୍ମକ ପୁଷ୍ଟ ଦୃଷ୍ଟିକୋଣର ଏହା ପରିଚାୟକ ନାଟକ ଲୋକୋନୁନୁଷ୍ଠା ସାଂସ୍କୃତିକ ଧାରାର ବିଶୁଦ୍ଧ ବାତାବହ ହେବା ସହିତ ଲୋକକଳା ପ୍ରସାରର ମଧ୍ୟ ଏକ ପ୍ରକୃଷ୍ଟ ମାଧ୍ୟମ । 'ଆଚାର୍ଯ୍ୟ ଭରତ' ନାଟକକୁ ବିନୋଦ ଜନମ (ମନୋରଞ୍ଜନକ୍ଷମ) ହିତୋପଦେଶଜନନମ (ହିତୋପଦେଶ ପ୍ରଦାୟକ) ବିଶ୍ରାନ୍ତିଜନନମ୍ (ଶାନ୍ତି ପ୍ରଦାୟକ) ତଥା ଧର୍ମ ଯଶ, ଆୟୁ ଏବଂ ବୁଦ୍ଧି ପ୍ରଦାୟକ ଏକ ଦିବ୍ୟବସ୍ତୁ ବୋଲି ଅଭିହିତ କରିଛନ୍ତି ।

ଓଡ଼ିଆ ନାଟ୍ୟ ସାହିତ୍ୟର ଆଦିପର୍ବରେ ଜଗନ୍ନୋହନ ଲାଲା, ରାମଶଙ୍କର ରାୟଙ୍କ ଭଳି ବିଶିଷ୍ଟ ନାଟ୍ୟକାରଗଣ ପୌରାଣିକ ତଥା ଐତିହାସିକ ଭାବଧର୍ମ ସମ୍ବଳିତ ନାଟକ ପ୍ରତି ଗୁରୁତ୍ୱ ପ୍ରଦାନ କରିଥିଲେ ହେଁ ପରବର୍ତ୍ତୀ ପର୍ଯ୍ୟାୟରେ ଏହି ଧାରା ସାମାଜିକ - ବାସ୍ତୁବାଦକୁ ପ୍ରାଧାନ୍ୟ ଦେଇଥିଲା । ଅଶ୍ୱିନୀ କୁମାର ଘୋଷ, କାଳୀଚରଣ ପଟ୍ଟନାୟକ, ରାମଚନ୍ଦ୍ର ମିଶ୍ର, ଗୋପାଳ ଛୋଟରାୟ, ଭଞ୍ଜ କିଶୋର ପଟ୍ଟନାୟକ, ଅଦ୍ୱୈତ ମହାନ୍ତି, କମଳଲୋଚନ ମହାନ୍ତି, କାଉକ କୁମାର ଘୋଷ, ନୀଳକଣ୍ଠ ମିଶ୍ର, ବ୍ୟୋମକେଶ ତ୍ରିପାଠୀ, ପ୍ରାଣବନ୍ଧୁ କର ତଥା ମନୋରଞ୍ଜନ ଦାସ ପ୍ରମୁଖ ନାଟ୍ୟକାର ସାମାଜିକ-ବାସ୍ତୁବାଦୀ ଆଭିମୁଖ୍ୟକୁ ନେଇ ବିଚିତ୍ର ନାଟକମାନ ରଚନା କରିଥିଲେ ।

ଓଡ଼ିଆ ନାଟ୍ୟକାରମାନଙ୍କ ପରେ ଉନବିଂଶ ଶତକର ଶେଷ ଭାଗ ଏବଂ ବିଂଶ ଶତାବ୍ଦୀର ପ୍ରଥମାର୍ଦ୍ଧରେ ଏକାଙ୍କିକା ର ଭୂୟୋବିକାଶ ସାଧିତ ହୋଇଥିଲା । ଇଉରୋପୀୟ ସାହିତ୍ୟ ହିଁ ଏହି ଏକାଙ୍କିକା ସାହିତ୍ୟକୁ ନୂତନ ପରିଚୟ ପ୍ରଦାନ କରିଥିଲା । ପାଶ୍ଚାତ୍ୟ ନାଟ୍ୟ ଆନ୍ଦୋଳନର କର୍ଣ୍ଣଧାର ହେନେରିକ ଇବସନଙ୍କ ପ୍ରଭୃତ ପ୍ରଭାବ ସହିତ ବିଶ୍ୱନାଟ୍ୟକାର ଗଠନଗତ ଶିଳ୍ପଧର୍ମ ଭାରତୀୟ ଜନମାନସକୁ ବହୁତ ଭାବରେ ପ୍ରଭାବିତ କରିଥିଲା । ସୌଖୀନ, ନାଟ୍ୟସଂସ୍ଥା ଆନୁକୁଲ୍ୟରେ ଏକାଙ୍କିକା ମଂଚସ୍ଥ କରାଯିବାର ଅଭିନବ କଳା କୌଶଳ ଭାରତୀୟ ନାଟ୍ୟକାରମାନେ ଗୁରୁତ୍ୱ ପ୍ରଦାନ କରିଥିଲେ ।

୧୯୪୦ ପରବର୍ତ୍ତୀ ଓଡ଼ିଆ ନାଟକ କ୍ଷେତ୍ରରେ ପାରମ୍ପରିକ ମୂଲ୍ୟବୋଧ ସହିତ

ଓଡ଼ିଆ ଭାଷା, ସାହିତ୍ୟ ଓ ସଂସ୍କୃତି ବିଭାଗ, ଓଡ଼ିଶା ସରକାରଙ୍କ ପକ୍ଷରୁ ଜାତିର  
ଜନକ ମହାତ୍ମା ଗାନ୍ଧୀଙ୍କ ୧୫୦ ତମ ଜନ୍ମବାର୍ଷିକୀ ପଲନ ଅବସରରେ ପ୍ରକାଶିତ।

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## ମହାତ୍ମା ଗାନ୍ଧୀ ଓ ନାରୀ ଜାଗରଣ

- ସଂପାଦିତ୍ରା ଭଞ୍ଜ

ଭାରତର ମୁକ୍ତି ଏବଂ ସ୍ୱରାଜ ସ୍ଥାପନା କ୍ଷେତ୍ରରେ ଭାରତୀୟ ନାରୀ ଜାତିର ତ୍ୟାଗ, ଉତ୍ସର୍ଗ ଏବଂ ନୈତିକ ମାନଦଣ୍ଡର ଭୂମିକାକୁ ଭୂୟୋଦର୍ଶୀ ଜନନାୟକ ଗାନ୍ଧୀଜୀ ମହତ୍ତ୍ୱ ପ୍ରଦାନ କରିଥିଲେ । ସେ ଭାରତୀୟ ମହାଜାତିର ପୁନରୁତ୍ଥାନ ତଥା ଜାତୀୟ ଅଭ୍ୟୁଦୟ ନିମନ୍ତେ ନାରୀ ସଂପ୍ରଦାୟର ସକ୍ରିୟ ଅଂଶ ଗ୍ରହଣର ଆଶୁ ପ୍ରୟୋଜନୀୟତା ଅନୁଭବ କରିଥିଲେ । ନାରୀ ଜାଗରଣ ଥିଲା ମହାତ୍ମାଙ୍କ ରତ୍ନନାମକ କାର୍ଯ୍ୟକ୍ରମ ଅନ୍ତର୍ଗତ ଏକ ବଳିଷ୍ଠ ସଂସ୍କାରଧର୍ମୀ ଆନ୍ୱହା । ଦକ୍ଷିଣ ଆଫ୍ରିକାରେ ନାରୀ ଜାଗରଣ ଚିନ୍ତାଟି ପରବର୍ତ୍ତୀ ସମୟରେ ତାଙ୍କ ସତ୍ୟାଗ୍ରହର ପ୍ରମୁଖ ଅଂଶ ହୋଇଥିଲା । ସେଠାରେ ବହୁ ମହିଳା ତାଙ୍କ ସହିତ ସତ୍ୟାଗ୍ରହ କରି କାରାବରଣ କରିଥିଲେ, ଏପରିକି ଜେଲ ଭିତରେ ପ୍ରାଣତ୍ୟାଗ ମଧ୍ୟ କରିଥିଲେ ।

“ଯତୁ ନାର୍ଯ୍ୟସ୍ତୁ ପୂଜ୍ୟତେ ରମତେ ତତୁ ଦେବତା  
ଯତ୍ରେତାସ୍ତୁ ନ ପୂଜ୍ୟତେ ସର୍ବାସ୍ତ୍ରତ୍ତାପକାଃ କ୍ରିୟାଃ” (୧)

ଯେଉଁ ଦେଶରେ ଏହି ପବିତ୍ର ବାଣୀ ଉଦ୍‌ଘୋଷିତ ହୋଇଥିଲା, ସେହି ଦେଶରେ ବିଶ୍ୱ ବରେଣ୍ୟ ଜନନାୟକ ଗାନ୍ଧୀଜୀ ନାରୀ ଶକ୍ତିକୁ ସତ୍ୟାଗ୍ରହ, ସମାଜ ସଂଗଠନ ଓ ସମାଜ ସେବାରେ ପ୍ରୟୋଗ କରିଥିଲେ । ‘ଅହିଂସା’ ରୂପୀ ଅନନ୍ତ ପ୍ରେମ ଭିତରେ ଅସହ୍ୟ ଯନ୍ତ୍ରଣା ସହ୍ୟକରିବାର ଅଭୂତ ସାମର୍ଯ୍ୟକୁ କେବଳ ନାରୀ ପକ୍ଷରେ ସମ୍ଭବପର ବୋଲି ସେ ମନେ କରୁଥିଲେ । ମହାତ୍ମାଙ୍କ ମତରେ- “ନାରୀ-ନରର ଠିକ୍ ପାଖେ ପାଖେ ଜନନୀ ଭାବରେ, ପୃଷ୍ଠିକାରିଣୀ ଭାବରେ ଏବଂ ନୀରବ ପଥ ପ୍ରଦର୍ଶିକା ଭାବରେ ତା’ର ଗୌରବମୟ ଆସନ ଗ୍ରହଣ କରିବ । ଶାନ୍ତିର ଅମୃତ ପାଇଁ ତୃଷ୍ଣିତ ଯୁଦ୍ଧରତ ପୃଥିବୀକୁ ଶାନ୍ତିର କଳାଶିକ୍ଷା ଦେବାପାଇଁ ସେ ଯେ ଉଦ୍ଦିଷ୍ଟ” । (୨)

४४०  
Sushanta Polya

# ADVANCES IN FISH RESEARCH

VOLUME-VII

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THEME:  
CONTEMPORARY RESEARCH IN FISH BIOLOGY  
AND BIOTECHNOLOGY

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## MUSCLE PROTEOMICS OF INDIAN MAJOR CARP *CATLA CATLA* (HAMILTON)

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### ABSTRACT

The use of scientific knowledge and emerging technologies are used to obtain a sustainable production in aquaculture sector. To obtain a sustainable production in aquaculture sector, the application of scientific knowledge and emerging technologies are inevitable. Proteomics- the study of the function of all expressed proteins has been increasingly used over the last decade to address different aspects of aquaculture viz. welfare, nutrition, health, quality, and safety. Fish is the one of the cheapest sources of quality animal protein. In order to meet the world's health requirements of fish protein, a continuous growth in production is expected. Skeletal muscle is the largest organ system in fish and represents the edible part. Muscle tissues contribute 34–48 % of the total body mass in fish and muscle composition contributes strongly to the quality. Skeletal muscle proteomics aims at global identification, cataloging and biochemical characterization of the entire protein complement of voluntary contractile tissues. *Catla catla* is a commercially important carp species contributing a major share to the freshwater aquaculture production in the Indian subcontinent; however, little omics information is available on this species. A reference muscle proteome map for *Catla catla* was generated by using 2-D gel electrophoresis and 70 protein spots representing 22 proteins, have been identified by MALDI-TOF MS. The first study on the muscle proteogenomics of the commercially important carp *Catla catla* not only add to the existing knowledge base on comparative muscle proteomics, but also would serve as the baseline proteogenomic information on this Indian major carp.

**Keywords:** Indian major carp; *Catla catla*; Proteogenomics; Reference muscle proteome; 2-D electrophoresis; MALDI-TOF-MS; Flesh quality

### INTRODUCTION

Proteomics is the study of the function of all expressed proteins. In the past years, immense efforts has been put to generate large-scale database for protein expression



## OMICS TECHNOLOGY IN FISHERIES AND AQUACULTURE

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### ABSTRACT

Omics technology is an umbrella term for modern technologies like genomics, transcriptomics, proteomics and metabolomics. These techniques have received increasing recognition because their potential to unravel novel mechanisms in biological science. The successful completion of human genome project was the beginning of revolution in genomics. Proteomics is the study of all the expressed proteins of an organism or cell type. Proteomics technology provides a powerful set of tools for the study of functional genomics. Metabolomics comprises the measurement of low molecular weight endogenous metabolites and can provide an overview of the metabolic status of a biological system. Data generated from genomics, transcriptomics, metabolomics can be linked together through bioinformatics to generate a landscape of events occurring within a given organism. Omics technology is being used in a number of applications in the fisheries and aquaculture sector such as unraveling the mechanisms of disease and stress tolerance, selection of disease resistant varieties, fish disease diagnosis, vaccine development, species identification for fish food authentication, post-harvest value addition and many more. In this chapter, detailed description of various applications of the technology in the fisheries and aquaculture is provided.

**Keywords:** Omics, Proteomics, Genomics, Metabolomics, Fish, Aquaculture

### INTRODUCTION

Omics technology, representative of collective technologies is used to explore the function, mechanisms, interactions as well as relationship between genes, transcripts, proteins, lipids and other biomolecules in a specific biological sample in unbiased and non-targeted manner (Horgan *et al.*, 2011). The completion of the human genome project marked the start of high-throughput technologies. Henceforth, genomic, transcriptomic, proteomic and

## EYE LENS OF CATFISH *RITA RITA* - AGE-RELATED CHANGES IN LENS LIPIDS AND PROTEINS UNDER OMICS PLATFORM

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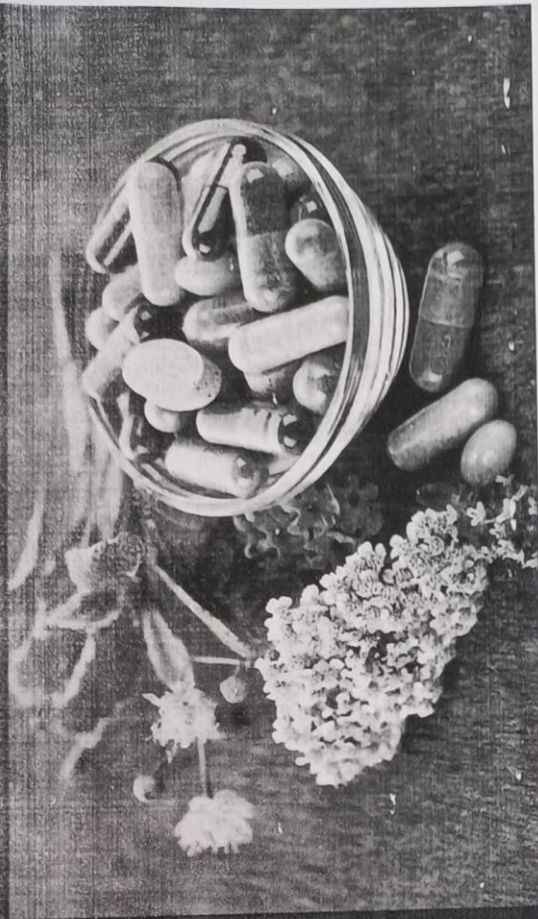
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### ABSTRACT

Lens, the key refractive element of the eye is enclosed in a collagenous basement membrane and composed of diverse group of multifunctional proteins and lipids. Ninety percent of the protein within mature lens fibre cells consists of three types of crystallins; alpha ( $\alpha$ ), beta ( $\beta$ ) and gamma ( $\gamma$ ). Most of the lens lipids are associated with proteins. Lipids and lipid soluble compounds are essential constituents of lens that have significant role in intracellular and extracellular transport and often severely debilitating eye disease. In vertebrates, fishes have become a valuable model-organism for vertebrate eye research, development, function and diseases. In particular, like freshwater catfish *Rita rita* has been used as model organism to investigate the age related changes in lens proteins and lipid contents. 2D immunoblot analysis of three age group of fishes revealed that the relative intensity and number of  $\alpha$ A-crystallin spots increased during aging. Proteomic analysis of lens crystallins of *Rita rita* demonstrated changing levels of  $\alpha$ A-,  $\beta$ B1-, and  $\gamma$ M7-crystallins expression which are  $\geq$  2-3 folds up regulated with age.  $\alpha$ A and  $\gamma$ M7-crystallins of *Rita rita* significantly increases during ageing. Similarly, age-related changes was observed in lipid composition which could be a contributing factor for altered protein-lipid interaction that leads to protein aggregation and cataract. Fatty acid composition analysis of different age groups of rita lenses showed that three fatty acids viz. heneicosylic acid (C21), docosahexaenoic acid (C22:6), nervonic acid (C24:1) which were absent in the adult lens, appeared in the aged lens. On the other hand, eicosenoic acid (C20:1) present in the adult lens, disappeared in the aged lens. Thus, the information generated in this study may add to the ongoing efforts for identifying age-related alterations in lens proteome and crystallin modifications which may lead to cataract formation. The appearance or disappearance of these fatty acids in fish lens can possibly serve as biomarkers of aging lens.

**Keywords:** Lens, *Rita rita*, proteins, lipids, crystallins, ageing

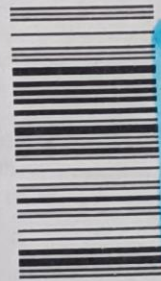
Herbal drugs are in use as medicines world over for centuries. The recent surge in demand for herbal drugs in global market, however, cannot be met due to constraints that need to be addressed immediately for their effective commercialization. A viable long-term alternative to overcome the inherent problems, therefore, is to opt for intensively monitored domestic cultivation. The immediate imperative however is to study the effect of environmental and biotic factors that affect quality and yield of phytochemicals under natural conditions. This review summarizes a list of drugs derived from different plant sources, the role of different factors influencing their production with relevant examples. We have also analyzed critically about few such factors that can be controlled under greenhouse condition for production of plants with consistently high levels of desired phytochemicals. Further, the review also emphasizes the significance of developing models like artificial neural network (ANN) and multiple linear regression (MLR) for optimization and prediction of drug yield under any situation, either natural field condition or controlled greenhouse condition.



Sanghamitra Nayak  
Suprava Sahoo  
Shikha Singh

## Medicinal Plants: Towards Optimization and Prediction of Drug Yield

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# Characteristics Features of Mesenchymal Stem Cells

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## ABSTRACT

Currently, applications of mesenchymal stem cells (MSCs) to treat several chronic diseases are tend to be safe, feasible and promising. The therapeutic contribution of mesenchymal stem cells (MSCs) include their functional activity and interaction with host tissues after engraftment. Their unique biological characteristics which include self-renewal activity, differentiation potential, homing and migration ability and immune-tolerant capacity make them suitable candidates for both autologous and allogeneic cell based therapies. At current scenario MSCs associated clinical trials are gaining attention from common people to expert surgeon. The following communication describes the *in vitro* characteristics of MSCs which make them novel therapeutic agents to be used in different cell-based approaches and regenerative medicine.

**Keywords:** Mesenchymal stem cells, Migration, Immune-tolerant, Autologous and allogeneic.

## Introduction

Mesenchymal stem cells or mesenchymal stromal cells (MSCs) recently, have been given a new acronym "medicinal signaling cells" by Caplan (Caplan, 2010). This new acronym may specify the ability of MSCs to create and store drugs for patient-specific injured tissues. The existence of this cell population was first observed by Cohnheim more than 140 years ago (Cohnheim, 1867). However, its nature and *in vitro* characters was later confirmed by Friedenstein and their colleagues (Friedenstein *et al.*, 1976). This adherent non-haematopoietic cell population are multipotent in nature. These can differentiate into both mesenchymal and non-



## Walking in Their Shoes: Exploring the Lived Experiences of Mothers of Autistic Children

Dr. Sayantani Behura<sup>1\*</sup>, Suprit Panigrahi<sup>2</sup>

### ABSTRACT

There has been a dramatic increase in Autism Spectrum Disorder (ASD) around the globe. A growing body of research has sought to characterize the different presentations of ASD among boys and girls. However, very limited number of Indian studies have focused on mothers of children with ASD. As mothers are the major caregivers of the autistic children, deeper understanding is needed to understand the life experiences of Indian mothers with ASD children. According to the American Psychiatric Association Diagnostic and Statistical Manual, Fifth Revision (DSM-5), the current diagnostic criteria for ASD include deficits in: (a) social interaction and nonverbal communication; and (b) restricted, repetitive movements, behaviours and interests. The lifelong nature of autism has deep implications on parents of children with the disorder, resulting in a wide range of challenges. This is because parents, especially mothers, are generally the primary caregiver of children with autism. Very limited number of Indian studies address the daily challenges faced by mothers of children diagnosed with Autism Spectrum Disorder. The purpose of this research is to gather in-depth information and understanding of mothers who have autistic children. Their perception and difficulties in raising a child with autism and to critically look at areas where future research might need to focus. To conceptualize the recorded experiences; primarily the feminist standpoint epistemology (that focuses on building knowledge and empowerment through women's lived experience) has been taken into consideration. A pre generated interview questionnaire has been used while conducting the interviews. To analyse the mothers' narratives, thematic content analysis method has been used. The thematic content analysis of the qualitative data identified five core categories: resources, care load distribution, me time and mental health, autism: subjective understanding of mothers, blame and mothering. The results of this study offer valuable insight into the lived experiences of mothers of children with autism and need for further course of action to empower them.

**Keywords:** *Autism, Blame, Autistic Children, Qualitative Study*

Autism Spectrum Disorder (ASD) is a developmental disorder involving abnormal communication, repetitive and restrictive interests and impaired social functioning. Studies have shown that it can have a profound impact on the individual as well as family life. In India, little research has sought to examine parents' indigenous viewpoints of their children

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# Understanding Menstruation from the Eyes of Adolescents: A Study on the Attitude of Indian Girls towards Menstruation

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**Abstract**—Menstruation—an important part of every woman's life is not without interference from the society and culture. The biological function of menstruation has been overtaken and manipulated by the on-going societal construction and interpretations that shape the lives of women throughout the world (Delphy 1984). In India, the attitude towards menstruation and menstrual blood is diverse and in most cases is a process of reflection of self. With the help of the issues emerging from the discussion, this article aims to throw light on the perceptions of menstruation amongst adolescent girls in India. The present study also aims to look at role of menstrual myths and taboos in shaping lives in the context of Indian women.

## 1. Introduction

Menstruation—an important part of every woman's life is not without interference from the society and culture. The biological function of menstruation has been overtaken and manipulated by the on-going societal construction and interpretations that shape the lives of women throughout the world (Delphy 1984). In India, the attitude towards menstruation and menstrual blood is diverse and in most cases is a process of reflection, participants were asked to create a poster together about their experience of menstruation. With the help of the issues emerging from the discussion, this article aims to throw light on the perceptions of menstruation amongst adolescent girls in India

An idea can be drawn by the implied meanings of the word for menstruation in Indian languages. Most of the languages use word similar to 'month' or 'cycle' like 'masik' in Hindi and 'maathavidai' in Tamil nonetheless there is insulting usage like 'nongra' in Bengali which means dirty or nasty signifying a derogatory attitude toward menstruation. Such perception plays an important function in disciplining and restricting women. The present study looks at role of menstrual myths and taboos in shaping lives in the context of Indian women.

Delaney et al. (1976) in *The Curse: A Cultural History of Menstruation* gave a comprehensive history of menstrual taboos and perception around the world. In fact the word taboo comes from the Polynesian word 'tapua' which itself means menstruation. Taboos of menstrual exclusion were born out of reason like fear of blood and the supernatural power it contained. The primitive man respected menstrual blood out of his fear for the unknown mystery within the female body which also coincided with the lunar cycle. On one hand women were holy, pious and inviolable and on the other, they were polluted and unclean and even harmful. The paradox was clearly evident in contradictory beliefs like of that of a virgin's sanitary pad's therapeutic ability which was completely opposed to the idea that menstruating women caused blindness or death or crop blight. The practice was not just limited to exclusion. The taboos around food began among the hunting gathering tribes. Menstruating women were deliberated as unlucky for hunting. Even the husband of a menstruating woman was not allowed to participate. Food cooked by her was dangerous and not fit for consumption. Even today such beliefs persist that mayonnaise will not set and pickles will go sour if touched or even seen by a menstruating woman. This study will look into the most prevalent myths in some of the major communities of India and try to link them with the overall condition of women (Delaney et al 1976).

## 2. Methodology

Sixty female students in the age group of sixteen to eighteen years from different communities were contacted and a mixed method was used for data collection. Quantitative analysis included study of 60 on-going High-School girls and qualitative analysis included Focus Group Discussion (FGD) of fifteen key informants based on their reply in the prior session. Open ended questions were asked about menstrual taboos, myths and practices in one session of around two

life. Her friends were from not from Kerala. She refused to be a part of this ceremony as it made her feel different. 'We are given new clothes and everyone is invited. It is like flaunting my periods and I found it very embarrassing. None of my friend would have to do this because they were not from Kerala. In the end my family took me to our village and organized the ceremony.' On enquiring whether she thought this had a positive effect on the lives of women because it seemed quite liberating on the exterior, she denied vehemently saying it was just a way to make the news public that the girl is now matured and ready to get married. In fact she believed it was 'cheap publicity'. Menstruation was a taboo in most religions unlike Sikhism which allowed menstruating women to enter Gurudwaras (temples) and conduct prayers.

Agerstoun et al (2007) stated that 'Feminist activist art is characterized here as simultaneously critical, positive, and progressive' which has been utilized here. Works of menstrual artists (activists) like 'menstruate with pride' by Sarah Maple (Proudman 2012) and 'red is the colour' by Ingrid Berthon-Moine (Gallego2011) was shown during the FGD. At the end the participants were encouraged to create a poster on the basis of their experience and learning from the session. It can be said that poster making was a tool of feminist activism in this study. In this attempt to create feminist activist art a white sheet of paper was handed out to the group with the freedom to create a group art about menstruation and the restrictive practices related to it. The end product was a bright poster cut out in the shape of a sanitary pad with pictographic representation in bold colors and slogans named as 'It's my bloody right'. The poster showed signs of ambivalence. The slogan 'proud to b [sic] a woman' had been etched in the Centre with an emphasis on the word 'woman' by inscribing it in gold implying that women were as precious as gold but very close to that, blood tears were shed by a lone eye depicting pain. An earnest plea that said 'wish men bleed' reflected the 'other' factor of women from men who did not bleed and were thus not the same. Overall the poster showed signs of protest and emancipation with words like 'bloody fight, bloody right', 'I have wings', 'I am bleeding with pride so no one dare make fun of it'. One Muslim participant shared her realisation after creating the poster saying 'I don't believe that I am weak because of menstruation but everyone around me makes me feel inferior. I am not going to let them do it again.' Clearly, it was a moment of liberation for her.

### 3. Conclusion

The study is limited to urban young girls only and it would be interesting to probe further by studying rural women and older women to gain more ideas about menstrual taboos. Menstruation and myth surrounding it has limited women's opportunities and freedom. Young girls from poor background often have to quit school because of the absence of toilets in many Government schools. Instead improving facilities for women by focussing on health and hygiene, a lot of unnecessary stress is on barbaric restrictive practices which curb participation in almost all aspects of woman life. Women are almost invisible in sports because of the myth surrounding exercise and menstruation. Women do not travel while menstruating and thus lose out on social and economic opportunities. Caste based untouchability was abolished in India right after independence but even today a menstruating woman is treated like an untouchable. She does not have the right to cook and to access nutritious food which results in increase in the number of cases of anaemia, reproductive diseases and maternal mortality. All these can be dealt with, but, for the society accustomed to treat menstruating women as outsider, it is mandatory that these practices are revisited and reformed to save the future generation of women from suffering in silence.

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# A Cross Sectional Study on Attitude, Knowledge and Practices of College Students towards Menstrual Hygiene Management in Bhubaneswar

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## Abstract

**Background:** The knowledge about menstrual hygiene management is very poor among adolescent girls today. Cultural beliefs about menstruation such as food habits, untouchability and restrictions in attending religious functions have negative impact on dignity, health and education of girls and changing attitude of male members of the society

**Objective:** The objective of this study was to compare the attitude, knowledge and practice of menstruation among college students (19-25 years).

**Method:** A cross sectional study involving 90 college students in both government and private colleges of Bhubaneswar was carried out and the information was obtained using a semi-structured questionnaire. Students who had achieved menarche prior to the study were included.

**Results:** Majority of the girls (77.8%) achieved menarche between 13-25 years. Approximately 73.3. % of the respondents were shy enough to discuss menstruation with a female partner and 84.4 % still bought sanitary pads wrapped in a newspaper. A large number (62.2%) reported of being sick during menstruation while 28.9 percent accepted menstruation as a sign of maturity. Nearly 37% received a pre menarcheal knowledge from their mother and sister. Majority of male respondents (88.89%) reported that blood flow during menstruation was painful while one fourth of the respondents believed that the source of menstrual blood was vaginal. Nearly three fourth of the male participants reported of not having bought a sanitary napkin ever.

**Conclusion:** There are a lot of challenges regarding proper menstrual hygiene management practices. An effective curriculum should be designed so as to deal with several aspects of adult reproductive health sensitively.

## Introduction

Menstruation is a natural process linked to the reproductive cycle of women and girls. It is not a sickness, but if not properly managed it can result in health problems which can be compounded by social, cultural and religious practices. The start of menstruation is one of the most important events in the evolution of women, so that the first menstruation or menarche is considered important event during puberty. [1] Menstrual cycle can generate positive feelings regarding a good reproductive health, however, it is also an event of anxiety for girls as well as a sociocultural event relying on concealment of menstruation concept. [2] Although, menstruation is a natural physiological process of menstruation, but sometimes can be accompanied with the physical and health issues discomfort and might finally can cause physical, emotional and social destructive effects [3]. Studies have reported that the physical problems caused by menstruation can be found on the daily activities, for example in the performance of social and educational activities among adolescent girls [4]. Numerous studies, particularly from low-income countries, show that a very high number of girls start menstruating without having any idea what is happening to them or why [5-7]. Since parents can find it difficult to speak of sensitive and sexual issues with their children, even while admitting it is also their responsibility [8-9]. Menstrual hygiene is also likely to be affected by contextual factors, such as access to places where girls can manage menstruation-related washing in privacy and comfort. These factors are influenced by having access to water, hygiene and sanitation facilities at school or household. [10-11]. Poor MHM may



increase a woman's susceptibility to reproductive tract infections (RTI). [12] Reproductive tract infections, which have become a silent epidemic that devastates women's lives is closely related to poor menstrual hygiene. [13-14]. India has one of the fastest growing youth populations in out of 1.2 billion adolescents worldwide. Young girls up to 20 years of age comprise one quarter of India's female population. [11]. Adolescent years have been recognized as a special period in the life cycle of adolescent women as it requires specific and special attention [10]. This transition phase makes them vulnerable to a number of reproductive health morbidities.

### Literature Review

Myths and mysteries have long enveloped the truth about menstruation. It is customary for some girls to restrict their activities during the periods as per their social their activities during the periods as per their social customs and religious beliefs. She is not allowed to touch items of food, growing plants, flowers etc. According to Patel et al most women (73.6%) reported restrictions in their daily activities during the menstruation [13]. Although nutrition and genetics play an important role in age at menarche, psychosocial and environmental factors have also been associated with menarcheal timing. Menarche occurs at an earlier age among girls raised in stressful circumstances, such as father absence or stepfather presence (Jean, Wilkinson, & Spitz et al., 2011; Mendle et al., 2006) [14], or sexual abuse (Mendle, Leve, Van Ryzin, Natsuaki, & Ge, 2011). Lower socio-economic status also has been associated with earlier age at menarche (James-Todd, Tehranifar, Rich-Edwards, Titievsky, & Terry, 2010) [15], although racial differences have been shown (Braithwaite et al., 2009) [16]

McPherson and Korfine [17] conducted a study with college-aged women to explore the relationship between early and current menstrual experiences. First, participants answered a questionnaire about their menarcheal experience and about their preparation for menarche; then, those participants who fell in the upper or lower 25% of both measures were asked about their current menstrual attitudes, experiences, and behaviours. It was found that those women who had extremely negative early menstrual experiences reported more current negative menstrual attitudes than did women with more positive experiences. On the contrary, women who had extremely positive experiences reported more positive body image and better general health behaviours. Furthermore, Estanislau, Hardy, & Hebling [9] conducted focus groups with women aged 21-51 years, and concluded that the way in which menarche was experienced may exert an impact on later women's reproductive health, sexuality, and lifestyle behaviours.

### Objectives

This study descriptively analyses the knowledge, attitude, and practice related to menstruation among male and female in

colleges of Bhubaneswar, Odisha. The specific objectives of the study are:

1. To compare the attitude, knowledge and practice on menstruation among both male and female
2. To study the hygiene practiced and health problems during periods among females.

### Methodology

#### Data source

The study is a college based cross sectional study which was conducted in April 2019. The study was conducted in a college selected through multi stage random sampling in urban area of Bhubaneswar, Odisha. The college chosen was NM institute of engineering and technology (NMIET). It is non-govt college affiliated to Biju Pattanaik University of Technology (BPUT), Bhubaneswar.

#### Sample size

Sample size was calculated by using formula at 95% confidence level,  $N = (Z_{1-\alpha/2})^2 PQ / L^2$  followed by a multi stage random sampling method. During the available time period a total of 90 subjects were interviewed for this study.

#### Study tools

A semi structured questionnaire was developed for the study in English then, it was translated into "Odia" by an expert in that language keeping semantic equivalence to check the translation, and it was back translated into English.

#### Inclusion criteria

Those undergraduate students who willingly participated in the study were assessed for practice regarding menstrual hygiene.

#### Exclusion criteria

Students not interested to take part in the study were excluded from the study.

Students who were attending classes were excluded from the study.

#### Statistical analysis

SPSS version 21.0 (IBM, USA) was used for statistical analysis. Descriptive statistics, univariate and multivariable logistic regression analysis were performed to identify those factors associated with unsatisfactory menstrual hygiene practice, inadequate knowledge and negative attitude towards menstruation with a confidence interval of 95%,  $p < 0.05$

### Results and Discussion

The mean age group of the participants was in between 19-21 years. Most of respondents belonged to Hindu religion. In the present study all the respondents were pursuing their bachelor degree. 77.8% female started menstruation between 13-15 years while a mere 13.8 % were unaware about the exact time.