

Sublimation of Bhakti in Riti- Kal Poetry: Reading Thakur's Thakur - Thasak as a Case Study

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Abstract

The paper aims at examining the prevalence of Bhakti in Riti Kal (1550-1850) poetry which was otherwise considered to be erotic as the sringar rasa was the dominant theme. I intend to read Thakur, a Riti poet's Thakur- Thasak to show that bhakti in his poetry reflected divergent trends. The period witnessed emergence of various religious cults. The bhakti of Bhakti kal was carried forward by the poets of the period under review. Thakur presented Krishna and Radha as the nayak and nayika of Riti poets who were in intimate relationship defying all social barriers and notions of shame, yearned for physical communion and suffered pains of separation (viraha). The legend of Krishna was assigned all mythological attributes by Thakur. Apparently, the divinity of the Lord seems to be undermined but careful reading suggests that the Lord was still acknowledged as the incarnated Supreme God.

Keywords

Bhakti, Dwivedi, Hari, Krishna, Radha, Rasa, Riti, Shukla, Sringar, Sufi, Vallabha,

The literati who wrote the histories of Hindi literature periodized the literature on the basis of some features that represented the common trends. These features reflected social, cultural and literary tendencies which identified the period. Ram Chandra Shukla divided the literature of the period into four broad periods. Adi Kal, also known as Vir Gatha kal (V.S. 1050- 1375, Early Medieval or Bhakti Kal (V.S. 1375- 1700), late Medieval or Riti Kal (1700-1900) and Adunik Kal or Gadya Kal (V.S.1900-1984) are the four periods in this scheme of periodization.¹ Bhakti has been seen as a theme filled with intense devotional sentiment which sprung amidst conducive political, religious and literary environment. Bhakti assumed many forms. Nirgun was split into Gyanashrayi and Premmargi Sufi forms. Ramananda, Namdev, Kabir, Tulsidas, Surdas, Dadu Dayal, Guru Nanak and Vallabhacharya were some of the Saguni poets who preached the Nirgun and Sagun forms of bhakti as Gyanashrayi poets. Nirgun/ sagun dichotomy however still prevails when scholars see sagun god in the nirgun bhakti of these poets. However the Sufi and Indic mysticism was assimilated and many poets and their poems signified a religious and cultural environment. Kutban, Manjhan, Jaisi, Shekh Nabi, Qasim Shah and many more were identified as poets of Sufi form of bhakti. The language of all these bhakti saints and poets was vernacular, though script of some Sufi Premakhyan was Persian. Historians and Hindi litterateurs have given significant attention to examine the Bhakti poets and their poetry to interpret in diverse ways.² The period after Bhakti Kal has been seen as degeneration of literary traditions as the voluminous Riti Kal poetry, largely in Braj Bhasha was believed to be erotic which did not deserve attention. I have noted some reasons in my book why the voluminous literature of Riti Kal was neglected and argued that the literature assumes significance for the same reasons it was ignored.³

I however believe that any trend or tradition does not end abruptly. The emergence and spread of Bhakti in the north and other parts of India was a gradual process which emanated from the Bhakti Movement of the south eighth century onwards. We may further understand the bhakti as a popular form of Brahmanical religion in which emotional devotional sentiments connected the devoted with the deity he or she propitiated. In the period when works on Sanskrit poetics were composed during ninth and thirteen centuries, Rup Goswami introduced the concept of intimate relationship between Radha and Krishna.⁴ In spite of erotic representations of Radha and Krishna, Jaidev's Git- Govind was read in terms of sacred and profane dimensions of love.⁵ The eroticism was first applied to gods and goddesses and later to human beings. It is how the Radha and Krishna crept into the compositions of Riti Kal Braj poetry. The tradition of a living god was popular in Vallabhi sampradaya and Krishna and Radha assumed human forms during Riti Kal and the nayaks and nayikas of the poets became Radha and Krishna. Krishna emerges as a young boy tantalising the gopis and Radha, and engaged in frolicsome acts. They were objectified to an extent their intimate relationship was versified uninhibitedly.

Not only Thakur, a Riti Kal poet whom I have proposed to study in context of Bhakti in this paper presented Krishna in extreme intimate relationship:

Neebi bimochat chaunki uthi pahichani jhuki batiyan kahi bai.⁶
Basar gai ganwar charavat aavat hai nisi sej parai.

(She was startled identified him opening the waist- belt and bowed down and said.
 (O village folk you take cows for grazing during the day and reach the bed of unknown lady.)

Thus, Krishna, the cowherd boy goes to the bed of the nayika during night. The poetry was thus conceived to be erotic though some scholars tried to justify eroticism as the need of the Nayika- based poetry.⁷ Hazari Prasad Dwivedi however accepted that Bhakti of the preceeding period had not disappeared completely and the it was sublimation of the divine and the worldly features. It was submerged in the erotic poetry. Ram Chandra Shukla categorized Riti poets into sub- categories and Bhakt kavi was one of these categories. Nagridas, Jodhraj, bakshi Hansraj, Vrindavandas, Bodha, Thakur and many more names surface in Shukla's list.⁸ I proffer that these poets should be read in the historical context. Bodha, for instance, composed Viraha- Varish and Ishqnama. Viraha was a dominant theme of Riti Kal poets and the intense desire to have communion with the beloved was not only expression which enveloped nayak and nayika alone. It rather depicted the yearning of the soul of the lover (the devotee) and the beloved (the god). Ishqnama indicates the sufi dimension of the Bhakti during the period. I will discuss Thakur and his Thakur- Thasak in the following pages. The citations from the text will be explained in the medieval context, the intellectual and literary environment in which the poet had lived and composed. There have been attempts to re-examine and re-write the history of Hindi Literature. Nityanand Tiwari has offered sharp criticism of the perspectives given by Vishvanath Prasad Mishra, and of the Mishra- Bandhus who wrote first histories of Hindi literature.⁹ He considers them the proponents of classical and Riti kal mentalities and had not given any new meaning to the literature. He also criticise deconstructionist and structuralist approaches in reading this poetry. It is not feasible to view the poetry through the modern lens. Tiwari sees the contradiction in the approaches of Shukla, Dwivedi and Ram Vilas Sharma wherein they appreciate some elemnts of Riti poetry and also consider it as decadence. A more sympathetic treatment is therefore suggested by him. Bhagirath Mishra had written initially that the influence of Bhakti had decreased during the Riri Kal period due to feudal ideology,

he wrote later that various sampradayas including sufi orders could be visible in the writings of Riti poets.¹⁰

The identity of Thakur is shrouded in mystery. There have been three Thakurs during the Riti Kal according to Shukla and Dwivedi.¹¹ Two of them were from Asani, a village in modern Azam Garh district of India. The third Thakur hailed from Bundelkhand. The editor of Thakur- Thasak Lala Bhagwandeem lamented Siv Singh Sengar, Grierson and Babu Harishchandra who had written first histories of Hindi literature for casting doubts about identity of Thakur but not being conclusive.¹² His forefathers were from Kakori, Lucknow. Khadga Rai, the grandfather of Thakur was a court official. (Shukla assigns him the title of mansabdar though it is not clear if he was in the Mughal service). His son Gulab Rai settled in his matrimonial city Orchha in Bundelkhand. Thakur was born to him in Orchha in 1866 C.E. He excelled in poetry and got patronage from the ruler Parikshat, the son of Kesri Singh of Jaitpur. According to Dwivedi, he was respected in Jodhpur and Gosain Himmat Bahadur, the well-known mercenary commander also honoured him. Padmakar, also a poet of the same period was in the court of the Gosain and both Thakur and Padmakar were often engaged in bickering. Thakur was a fearless poet who had the courage to criticise even Himmat Bahadur who had good relations with many powerful kings and the British. Lala Bhagwandeem collected the compositions of Thakur published them as Thakur- Thasak.¹³ He claims that he read the poetry of all the three Thakurs and could differentiate on the basis of the language and the style of the verses. Though he is known for his shringarik poetry, I could see a strong sentiment of Bhakti, the Viraha, being the dominant theme. I will cite few verses from Thakur – Thasak and explain the context of those verses. I will also depict how the bhakti in his poetry represents many features which were dominated the writings of Bhakti poets of Bhakti Kal.

Thakur- Thasak begins with conventional Indic manner by propitiating the God and Lord Ganesha.

.... *Shambhu kau dularo Girija ka pranpyaro sada,*¹⁴
Tedhi sund waro soi saheb hamaro hai.

(The beloved of Shambhu and pampered by Girija and is as dear as her life,
 The tilted trunked is my lord.)

The next verses are devoted to Lord Krishna, Hari, Jagannath and Cowherd Krishna. In these verses, he invokes the mythological attributes of the gods, and Krishna in particular. Most of the verses are however devoted to Lord Krishna. The historical Krishna of Mahabharata is venerated in the following verse:

Mewa taji Durjodhan ki Bidurain keg har chokar khaye,
*Thakur Thakur ki ka kahon sada Thakur baware hotai aaye.*¹⁵

(He denounced the dry fruits of Duryodhana and ate peels offered by Vidur's wife,
 What should Thakur speak of his Lord, He has made this Thakur mad.)

These verses clearly reflect the Sagun form of the Lord. Saguna Bhakti was one of the dominant form of worship in the God has incarnated in human form though historians have seen both nirgun or sagun elements of bhakti in the verses of all the Bhakti poets.¹⁶ They argue that it is not possible to depict these Bhakti- saints either as nirguni or saguni. They demonstrated their lord in both these forms. Thakur may also be worshipping the god in both these forms. While perceiving Lord Krishna in Sagun form, the incarnated gods in the above verses, he also

conceived the god who was not visible and the relationship between the god and bhakta was spiritual.

He also expressed deep philosophical themes in vernacular language. The concept of Moha and Maya were elucidated by great philosophical thinkers.¹⁷ Krishna Sharma has examined the philosophies of dualism and non- dualism in depth. The non- dualism propounded by Shankara believed in unity of Atman and Brahman. The maya or illusion hides the Brahman and Atman cannot meet the Brahman or the Supreme Soul. They are in fact one but maya in this mundane ocean does not let the individual soul immerse in the Supreme soul. Thakur versified it in the following verse:

*Man mero matanga bhayo madmatta su maya Samudra me aan dhansyo hai.*¹⁸

Aru aan mahavat laaj ki aankus sankki sank ki ssankar nahi gahyo hai.

Kah Thakur mai hun upay kiye vah aavai na haath kusang basyo hai....

(My heart has become elephant and has sunk in the ocean of maya (illusion).

It has not held the mahout, restrictions of shame and the chain of wisdom.

Thakur says that he resorted to various ways but I can't catch as it is living in bad company).

There are many more such verses which depict the deep philosophical elements of Bhakti, Thakur was no exception during the Riti- Kal Poetry and he too engaged with the theme of emotional devotional love of Radha and Krishna. It has been written earlier that Krishna and Radha became the nayak and nayika for all the poets. Dwivedi wrote about the literary conventions in the Chaitanya and Gaudia Sampradayas had a bearing on portrayal of Krishna and Radha as gopa and gopi in the early writings during the Riti period, but they became ordinary nayak and nayika in most of the texts composed by the Riti poets.¹⁹ He described beauty of Radha in the similar way as were ordinary nayikas were described.:

Yei hain ve Virshbhansuta jinson Manmohan prem karain hain.

*Kamin to unsi nahi dusri damin ki duti ko nindarai hain.*²⁰

(She is the daughter of Vrishbhan whom Manmohan loves.

There is no other woman whose radiance humiliates the lightening.)

Her beauty steals the heart of every one in Braj. She is centre of discussion in all corners of the village. He even versified her ghunghat, lips, cheeks nose and even the breasts in nakh- shikh tradition. In spite of such description, the divinity of Krishna is not hidden. Thakur had to abide by the literary style of Shrigar poets but Bhakti was clearly reflected in his verses. The inhibited description of intimate relations between Radha and Krishna project them exactly in nayak-nayika bhed style. Thakur writes that Radhika and Shyam are lying on the bed and the description of their communion is beyond the words. She takes the palms of Krishna in her hands and folds them gently. Thakur further writes that Radha puts her face on Krishna's face. Pages 12-16 are describing these love pangs of the duo. It is where the scholars interpreted these details as erotic and undermining the divine aspects of the Lord. The social defamation which ordinary nayika face is also attached to Radha. She is lamented by the family and village community for her relationship with Krishna. Radha confronts the people and is emboldened after she is despised to transgress all the notions of shame. She says that she has renounces the family honour as she is drenched in the love with Brajraj. In typical nayika style, she yearns for communion with her beloved and Thakur expressed this extreme desire of Radha as in the following verse:

Ye din aise hi bitat hain humhun tarsin tum hun tarsan.²¹
Thakur aur bichar kachhu nahi ye abhilakh hiye harsane.
Kai hum hi basiye Nandgaon kia ap hi aan baso Barsane.

(these days pass like this when I am longing for you and you too long for me.

Thakur says that my heart finds only one solution for fulfilling our desire for being happy.

Either I settle down in Nandgaon or you you come to live in Barsana.)

The viraha has been given much space by Thakur. Verses 66-85 on pages 16-20 are on viraha theme. The poet does not refer to Krishna's departure from Nandgao to Mathura as id given Sursagar of Surdas, but he implicitly versified the episode when Radha murmurs the complaint. She laments Krishna for being as hard as log of wood. He had flown without wings and does not even send a word though lakhs of people come from there. Even as we understand these description as erotic, the metaphors still highlight the divinity of the Lord. Use of various names the incarnated God was given suggest the divinity. Brajraj, Manmohan, Sanwara, Gopal or Govind and the places associated with him like, Nandgaon or Braj indicate the Cowherd God. The references to his flute and attire, pitpat (yellow clothes) his peacock feathered crown symbolise Krishna's divinity. His migration to Mathura had left Gopis and Radha in a state of extreme depression. Viraha- Bhakti has been interpreted by Friedahm Hardy as climax of yogic practice when the Virahini wanders like a mad person and keeps yearning for a vision of the Divine.²² Thakur's Bhakti verses covered all aspects of Bhakti preached by the Bhakti poets of Bhakti Kal. It was continuation of earliest forms of Bhakti which included all legends and mythological attributes of Krishnaite Bhakti.

Conclusion

It may be concluded that Thakur and other Riti poets were influenced by the intellectual and literary traditions of the time. It was much desired as they had to survive in a competitive poetic world. The court patronage depended on their poetic skills of treating poetics. Though Bhakti was also an emotive theme and sringar was the dominant rasa of the period under review, the lover- beloved relationship of Radha and Krishna was suited for an emotional- devotional Bhakti. The ground for lover- beloved relationship was already prepared by Rup Goswami and Jaidev, it was not difficult for them to portray the divines as nayak- nayika. In spite of the frolicsome and erotic acts of Krishna, his divinity was still embedded in the verses.

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हिन्दू और मुस्लिम अस्मिताएँ तथा 19वीं और 20वीं शताब्दी में साम्प्रदायिकता

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सारांश

भारतीय स्वतन्त्रता आंदोलन के काल में अस्मिताएँ धर्म के आधार पर पनपने लगी थीं। भारतीय जन-समुदाय अपने धर्म के लोगों को एकीकृत करके ब्रिटिश साम्राज्य का समर्थन या विरोध कर रहे थे। इनमें मुख्य रूप में हिन्दू व मुस्लिम समुदाय अपनी एक पहचान बनाना चाह रहे थे। विभिन्न संगठनों के माध्यम से ये दोनों समुदाय स्वतंत्रता संग्राम में भागीदारी कर रहे थे। मुस्लिम लीग तथा हिन्दू सभाओं को इंडियन नेशनल कांग्रेस ने राष्ट्रवादिता से जोड़ने का अथक प्रयास किया। धार्मिक अस्मिता और राष्ट्रीय अस्मिता को संयुक्त करने की चेष्टा की। ज्ञानेन्द्र पाण्डे, रोमिला थापर, सी.ए.बेली और नील ग्रीन के शोधों के कुछ अंशों के आधार पर इस लेख में धार्मिक अस्मिताओं को राष्ट्रीय संदर्भ में समझने की चेष्टा की है।

बीज शब्द: मुस्लिम, राष्ट्रवाद, हिन्दी, उर्दू, भारतेन्दु, लीग, साम्प्रदायिकता, औपनिवेशिक, नेहरू।

भारतीय इतिहास में साम्प्रदायिकता का मुद्दा स्वतन्त्रता संग्राम की 19वीं तथा 20वीं शताब्दी में वाद-विवाद का विषय रहा है। इसमें 'हिन्दू' तथा 'मुस्लिम' दो वर्गों को परस्पर विरोध में दर्शाया जाता है। दोनों वर्गों के नेताओं की भूमिका 1947 में

विभाजन के संदर्भ में अलग-अलग देखी गई है। ज्ञानेन्द्र पाण्डे अपनी पुस्तक *Construction of Communalism in Colonial North India* में हिन्दू पक्ष के बारे में Hindi, Hindu, Hinduism अध्याय में लिखते हैं तथा 'मुस्लिम' संदर्भ में तुलनात्मक अध्ययन करते हैं।¹ पाण्डे के अनुसार अखिल-भारतीय मुस्लिम लीग, बिहार की मुस्लिम संस्थाओं तथा उत्तर-प्रदेश के अनेक उलमाओं के व्यवहार के प्रतिक्रियाओं में स्थानीय सरकारों, ब्रिटिश वर्गों, और कांग्रेस दल को समर्थन बीसवीं शताब्दी में मुस्लिम वर्गों के हित में नहीं मानती थी तथा ईसाई धर्म को मुस्लिम व इस्लाम के निकट मानते थे। इन मतभेदों के बावजूद राष्ट्रीय सत्याग्रही आंदोलनों में चाहे व रॉलट एक्ट के विरुद्ध या असहयोग आन्दोलन हों या खिलाफत आन्दोलन रहा, सभी में मुस्लिमों ने समान रूप से भाग लिया। यह जन-आंदोलन के रूप में चलाए गए थे और इनमें बड़ी संस्थाओं व निम्न वर्गों की बराबर भागीदारी थी।

इसी प्रकार गैर-मुस्लिम समुदायों में भी अहीर, कूर्मी तथा किसान-सभाओं ने भारतीय राष्ट्रीय कांग्रेस को समर्थन दिया। कुछ निम्न मध्यम वर्गीय संस्थाएँ व किसान त्रिवेणी संघ के अन्तर्गत गाँधी के भारत छोड़ो आन्दोलन के विरोध में ब्रिटिश सरकार को समर्थन दे रहीं थी। इससे ज्ञानेन्द्र पाण्डे ये तर्क देना चाहते हैं कि प्रारम्भिक बीसवीं शताब्दी में सम्प्रदाय धर्म व जातीयता के आधार पर बंटे थे। सिक्ख, मुस्लिम, हिन्दू और अन्य वर्ग अब निम्न वर्गों तथा अछूतों को अपने समाज में स्थान देने लगे थे। प्रत्येक समुदाय स्वयं को अन्य वर्गों से अलग बनाए रखना चाहते थे। 1880 व 1890 के दशक से हिन्दू समुदाय स्थानीय दलों के रूप में विकसित हो रहे थे। प्रयाग हिन्दू समाज तथा मध्य हिन्दू समाज भारतीय राष्ट्रीय कांग्रेस के समानान्तर अब स्थानीय स्वरूप छोड़ कर राष्ट्रीय स्तर पर दिखने लगे थे। C.A. Bayly (बेली) लिखते हैं कि अब दो स्पष्ट वर्ग हिन्दू और मुस्लिम बन गए थे। हिन्दू समुदाय का उद्देश्य हिन्दी भाषा देवनागरी लिपि व पशु/गाय की रक्षा करना हो चुका था।

अन्य तर्क के अनुसार भी समझा जाए तो 19वीं शताब्दी के वहाबी, फरैजी या ब्रह्म समाज आन्दोलन औपनिवेशिक साम्राज्य में अपने अस्तित्व को बचाए रखने के लिए हुए। अस्मिता के मुद्दे अहम् बन गए थे। यूरोपीय शिक्षा के कारण केवल धार्मिकता ही नहीं बल्कि सांस्कृतिक अतीत भी इन समुदायों के लिए अस्मिता का सूचक बना। ब्रिटिश के द्वारा प्राच्यवाद की अवधारणा में असभ्य, बर्बर व पिछड़ेपन

के लेबल को मिटाने के लिए सभी अपने सांस्कृतिक व पारम्परिक मूल्यों को प्रस्तुत करने लगे। हिन्दू जनसंख्या का अधिक होना, संसाधनों पर उनका अधिक नियन्त्रण हिन्दू वर्ग की गतिविधियों को व्यापक स्तर पर ला सका। हिन्दी का भारतेन्दु के नेतृत्व पर बनारस हिन्दू विश्वविद्यालय में प्रसार हुआ। इस प्रकार राष्ट्रवाद व साम्प्रदायिकता के मुद्दे और जटिल हो जाते हैं जब परस्पर सहयोग तथा क्षेत्रीय साम्प्रदायिकता अलग-अलग रूप में सामने आते हैं। भारतीय राष्ट्रवाद औपनिवेशिक आधुनिकता तथा सर्वदेशीय (cosmopolitan) संस्कृति से प्रभावित हुआ तथा धार्मिकता भी एक महत्वपूर्ण कारण था।² इनसे प्रभावित हो कर 'समुदाय' व 'राष्ट्र' की परिभाषा अलग होने लगी। सैयद अहमद खान के अनुसार राष्ट्र में रहने वाले हिन्दू, मुस्लिम तथा ईसाई एक ही राष्ट्र की कौम हैं चाहे उनके धर्म अलग हैं। इसी प्रकार गाँधी जी ने 'हिन्द स्वराज' में लिखा कि हिन्दू, मुसलमान, पारसी व ईसाई जो राष्ट्र को अपना बना चके हैं वे सभी इस राष्ट्र के नागरिक हैं। यद्यपि मदन मोहन मालवीय बनारस हिन्दू विश्वविद्यालय, प्रयाग समाज, अखिल भारतीय हिन्दू महासभा के माध्यम से हिन्दू, हिन्दी व हिन्दुस्तान का प्रचार करते थे पर राष्ट्रीय स्तर पर सभी जातियों व समुदाय में प्रेम भाव पैदा करना सबका कर्तव्य मानते थे। लाला लाजपत राय के भी यही विचार थे।

भारतेन्दु ने बनारस हिन्दू विश्वविद्यालय को अपना केन्द्र बनाकर भारतीय नारी व पुरुषों को अपने भविष्य को अपने हाथ में लेने की शिक्षा दे रहे थे। हिन्दू व देवनागरी को उन्होंने उर्दू व फारसी विरोध में प्रस्तुत किया। पाश्चात्य शिक्षा व विज्ञान को उन्होंने आधुनिकता के उपकरण माना। रूढ़ियों व अंधविश्वास को त्यागने को कहा। उन्होंने लोगों से जातीय व धार्मिक एकता की अपील की। हिन्दू तथा मुस्लिम भाइयों से हिन्दुस्तान के निवासी होने के कारण एकता की माँग भी की। इस प्रकार स्थानीय, क्षेत्रीय व भाषा के स्तर पर उनका उद्देश्य राष्ट्रीय स्तर से अलग था। यूरोप में जाने वाली भारतीय आय को अपने विकास के लिए उपयोग किए जाने की माँग भी की। ज्ञानेन्द्र पाण्डे भारतेन्दु को एक अविश्वसनीय (Uncertain) राष्ट्रवादी मानते हैं। उनकी नजर में लखनऊ के वकील बिशन नारायण दार, रोमेश चन्द्र दत्त, भारतेन्दु से अधिक भरोसेमन्द थे।³ दार लोगों को ब्रिटिश नीति, Divide and rule की नीति से सचेत करते थे। उनके लिए हिन्दू-एकता और मुस्लिम एकता राष्ट्रीय एकता की प्रथम अनिवार्यता है।

इसी प्रकार मुस्लिम, उर्दू व हिन्दुस्तान भी साम्प्रदायिक चेतना की सूचक है। परन्तु मुस्लिम नेताओं के लिए थोड़ा कठिन था कि इस्लाम हिन्दू धर्म की तरह भारतीय नहीं था। W.W. Hunter (हंटर) ने 1871 में लिखा कि भारतीय मुस्लिम हिन्दुओं के मुकाबले में शिक्षा, सरकारी नौकरी तथा आधुनिक उद्योगों में पिछड़े हुए हैं। इसी से सैयद अहमद खान व अन्य मुस्लिम प्रचारक बहुत प्रभावित हुए।

1920 के दशक में हिन्दू महासभा तथा अन्य संस्थाएँ अधिक सामुदायिक होने लगीं। सावरकर की पुस्तक 'हिन्दुत्व', राष्ट्रीय स्वयं सेवक संघ की स्थापना इस तर्क की पुष्टि करती है। RSS के संस्थापक हेडेगवार ने प्रश्न किया कि यूरोपीय देशों की पहचान उनकी भाषा व धर्मों के आधार पर हो सकती है तो भारत की पहचान Hinduism (हिन्दूवाद) से क्यों नहीं हो सकती? अतः हिन्दू राज की अवधारणा से प्राचीन सभ्यता को उबारा गया। इसी प्रकार 'मुस्लिम राज' की अवधारणा भी पनपी। अतः भारतीय राष्ट्रवाद की मुख्य चेष्टा रही कि साम्प्रदायिकता को धर्म-निरपेक्षता में ढाला जाए। किसी धर्म के अनिवार्य व गैर-अनिवार्य (Essential and inessential) में अंतर करना जरूरी है तथा गैर-अनिवार्य तरीकों के राष्ट्र के हित में छोड़ देना चाहिए। राष्ट्रवाद पूर्णतः शुद्ध राष्ट्रवाद होना चाहिए। पाण्डे लिखते हैं कि कानपुर में हुए मई 1931 के दंगों पर कांग्रेस द्वारा नियुक्त कमेटी की रिपोर्ट के अनुसार 1920 के दशक में साम्प्रदायिकता को धार्मिक राजनीति के रूप में समझा गया परन्तु हिन्दू मुस्लिम साम्प्रदायिकता भी भारतीय राष्ट्रवाद ही था। जवाहर लाल नेहरू ने अपनी पुस्तक Discovery of India (डिस्कवरी ऑफ इण्डिया) में लिखा कि हिन्दू राष्ट्रवाद यद्यपि भारत की मिट्टी से ही उत्पन्न हुआ है परन्तु यह भारतीय राष्ट्रवाद इससे बड़ा है। भारतीय राष्ट्रवाद का उद्देश्य सामान्य आर्थिक हित होना चाहिए तथा राष्ट्र के आर्थिक बोझ को हटाने की चेष्टा ही भारतीय राष्ट्रवाद है। उन्होंने लिखा कि भारतीय मध्यम वर्ग तथा सामन्त हिन्दू बुर्जुआ वर्ग के प्रति संवेदनशील होता है परन्तु मुस्लिम सामन्त वर्ग अधिकांशतः हिन्दू बुर्जुआ वर्ग का समर्थन नहीं करता। ये दोनों वर्गों के प्रतिनिधि व नेता अपनी-अपनी धार्मिकता को अपने तरीके से राष्ट्रवाद के लिए प्रेयाग करते हैं तथा जन-समूह को अपनी तरफ करते हैं। इस प्रकार 'राष्ट्रवाद' को धर्म-निरपेक्ष, प्रजातंत्रीय तथा कभी-कभी समाजवादी परिभाषा में समझा गया तथा साम्प्रदायिक राष्ट्रवाद के विरोध में प्रस्तुत किया गया। साम्प्रदायिकता एक पूर्व-आधुनिक विश्व की

देन बनी जिसको औपनिवेशिक शक्तियों (ब्रिटेन) ने अपने हित के लिए प्रयोग किया। भारतीय राष्ट्रवाद प्रगतिशील तथा दूरदर्शिता पर आधारित था तथा साम्प्रदायिकता प्रतिक्रियावादी तथा अतीत पर आधारित थी।

भारतीय राष्ट्रीय कांग्रेस ने माना कि अंग्रेजों के भारत छोड़ने के बाद साम्प्रदायिकता खत्म हो जाएगी। इसीलिए 'स्वराज' की माँग पहले पूरी की जानी चाहिए और हिन्दू-मुस्लिम या कोई भी सामाजिक समस्या को बाद में सुलझाया जा सकता है। रोमिला थापर भारतीय संदर्भ में साम्प्रदायिकता के संदर्भ में 'Imagined Religious Communities' लेख में लिखती हैं कि एक परिकल्पित धार्मिक अस्मिता (Identity) हिन्दू/मुस्लिम तथा अन्य वर्गों में धार्मिक चेतना पैदा करती है तथा राजनैतिक कार्यक्रमों का समर्थन या विरोध करती है।⁴ वर्तमान में भारतीय साम्प्रदायिकता भारतीय राष्ट्रवाद के मुद्दों से जुड़ी है क्योंकि मनुष्य का अस्तित्व व अस्मिता धर्म से जुड़ी है इसीलिए भारत में धर्मों को बार-बार परिभाषित व संशोधन किया जाता रहा है। वैदिक धर्मों से पौराणिक धर्मों तक, बौद्ध व जैन धर्मों में, वैष्णव व शैव सम्प्रदायों में तथा भक्ति और सूफी आन्दोलनों में धार्मिक आदान-प्रदान चलता रहा था और हिन्दूवाद या हिन्दू धर्म की उत्पत्ति नहीं दिखाई देती।⁵ स्थानीय कुल देवी/देवता Little Tradition से निकलकर Great Tradition में समाहित हो जाते हैं। राजनैतिक मुद्दे धर्म को हमेशा अपने लिए प्रयोग करते रहे हैं। रोमिला थापर व अन्य इतिहासकार सभी धार्मिक ग्रन्थों में आर्थिक व सामाजिक अनिवार्यता का प्रभाव बताते हैं। भौगोलिक व स्थानीय तत्त्व पुराणों व जैन-बौद्ध साहित्य को प्रभावित करते हैं। इसी प्रकार हिन्दूवाद व इस्लाम को परस्पर विरोधी धर्मों के रूप में दर्शाया जाता रहा है। थापर का विचार है कि इन दोनों धर्मों में अपने-अपने शासकों को दैवीय तथा धार्मिकता से जोड़ कर उनकी सत्ता को अधिक मजबूत बताया जाता रहा। दोनों धर्मों में सदैव विरोध नहीं था और सामंजस्य के उदाहरण भी हमें मिलते हैं।

परन्तु 19वीं शताब्दी में J.S.Mill ने जब भारतीय इतिहास का काल-विभाजन किया तथा प्राचीन काल को हिन्दू व स्वर्णिम युग बताया और मध्य काल को मुस्लिम और पतनशील माना, आर्यों के संदर्भ में वाद-विवाद किया तभी से साम्प्रदायिकता धर्म और धार्मिकता से जुड़ गई।⁶ भाषा व धर्म के आधार पर भारत में अनेक धार्मिक वर्गों की संख्या बढ़ती घटती रही है। यहाँ बहुजातीय, बहुधार्मिक

(Multiple religions, multiple identities) समाज में एक समरूप हिन्दू समाज या हिन्दू राष्ट्र की परिकल्पना अनुचित है।

दूसरी मुस्लिम लीग उच्च वर्गीय सामन्तवादियों के नेतृत्व में धार्मिकता का सहारा ले रही थी। नेहरू ने सही निष्कर्ष निकाला कि भगवान और कुरान को राष्ट्रवादी चुनाव तन्त्र के रूप में प्रयोग कर रहे थे। संक्षिप्त में कह सकते हैं कि भारतीय राष्ट्रवाद में हिन्दू-मुस्लिम अपने-अपने अस्तित्व व पहचान के लिए संघर्ष कर रहे थे और अनेक दृष्टिकोण प्रस्तुत कर रहे थे। भारतीय राष्ट्रवाद इन्हीं दृष्टिकोणों के बीच संघर्ष तथा सामन्तस्य का विषय है। ये अन्तर्विरोध जब चरम सीमा पर पहुँ गए थे तब जू.छंजपवद.जेमवतल प्रस्तावित हुई। भाषा और धर्म के आधार पर देश विभाजित हो गया।

बेली अपनी पुस्तक *The Birth of the Modern World* में लिखते हैं कि भारतीय धर्म/एशियाई धर्म ईसाई मिशनरियों से प्रभावित होकर धर्मान्तरण (Proselytization) के तरीके अपनाने लगे थे। 1900 के आरम्भ से रुढ़िवादी हिन्दुओं ने शुद्धि सभाएँ स्थापित करनी आरम्भ कर दी थीं। इनका कार्य निम्न वर्ग के उन लोगों को, जिन्होंने कभी इस्लाम या ईसाई धर्म अपनाया था, उन्हें पुनः हिन्दू बनाना था। यह विचार हिन्दूवाद के एकीकरण के लिए नया था। आर्य समाज हिन्दूवाद का नवीनीकरण था तथा शुद्धीकरण आर्य संस्थाओं की देन था। आधुनिकीकरण से तीर्थ स्थलों को विश्व के परिवेश में परिवर्तित किया जाने लगा। बनारस, गया, इलाहाबाद तथा बुद्ध से सम्बन्धित स्थान मशहूर हो रहे थे। ये विश्व के सभी देशों व धर्मों में हो रहा था। लिखित व मौखिक रूप में इमारतों के संदर्भ से एशियाई धर्म विश्व-धर्मों में आ गए थे। धार्मिक अस्मिता विश्व के बड़े देशों में राष्ट्रवाद का हिस्सा बन गए थे। छोटे व स्थानीय देवी-देवता, सूफी और सूफियों की मजारें एक बड़े धार्मिक परिप्रेक्ष्य में मध्यमवर्गीय समाज में मान्य हो गए। पूरे विश्व में धर्म तथा शक्ति के तन्त्र राष्ट्र-राज्यों के निर्माण में भागीदार रहे। जर्मनी में लूथरवाद इसका उदाहरण है।⁸ प्रोटेस्टेन्टवादी देशों में आर्थिक और जनसंख्या के उत्थान व पतन को दैवीय कृपा या आक्रोश के रूप में समझा गया। इस्लाम, हिन्दू व बौद्ध धर्मों ने भी इसका अपने अनुरूप ढाला मगर इन एशियाई देशों ने अच्छे राज्य और दैवीय न्याय (Divine Justice) की व्याख्या भी धार्मिक व्याख्याओं में जोड़ी।

निष्कर्ष में सी.ए.बेली कहते हैं कि धार्मिकता व धार्मिक-क्रियाकलापों ने पूरे विश्व में अपना प्रभाव फैलाया हुआ था। प्रथम विश्व-युद्ध में अनेक देशों में यह कारक देखे जा सकते थे। परन्तु ये सभी धर्म व धार्मिकताएं अतीव पिछड़े हुए, आदिवासी समाज को प्रभावित नहीं कर सकीं तथा मध्यम वर्गों में इसका प्रभाव था। भारतीय राष्ट्रवाद साम्प्रदायिकता तथा धार्मिकता 19वीं और 20वीं शताब्दी में विश्व परिप्रेक्ष्य में देखी जानी चाहिए।

इसी संदर्भ में नील ग्रीन 'बॉम्बे इस्लाम' के स्वरूप में आन्तरिक विभिन्नताओं और विषमताओं का बृहत् अध्ययन करके यह मत देते हैं कि बॉम्बे के मुस्लिम अनेक वर्गों में बँटे थे और इस विविधता का आधार धार्मिक ना होकर आर्थिक तथा सांस्कृतिक था। नील ग्रीन का विचार है कि 1903 ईस्वी में बॉम्बे (उस समय के लिए यही उपयुक्त था) में सीताराम बिल्डिंग के गिरने को बॉम्बे के मुस्लिम समुदायों के परस्पर विरोध से जोड़ते हैं। इसमें नीचे एक बार था जो बिल्डिंग के सामने पैट्रो शाह सूफी की मज़ार की धार्मिकता को कम करता था। माना गया कि यह बिल्डिंग सूफी पीर के चमत्कार से ध्वस्त हुई थी। परन्तु ग्रीन को यह मत उचित नहीं लगा। वे इस घटना को बॉम्बे के कुछ हिस्सों की आधुनिकता और परम्पराओं का विरोध मानते हैं। इस समय तक बॉम्बे में मुस्लिम अनेक समुदायों में बँट चुके थे।¹⁰

बॉम्बे भारत की आर्थिक राजधानी के रूप में देश-विदेश के विभिन्न मुस्लिम व्यापारियों को शरण दे रहा था। बॉम्बे औपनिवेशिक शक्ति के भी अनेक खंडों में विभक्त था, जैसे कि ब्रिटिश बॉम्बे, मराठी बॉम्बे या पारसी बॉम्बे। हिन्द महासागर, गुजराज व हैदराबाद से रेल मार्गों से, ईरान व दक्षिण अफ्रीका से और मध्य एशिया से अनेक मुस्लिम यहाँ बसने लगे थे। 1816 में ये शहर जान-ए-बॉम्बई के रूप में अरबी, ईरानी, तुर्की, तूरानी, काबुली, सिंधी, लाहौरी, मुल्तानी, मद्रासी, मालाबारी या दक्कनी मुसलमानों के अतिरिक्त ग्रीक, डच, पुर्तगाली, यमनी व चीनी आबादी से पूरित था। इस समय तक बॉम्बे ब्रिटिश राज्य का महत्वपूर्ण आर्थिक केन्द्र बन चुका था। इन सभी वर्गों में बॉम्बे ब्रिटिश राज्य का महत्वपूर्ण आर्थिक केन्द्र बन चुका था। इन सभी वर्गों में परस्पर आर्थिक, सांस्कृतिक तथा राजनैतिक विरोध थे। इन सभी वर्गों ने अपनी व्यक्तिगत धार्मिकता को नियम-बद्ध कर अपनी एक अलग पहचान बनाने की कोशिश की। प्रिंट तकनीक के आने से ये प्रचार-प्रसार और बढ़ गया। एक ओर कुछ वर्ग स्वयं

को आधुनिकता से जोड़ रहे थे तो दूसरी ओर कुछ वर्ग अपनी संस्थाएँ बनाकर अपनी परम्पराओं को नियमों के रूप में संचालित कर रहे थे। मुस्लिम लीग बीसवीं शताब्दी में इन वर्गों को स्वतन्त्रता संग्राम में अपनी विचारधारा के अनुकूल समाहित करने की चेष्टा कर रही थी। ग्रीन का अध्ययन बहुत विस्तृत है जो इस लेख में पूर्ण रूप से प्रस्तुत नहीं किया जा सकता है।

निष्कर्ष में यही कहा जा सकता है कि जिस प्रकार उन्नीसवीं और बीसवीं शताब्दी में हिन्दू-मुस्लिम को स्पष्टतः परिभाषित किया गया, इन दोनों वर्गों में अनेक परस्पर-विरोधी विभाजन थे। पारसी-पंचायत तथा सिंह सभाएँ पारसी व सिक्ख समुदायों की विषमताओं का उदाहरण हैं जिन्हें इस लेख में शामिल नहीं किया जा सकता।¹¹


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The mindfulness trajectories of addressing suicidal behaviour: A systematic review

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Abstract

Background and objectives: Suicidal behaviour has been a persistent concern in medical as well as general settings. Many psychotherapeutic approaches have tried to address suicidal behaviour in different ways. Mindfulness-based interventions (MBIs) have garnered much attention in the last decade because of their treatment efficacy. This systematic review aimed to examine evidence-based research regarding the effectiveness of MBIs as a psychotherapy intervention on suicidality and to deliver suggestions that might help future research.

Method: The identification of literature was made through an extensive search of the electronic databases, to extract studies relating to the efficacy of MBIs on addressing suicidal behaviour. Additional researches based on library sources were searched manually. The studies' selection was based on a pre-determined inclusion and exclusion criteria as well as the quality of the studies.

Results: The present review helped us identify 13 studies, including six randomised controlled trials, two controlled studies and five pre-post observational studies. The findings reported in the studies were mostly favourable to MBIs as an effective intervention strategy for suicidal behaviour.

Conclusion: MBIs show promising effects as an intervention for suicidal behaviour. However, large scale, high-quality trials with active control, and long term intervention efficacy studies are needed to understand the mechanisms through which MBIs reduce suicidal behaviour.

Keywords

Mindfulness, suicidality, suicidal ideation, systematic review, mindfulness based cognitive therapy

Introduction

Suicidality or suicidal behaviours are the thoughts, gestures, behaviours of intentionally taking one's own life. More precisely, these thoughts are characterised by suicidal ideation and suicidal plan. The DSM-5 differentiates between suicidal ideation, non-suicidal self-injury and suicidal attempts. The proposed criteria for suicidal behaviour disorder are marked by the presence of a suicide attempt within the last 24 months (DSM-5). There are no exact causes of such behaviour because suicidality is a complex phenomenon which can have multifaceted explanations. Previous research has focused on understanding psychological attributes that might play a role as precipitating factors or recurrence of suicidal attempts. Several researchers have linked suicidal behaviour to over-general memory (Evans et al., 1992); intrusive thoughts (Holmes et al., 2007); perceived self-discrepancy, and brooding (Crane et al., 2007). In most cases, the presence of suicidal thoughts and attempts has been attributed to an underlying psychiatric disorder, especially mood disorders (O'Connor & Nock, 2014; Rihmer & Kiss, 2002). It has been reported that about 27% of bipolar depressive individuals have suicidal

thoughts and behaviour (Bottlender et al., 2000). The severity of depression at different levels is likely a predictor of suicidal tendencies (Uebelacker et al., 2010). In the context of schizophrenia, a study reported that approximately 50% of the patients, at some point, report suicidal thoughts or make an attempt during their illness. (Dassori et al., 1990). However, suicidality is not just limited to specific

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syndromes or psychiatric diagnoses, but it can occur among the general population without any diagnosable conditions (Strosahl & Chiles, 2006; Williams et al., 2005). Evidence of suicidal ideation in terminally ill, medical, and surgical patients in a hospitalised setting has also been reported (Ballard et al., 2008; Botega et al., 2010). Moreover, there have been numerous research studies on suicidal tendencies in college and school students (Mackenzie et al., 2011; Ziaei et al., 2017). The diversity in the diagnoses and the presence of suicidal phenomenon in non-clinical settings demands effective treatment strategies.

Developing effective clinical intervention strategies independently to address suicidal behaviour is one of the most significant challenges for healthcare professionals. Approaches like cognitive behaviour therapy have been influential in the context of depression and suicide. Dialectical behaviour therapy (DBT) commonly used for treating borderline personality disorder has also been useful in the context of self-injurious and suicidal behaviours in suicidal attempters (Linehan et al., 2006). However, DBT in acute suicidal crisis and suicidal ideation has not been found very effective (DeCou et al., 2019). Further, traditional mental health treatment/therapeutic approaches used to address suicidality were not free from limitations like premature dropouts, refusal to adherence, stigma and low confidence to treatment effectiveness (Bruffaerts et al., 2011; Lizardi & Stanley, 2010). In contrast to these intervention strategies, Mindfulness-based therapeutic approaches have shown encouraging results in clinical settings and the general population. Mindfulness-based procedures use elements like awareness, acceptance, being non-judgmental about current experiences, which help to make individuals resilient against dysfunctional thinking and distressing emotional experiences (Hayes & Feldman, 2004; Kabat-Zinn, 1990). Mindfulness-based intervention (MBIs) as adjunctive treatment could improve treatment outcomes when psychiatric disorders are chronic and are marked by social and economic implications (Lish et al., 1994; Mintz et al., 1992; Wyatt and Henter, 1995).

Mindfulness-based techniques can modulate suicidal ideation in various ways. Several cross-sectional studies have demonstrated the effectiveness of mindfulness-based training in reducing suicidality risk (Anastasiades et al., 2017; Chesin & Jeglic, 2016). It has been asserted that mindfulness helps in accepting maladaptive thoughts and emotions, enabling suicidal individuals to re-engage themselves in goal-directed behaviour even during adverse situations (Garland et al., 2017; Kabat-Zinn, 1993; Mark et al., 2004). Researchers have suggested that mindfulness reduces cognitive rigidity, works on maladaptive cognitive styles of suicidal individuals, and improves their problem-solving capability (Greenberg et al., 2012). Additionally, suicidality has been associated with greater cognitive reactivity, which is marked by

biased thinking, poor interpersonal problem solving, and slow information processing resulting from non-pathological mood deterioration (Williams et al., 2005). In addition, cognitive reactivity is an essential determinant of suicidal risk that can be minimised through mindfulness-based cognitive therapy (MBCT) in individuals with suicidal depression history (Williams et al., 2006).

Above mentioned studies have shown how mindfulness-based strategies work on the different modalities which might reduce suicidal risk and suicidal behaviour. Some of these have proved positive in symptom relief, and some have contributed to making the prognosis better. To date, very few reviews have attempted to understand the impact of mindfulness-based interventions (MBIs) independently on suicidality (Chesin et al., 2016b). Previously systematic reviews on mindfulness-based interventions have focused mostly on MBCT and its effects on suicidal ideation reported in psychiatric disorders and chronic conditions (Williams et al., 2006). Given that some authors have proposed that Mindfulness-based treatment can prove a promising approach for suicidal individuals, the available evidence must be reviewed. Therefore, in this paper, we aim to review the evidence-based studies which have used mindfulness-based interventions on people at risk of suicidal behaviour to understand their immediate and long term effects. The review will also focus on the measures being used and their applicability in the context of intervention outcomes. Furthermore, our review will explore possible mechanisms of actions and feasibility by which mindfulness-based interventions may lower suicidality in the psychiatric and non-psychiatric population.

Method

Eligibility of the studies

Inclusion criteria. The criteria for included studies are as follows:

- (i) Population: Studies that reported suicidal ideation or attempts in participants with any psychiatric disorder, non-psychiatric disease (like cancer) and the general population were included.
- (ii) Intervention: Studies that assessed the effectiveness of mindfulness-based psychotherapy techniques on suicidality were included.
- (iii) Outcome: Studies that assessed suicide objectively either through scale or interview, as the outcome was included.
- (iv) Comparators: The comparators included were any other form of psychotherapy, psychopharmacological interventions, treatment as usual (TAU) and without treatment as control.
- (v) Design of the Study: Randomised control trials (RCT), non-randomised observational studies and

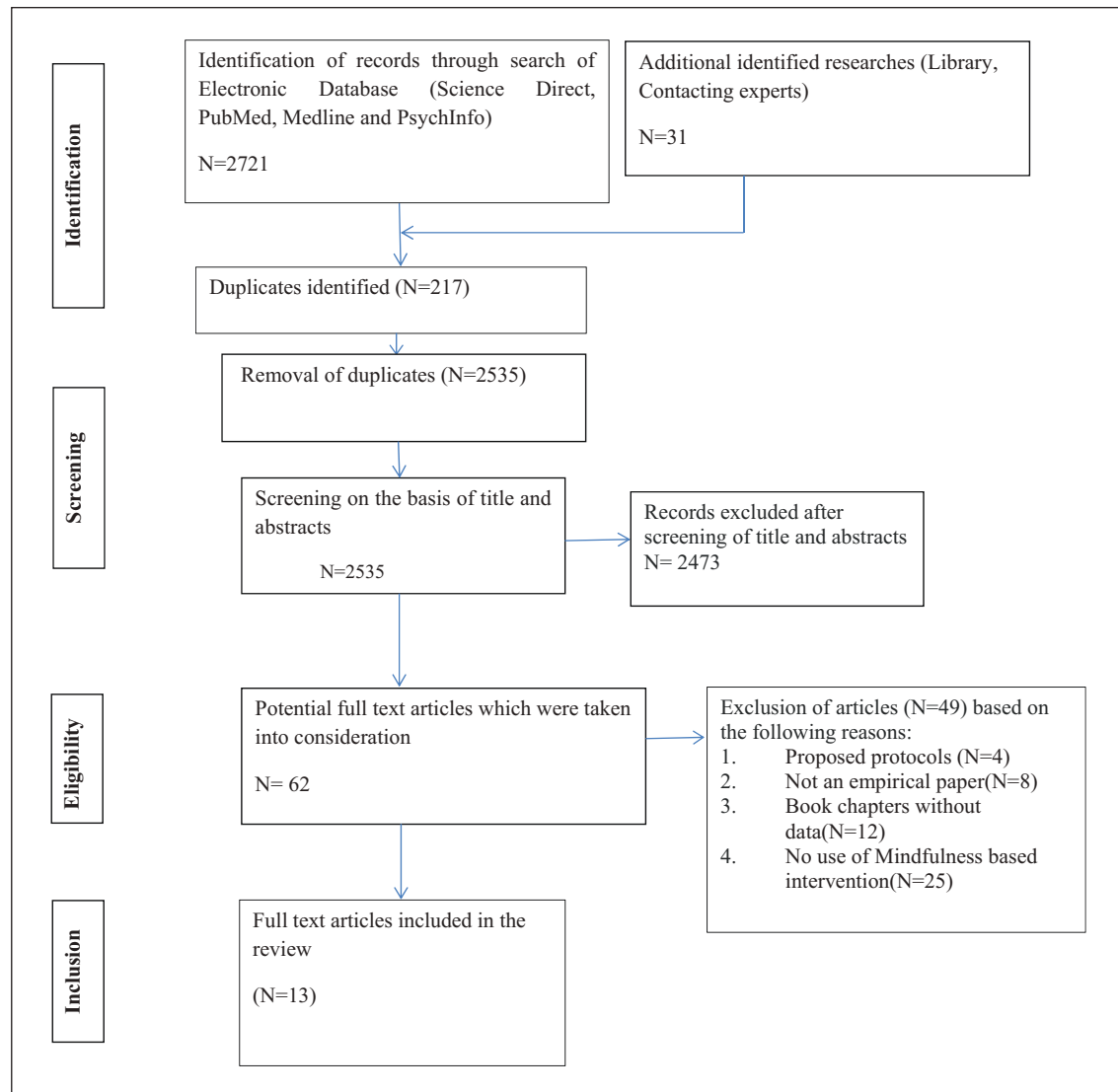


Figure 1. The PRISMA flowchart depicting study selection and eligibility process.

pre-post intervention design studies were included. Studies reported in peer-reviewed journals were only included. Review articles, book chapters, conference papers, thesis and proposed protocols were not included. Only those studies were included, which were published in the English language.

Literature search

This present review followed the PRISMA guidelines (see Figure 1 for details) for the selection of the published studies on the topic. Bibliographic databases were searched for relevant literature by two independent researchers. The studies that reported the effect of MBIs on suicide and published in peer-reviewed journals with a time frame from January 2010 to March 2020 were taken into consideration. The following electronic databases were searched for potential researches: PubMed, Medline, ScienceDirect and

PsychInfo. Additional searches were conducted for non-indexed citations, and the references of shortlisted papers were examined to find other potentially eligible papers.

The keywords and terms used for searching were as follows: 'mindfulness and suicide', 'mindfulness intervention and suicide', 'mindfulness-based therapy and suicide', 'mindfulness training and suicidal ideation', 'suicidal ideation and mindfulness meditation' and 'Mindfulness-based cognitive therapy and suicide'.

Study selection

The data extraction process rendered a total of 2,721 potentially relevant papers. Additionally, from library resources and through contact with experts helped in the identification of 31 more papers. Subsequently, 217 duplicates were identified and removed. The remaining 2,535 papers were screened based on their titles and abstracts.

After that, 2,473 articles were not fitting into the inclusion criteria. Hence they were removed. The remaining 62 full-text articles were checked on the eligibility parameters. Out of these, 49 publications were excluded for several reasons like no use of mindfulness-based intervention (MBI), book chapters with insufficient data, proposed protocols and no empirical data. Finally, we included 13 studies for further analysis (see Table 1).

Quality assessment

The Cochrane risk of bias tool was used with slight modifications to assess the quality and risk of bias assessment for randomised control trials and non-randomised control studies (Higgins et al., 2011). The results of the quality assessment of RCTs and Non-RCTs have been summarised in Table 2.

The NHLBI tool was used to assess pre-post intervention studies' quality without any control group (National Institutes of Health [NIH], 2014). This tool comprises 12 statements, each of which is rated either 'yes', 'no' or 'uncertain'. Further, based on the overall rating, each study was classified as good, fair, or poor. Two reviewers rated each of the studies as per their observations on the given criteria. In case of disagreements, unanimity was achieved through discussion. The results of the quality assessments for pre-post studies have been summarised in Table 3.

Results

Table 1 summarises the salient features and key findings of the selected studies. The review's focus was to include those studies that have examined the psychotherapeutic effects of MBIs on suicidal behaviour. The sample used in the studies ranged from patients either having depression or personality disorder ($N=6$, 46.1%), school students ($N=2$, 15.3%); left-behind children ($N=1$, 7.69%), college students or youth ($N=2$, 15.3%); cancer patients ($N=1$, 7.69%) and veterans ($N=1$, 7.69%). About the type of MBIs used, the majority of studies had given mindfulness-based cognitive therapy ($N=6$). Two studies trained the participants on MBCT-S (mindfulness-based cognitive therapy, along with safety planning intervention for suicide). Other studies used MBSR ($n=1$), mindfulness meditation practice ($n=1$), mindfulness suicide prevention intervention ($n=1$) and 10-minute mindfulness audio for focused attention ($n=1$).

Summary of controlled studies (RCTs and non RCT controlled intervention studies)

The retrieved studies consisted of six randomised control trials (RCTs), and two studies used control arms but have not reported a formal randomisation procedure (Collins et al., 2017; and Nabipour et al., 2018). Collins et al. (2017) used a task-based experimental paradigm to see the

comparative effects of a 10 minutes mindfulness audio exercise and unfocused attention exercise on perceived burdensomeness (PB) and thwarted belongingness (TB) scores of college graduates. In the initial stage, the high PB/TB group reflected an increased desire to escape, but in the later phase, the group that received mindfulness witnessed the intervention's attenuation effects resulting in reduced suicidal desire. Nabipour et al. (2018) adopted a pre-post design and tested the effect of mindfulness on death anxiety and suicidal ideation on cancer patients. The eight MBCT training sessions resulted in a significant reduction of suicidal ideations and death anxiety in the experimental group. Hargus et al. (2010) studied depressed individuals who had experienced suicidal crises. It was seen that the group which received MBCT with TAU had significant post-treatment improvements in the meta-awareness. The authors concluded that this increased reflective ability after mindfulness might prevent future relapse. Forkmann et al. (2014) examined 130 patients who had residual depressive symptoms in a randomised controlled trial. These patients were randomly assigned to either a treatment group (MBCT) or a waitlisted arm. MBCT group showed significant post-treatment reductions in suicidal ideation.

Based on the cohen's d scores, it was seen that MBCT had a moderate effect size on suicidal ideation. Another study conducted by Forkmann et al., (2016) on chronic depressive patients used an active control group that was given CBASP, and a TAU group. The results reveal that on HDRS suicide item, both the groups show no difference, but when the suicide item for BDI was analysed, the MBCT group showed a significantly larger effect than the CBASP group. The study concluded that MBCT could be an effective psychotherapeutic intervention for addressing suicidal ideation in chronic depression. Britton et al. (2014) also examined the effects of mindfulness-based training on sixth graders and found a significant reduction in post-intervention scores of suicidal ideation and self-harming thoughts compared to the control group. The interpretation of effect size estimations of the mindfulness intervention group had a low to moderate effect size benefit over the active control condition. It was concluded that mindfulness could be useful in addressing suicidal ideation and self-harming tendencies. Barnhofer et al. (2015) used an active control condition, whereby 194 patients with suicidal history were randomly divided into MBCT, CPE and TAU groups. The MBCT group showed a significant reduction in suicidal cognitions in comparison to other control groups. The conclusion drawn from the study was that mindfulness prevents the recurrence of depression by weakening the link between depressive tendencies and suicidal cognitions. Lu et al. (2019) examined left behind children assigned randomly either to a mindfulness intervention condition or a waitlisted arm. The ANCOVA results revealed moderate between-group effects size. The study concluded that mindfulness

Table 1. Showing the summary and salient features of the included studies.

SL NO	Study	N	Design	Population	Intervention name	Control	Intervention length	Major outcome measures	Main outcome
1.	Hargus et al. (2010)	27	RCT	Depressed Participants	MBCT	TAU	The MBCT treatment comprised of eight weekly sessions and sessions were about 2 hours in duration.	BDI II, Relapse Signature of Suicidality Interview (ReSSI), Relapse signature specificity measure, Relapse signature meta-awareness measure.	In comparison to TAU group there were significant pre-post score changes in meta-awareness and suicidal specificity in MBCT group.
2.	Le and Gobert (2015)	8	Mixed method	Young Native Americans	A tailored mindfulness based youth suicide intervention programme	None	Intervention spanned over 10 weeks. Weekly Four sessions were given and each session was about 55 minutes.	Healthy Self-Regulation, Teen Conflict Survey, Patient Health Questionnaire,	The intervention led to better self-regulation skills, lower mind wandering, increased awareness relaxation and calmness and decreased suicidal thoughts
3.	Forkmann et al. (2014)	130	RCT	Patients suffering from residual depressive symptoms	MBCT	Waitlisted control	The training comprised of eight weekly sessions lasting for about 2.5 hours in a group of 10 to 15 participants.	KIMS, HDRS, PSWQ, RSS, Inventory of Depressive Symptoms was used for suicidal ideation(Dutch Version)	MBCT group reported significant improvement in self-reported suicidal ideation in MBCT group. These changes in suicidal ideation were independent from change in depression.
4.	Serpa et al (2014)	79	Prospective, longitudinal observational study	Veterans (Veterans Health Administration medical facility)	MBSR	None	A group of 10 to 15 participants were trained weekly. The sessions spanned over 9 weeks.	FFMQ, PEG scale, PHQ-9, GAD-7 and Short Form-12 (SF-12)	The MBSR training brought about significant reductions in post-intervention anxiety, depression and suicidal ideation scores.
5.	Britton et al. (2014)	101	RCT	Sixth-grade students	Mindfulness meditation practice	Students from African History course with a matched experimental activity.	Meditation module lasting 6 weeks	Youth Self Report (YSR), STAI-C, CAMS-R,	Mindfulness based meditation significantly reduced suicidal ideation as well as self-harm thoughts.
6.	Barnhofer et al. (2015)	194	RCT	Previously Suicidal Patients	MBCT and CPE	Cognitive Psychoeducation and TAU group	Eight weekly 2-hour sessions were given and one pre class interview was conducted	BDI-II, and Suicidal Cognitions Scale	In comparison to TAU and CPE group the MBCT group showed weaker association between levels of depressive symptoms and suicidal cognitions
7.	Chesin et al. (2015)	18	Quasi-experimental pre-post design	High suicide risk psychiatric outpatients	MBCT-S	None	9 weeks group based MBCT-S as an adjunctive therapy	BSSI, BDI-II, Beck Hopelessness Scale	The participants in the MBCT group displayed an overall reduction in suicidal cognitions.
8.	Chesin et al. (2016a)	10	Quasi-experimental pre-post design	Outpatient with mood and personality disorder who had a suicidal attempt history in past 6 months and currently endorsed suicidal ideation	MBCT-S	None	7 sessions of mindfulness meditation practice and 2 sessions of safety planning intervention, over a period of 9 weeks in group	LEIDS-R, FFMQ, The Self Compassion Scale-Short, RRS-B, The computerised Stroop Task (Stroop), CPT, The Buschke selective reminding, Benton Visual Retention Test.	MBCT S resulted into significant post intervention decreases in suicidal ideation as well as depression but no changes in hopelessness.

(Continued)

Table 1. (Continued)

SL NO	Study	N	Design	Population	Intervention name	Control	Intervention length	Major outcome measures	Main outcome
9.	Forkmann et al. (2016)	106	RCT	Outpatients with chronic depression	MBCT Intervention, CBASP Intervention	TAU, Another group was given CBASP	MBCT was conducted in eight weekly 2.5 hours group session. A pre class interview was conducted. CBASP Program consisted of two individual and group sessions in an eight weekly 2.5 hour sessions.	HAMD, BDI,	Significant reduction of suicidal ideation emerged on HAMD suicide item result for both MBCT group and CBASP group over the TAU group, while on BDI suicide item, results revealed only significant difference on MBCT group.
10	Collins et al. (2017)	92	Experimental design	Undergraduate student from Psychology class	Mindfulness Intervention, and Unfocused attention intervention	Four conditions: Two groups were without intervention that is, One group consisted of Low perceived burdensomeness (PB) thwarted belongingness (TB) and another group who has high scores in both PB and TB. One high PB/TB group received brief mindfulness intervention another high PB/TB group was given an unfocused attention intervention.	10 Minutes mindfulness audio exercise for both the intervention formats.	Freiburg Mindfulness inventory, interpersonal need questionnaire, Need to belong to the team, Kessler psychological distress scale, Self-injurious thought and behaviour interview (SITBI), and Intent, likelihood and readiness for suicide	The desire to escape response in all three high PB/TB conditions witnessed a linear increase in the initial stage of the task. In one condition which was given mindfulness intervention the linear increase was stabilised after a point which reduced the risk for suicidality in the comparison of other conditions.
11.	Nabipour et al. (2018)	30	Semi experimental with pre-test, post-test design	30 cancer patients	MBCT	15 participants were in experimental control group	Total 8 sessions of mindfulness based cognitive group therapy	Templer's Death Anxiety, BSSI,	MBCT led to a significant reduction in suicidal thoughts and death anxiety. MBCT was effective on female cancer patients
12.	Lu et al. (2019)	49	RCT	Left behind children	Mindfulness training module	Waitlisted control group	8 week mindfulness training program	MAAS, SAS, SES, PANSI	The children showed significant improvements in mindfulness skills and reductions in social anxiety and suicide ideation in comparison to other group.
13.	Raj et al. (2019)	30	Pre-post design	School Students	MBCT	None	The sessions were given in groups which spanned over 16 weeks. Weekly one session was taken which lasted for about 45 min to an hour.	MSSI, BDI, Satisfaction with life scale, LOT-R.	There were significant improvements in scores of life satisfaction, life orientation and significant decrease in depression scores and suicidal ideation.

The Leiden Index of Depression Sensitivity-Revised (LEIDS-R), The Five Facet Mindfulness Questionnaire (FFMQ), GAD-7 (Generalised Anxiety Disorder-7 item scale), The Response Style Questionnaire-Ruminative Responses Brooding Subscale (RRS-B), The Continuous Performance Test-Identical Pairs Version (CPT), The Modified Scale for Suicidal Ideation (MSI), Revised Life Orientation Test (LOT-R), Cognitive Behavioral Analysis System of Psychotherapy (CBASP), Mindful Attention Awareness Scale (MAAS), The Social Anxiety Scale for Children (SASC), Self-Esteem Scale (SES), The Positive and Negative Suicide Ideation (PANSI), Cognitive Psychoeducation (CPE), Beck's scale for suicidal ideation (BSI), Kentucky inventory of Mindfulness Skill (KIMS), Hamilton Depression Rating Scale (HDRS), Penn State Worry Questionnaire (PSWQ), Rumination on Sadness Scale (RSS), Pain Enjoyment General Activity Scale (PEG Scale), Patient Health Questionnaire-9 (PHQ-9), modified version of the Spielberger State-Trait Anxiety Inventory – Child version (STAI-C), Cognitive and Affective Mindfulness Scale (CAMS-R)

Table 2. Quality assessment of RCTs and Non-RCTs using Cochrane Risk of Bias Tool.

Serial No	Studies	Random Sequence Generation	Allocation Concealment	Blinding of Participants and Therapist	Blinding of outcome assessment	Incomplete outcome data	Selective reporting	Remarks
1.	Hargus et al. (2010)	-	+	-	+	-	+	Process of randomising was not explained clearly. Interviewers were blind.
2.	Barnhofer et al. (2015)	-	?	+	+	-	-	Follow up results were not reported clearly No information on allocation. No blinding.
3.	Britton et al. (2014)	-	?	+	-	-	-	Researchers who were assessing were blinded throughout.
4.	Forkmann et al. (2014)	-	-	+	+	-	?	Randomisation was done by using blocks of five. Allocation was done through codes given in envelope.
5.	Forkmann et al. (2016)	-	-	?	-	-	?	Randomisation was done using blocks. Computer generated allocation by independent allocator. Raters were blinded, however participants information not clear.
6.	Lu et al. (2019)	-	?	+	+	-	-	No information on process of randomisation. Blinding information concealed.
7.*	Collins et al. (2014)	-	?	+	+	-	-	No blinding was followed
8.*	Nabipour et al. (2018)	-	+	+	+	-	-	No blinding, all outcome was clearly reported

+ = high risk; - = low risk; ? = uncertain.

*Non RCT studies with control group.

Table 3. Summary of quality assessment for pre-post no control group studies using NHLBI quality assessment tool (NIH, 2014).

Study	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Criteria 8	Criteria 9	Criteria 10	Criteria 11	Criteria 12	Quality
Le and Gobert (2015)	✓	✓	✓	<	✓	✓	✓	✓	✓	✓	<	<	Fair
Serpa et al. (2014)	✓	✓	#	✓	✓	✓	<	<	✓	✓	✓	<	Good
Chesin et al. (2015)	✓	✓	✓	<	✓	✓	<	✓	✓	✓	<	#	Fair
Chesin et al. (2016a)	✓	✓	✓	<	✓	✓	<	✓	✓	✓	<	#	Fair
Raj et al., 2019	✓	✓	✓	#	#	✓	<	✓	✓	✓	<	<	Fair

(✓ YES) (< NO) (# UNCLEAR).

training could effectively lower suicidal ideation and reduces social anxiety in these children.

Summary of observational pre and post studies

The review had five observational pre and post-intervention studies that were based on findings of a single group. Chesin et al. (2015) used a nine-session MBCT-S intervention on psychiatric patients. The effect size of the intervention indicates moderate effects based on the scores on the depression scale. The findings indicate that MBCT-S helped in reducing depression as well as suicidal ideation in these individuals. In another study, Chesin et al. (2016a) examined the effect of a 9 weeks adjunctive MBCT-S intervention on executive functions and attention processes in high-risk suicide patients. The results suggested that MBCT-S may improve depressed patients' cognitive deficits, specifically in people with suicidal ideations and attempters. The authors also posited that improving executive attention with brief MBIs may be possible. Raj et al. (2019) used MBCT on adolescents to understand life orientation changes, life satisfaction, depression and suicidal ideation. MBCT helped in reducing ideation and enhancing life orientation and life satisfaction among adolescents. One study on the Native American community (Le & Gobert, 2015) used an ideographic pre-post analysis to understand the efficacy of a translated Mindfulness-based youth suicide prevention program. The intervention resulted in reducing suicidal thoughts among the youth.

Quality assessment

In the RCTs and Non-RCTs, the quality ranged from fair to good. In the observational pre-post studies, one study qualified as good, whereas others ($N=4$) qualified as 'fair' in the quality assessment. Inadequate description of participants' characteristics and lack of proper assessment of effect size estimates were the common limitations found in the studies.

Discussion

The past decade has witnessed increased interest and popularity of MBIs due to their treatment efficacy in various clinical and non-clinical conditions. This systematic review aimed to understand the effect of mindfulness interventions on suicidal behaviour in various populations. Understanding the dynamics of mindfulness-based interventions in reducing suicidal behaviour can be imperative to prevent people at risk. The present review included 13 evidenced-based studies that were published from January 2010 to March 2020. These studies have examined various mindfulness-based techniques that can have a direct and indirect impact on suicidal behaviour. The treatment effects of MBIs have been investigated on both the clinically diagnosed patients having a suicidal

history and individuals attending school/colleges having suicidal ideation. The evidence-based studies reviewed in this paper cumulatively indicate that MBIs may be beneficial psychotherapeutic approaches for people susceptible to suicidal behaviour.

Suicidality is not just determined by the presence of particular disorders or medical conditions but involves psychological factors that might cause such behaviour's recurrence. Based on the review, it was found that mindfulness-based interventions have shown promising results in improving executive functioning (Chesin et al., 2016a), life orientation (Raj et al., 2019), over general memory (Hargus et al., 2010), ruminative responses (Forkmann et al., 2014; Chesin et al., 2016a), meta-awareness (Hargus et al., 2010), death anxiety (Nabipour et al., 2018) and attention (Britton et al., 2014; Chesin et al., 2016a). These attributes are equally important in understanding the psychological mechanisms through which suicidality can be addressed. However, studies that reported the moderating effects of MBIs on these variables are limited in number. Therefore, pathways through which these variables influence suicidal behaviour remain unaddressed. Further clinical trials are required to study the moderating effects of these attributes on suicidal behaviour. Since most of the studies focused on suicidal ideation, conclusive evidence regarding MBIs' effectiveness on the recurrence of attempts also cannot be determined.

Mindfulness-based interventions have also been influential in the mechanisms proposed by theoretical models that directly correlate with suicidal behaviour. Collins et al. (2017) examined two important interpersonal factors of suicide that is, perceived burdensomeness and thwarted belongingness. (Joiner et al., 2009). Hargus et al. (2010) have emphasised autobiographical memories that act as triggers of suicidal behaviour which was given in a model proposed by Williams et al. (2007). These studies have established that MBIs have a positive impact on these factors. However, studies involving the impact of mindfulness training on these theoretical constructs are minimal.

The success of using mindfulness-based interventions is dependent on the proper assessment of suicidal behaviour as an outcome measure. Three studies have reported the pre and post effect of MBIs on an independent scale for suicidal ideation (Chesin et al., 2015; Nabipour et al., 2018; Raj et al., 2019). One study reported the effect of the intervention on a scale of suicidal cognition (Barnhofer et al., 2015) and another on a scale of positive and negative suicidal ideations (Lu et al., 2019). Two studies have used an interview to assess suicidal outcomes (Collins et al., 2017; Hargus et al., 2010). On the other hand, six studies have assessed suicidality based on the item given on a particular scale, which measures a different construct altogether like Beck depression inventory (Forkmann et al., 2016) or PHQ 9 (Serpa et al., 2014). Most of the studies have shown that MBIs significantly reduce suicidality. However, while tapping suicidal aspects from

indirect measures, there is a possibility of overlapping results. In such cases, it becomes difficult to segregate whether the intervention is effective in suicidality or because of the overall construct. The conclusive evidence of MBIs on suicidal behaviour can be superior if a measure that is solely used for suicidal ideation/suicidal behaviour is included as the outcome variable.

To conclude about the efficacy of MBIs in decreasing suicidal behaviour, the variability of mindfulness techniques must be taken into account. The content of the training protocol varied across all the studies taken for review. Eleven studies described the mindfulness module being used, while the intervention protocol for two studies is not clear. Furthermore, the length of the interventions can also moderate their effectiveness. The range of intervention length varies from 10 minutes (Collins et al., 2017) to 16 weeks (Raj et al., 2019). Brief mindfulness-based interventions can enhance executive functioning and impact depressive cognition (Chesin et al., 2015). Most studies have given 8 to 9 weeks of mindfulness training. More extended protocols are susceptible to attrition rates, which can compromise the replicability of the intervention. A standard intervention format that addresses critical components of suicidal behaviour must have consensus in the literature regarding the best practices of mindfulness in this context.

While understanding the efficacy of the intervention, implementation fidelity is a crucial factor. Fidelity determines the degree to which an intervention is delivered as intended. Intervention fidelity is primarily determined by three factors that is, trainer's competence, treatment differentiation and therapist adherence (Schoenwald et al., 2011). In most of the studies, the trainer's characteristics and detail of the intervention protocol of the sessions had been given. In some studies, the mindfulness training was given by certified therapists. Some relied on trained research assistants and teachers to give the intervention, whereas few studies have not adequately described the trainer's characteristics. In such a scenario, it is possible that some extraneous factors related to trainer's characteristics might influence treatment efficacy. Some studies have also made an effort to report the participant's experiences during the intervention process, which adds to the understanding of fidelity (Britton et al., 2014; Chesin et al., 2015; Le et al., 2015). The treatment differentiation and variability could not be assessed due to inadequate information. The threat of variation in treatment procedure of large scale clinical trials must follow specific guidelines.

This systematic review includes six studies that have used a randomised controlled design in understanding treatment efficacy on suicidal behaviour. Two studies using RCTs have used waitlisted controls (Forkmann et al. 2014; Lu et al. 2019), and one study used TAU groups

alone for comparison (Hargus et al. 2010). Overall, the studies pointed out that mindfulness-based approaches help reduce suicidal behaviour. However, waitlisted designs carry a possibility to overinflate the relative efficacy of the MBIs intervention. On the contrary, three RCTs have used an active control group along with TAU (Barnhofer et al., 2015; Forkmann et al., 2016) or without a TAU group (Britton et al., 2014). As reported in these studies, MBIs have a remarkable effect in treating suicidal behaviour compared to active control. Thus, an active control group will bring clarity in the specificity of effects and actual differences in the interventions used. Similar outcomes that mindfulness-based therapies have a positive impact on reducing suicidal behaviour have been reported by the observational pre-post studies as well.

Most of the studies included in the review have focused upon the immediate effects of MBIs on suicidal behaviour with either no or limited follow-up span. There was a single study which had a longitudinal design (Serpa et al., 2014). Although the effect size reported in maximum studies show a moderate to the good effect of MBI's on suicidality, there was insufficient evidence to understand the trajectories of skills use over time.

This review reports a few studies which have emphasised the adaptation of mindfulness-based interventions as per their culture and purpose (Chesin et al., 2015; Forkmann et al., 2016; Le & Gobert, 2015 and Lu et al., 2019). These studies point towards the possibility of cultural differences and their importance in shaping the individual's behaviour. The interactions of shared beliefs, values, norms and language have a significant role in practicing psychotherapy (Jacob, 2013). Maximum studies reported in this review are from various countries. There are differences in western and eastern cultures, and each country has its own cultural endowment. Future researches using mindfulness-based paradigms will necessarily have to be tailored according to the individual and their socio-cultural context.

Limitations and future recommendations

Few limitations of the review are that it did not include any unpublished literature, which could have added to the understanding of how mindfulness-based approaches work on suicidal behaviour. A formal meta-analytic review might supplement our preliminary analysis in vital and empirically sound ways. As is the case with all reviews, our assessment is susceptible to search bias. This systematic review strengthens our understanding of mindfulness-based approaches and their impact on suicidality. Further, due to the inclusion of studies from various regions, that is, America ($N=5$), Europe ($N=4$), Asia ($N=3$) and Australia ($N=1$), the cross-cultural aspects can be understood from this systematic review.

Given the new empirical research standards, the sample size of the many included studies is relatively small. More research with larger samples is required to understand the effect of mindfulness on suicidality. Future studies must look into understanding the specificity of treatment effects on suicidal behaviour. It can be understood promptly if an active control group is used along with MBIs. The choice of a validated outcome measure to assess suicidality will clarify the impact of the intervention on suicide. Future researches can make use of scales that assess suicidal outcomes to understand the treatment effects more aptly. Longitudinal studies might help understand the impact of MBIs on the recurrence of suicidal behaviour.

Conclusion

Based on the present systemic review, it can be concluded that mindfulness-based approaches are effective in reducing suicidal behaviour. It was also seen that MBIs have an impact on other psychological factors. These factors are extremely relevant as they influence suicidal cognitions. The review also mentions the methodological concerns such as sample size, design, treatment fidelity, use of active control and independent outcome measures that must be taken care of while implementing MBIs. It is suggested that studies can focus more on mindfulness-based strategies as preventive training procedures, especially in the non-clinical population.

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Role of Psychological Makeup in Psychological Rehabilitation of Acid Attack Victims

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Abstract

From eve-teasing to more aggressive forms of sexual violence, subjection of women to sexual violence has been on the rise. One heinous form of sexual violence is the acid attack. Acid attack refers to the intentional act of throwing acid on an individual with the intent of harming, torturing, disfiguring, injuring, or killing them. Despite an increase in the number of reported cases of acid attacks, the initial nonavailability of strict legislatures and underreporting of the crime have led to gross underrepresentation of the acid attack victims in the scientific literature. Moreover, most researches focus on the impact of acid attack and not on the process of recovery for these victims. Hence, this paper attempts to explore the role of psychological makeup in the psychological rehabilitation of acid attack victims. This study adopted the homogeneous purposive sampling method. The sample consisted of 30 female victims of acid attack between the age group of 18 to 25 years. The narratives of these victims focusing on their

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experiences before and after the incidence were collected. Findings of this study indicate that psychological makeup is an important variable that is responsible for the successful recovery from trauma. Nearly all of the victims have shown symptoms of maladaptive psychological makeup after facing a violent event. However, after participation in the rehabilitation program, the victims moved from having maladaptive psychological makeup toward having adaptive psychological makeup. The emergent subthemes comprising maladaptive psychological makeup consists of cognitive distortions, hopelessness, shame, and suicidal ideation; and for adaptive psychological makeup, these are positive life orientation, belief in the just world, and self-efficacy. The insights of the study will contribute to an improved understanding of the recovery process of the acid attack victims and help in planning intervention protocols for them.

Keywords

acid attack, psychological makeup, psychological rehabilitation

Introduction

With the spread of the feminist movement in the 1960s, women began stepping out of their houses and demanding equality (Krolokke & Sorensen, 2005). Further with the advent of the fourth wave of feminism around 2008 (Kimble, 2009; Munro, 2013), a fight to combat sexual harassment, sexual violence, and misogyny began. Sexual violence against women has been a constant problem since the beginning of time. Literature, art, and history all bear witness to several incidents of sexual violence. Despite serious efforts being put in by women and even by some men across the globe, sexual violence continues to blight our society. Besides minor forms of sexual victimization such as sexist statements and sexually tainted whistles, women face more severe types of violence throughout their lifetime ranging from domestic violence, rape, molestation, dowry death, and kidnapping (Mittal et al., 2017; Mittal & Singh, 2017). During the “Me Too” movement, many women reported incidents of sexual harassment and sexual violence. Still, it remains one of the most underreported crimes due to the prejudiced treatment of its victims by society and associated stigma. This lead to the experience of devalued identity and poor health and well-being that threaten the mere existence of the stigmatized group (Verma et al., 2019). Sexual violence is evil, with numerous manifestations ranging from eve-teasingto genital mutilation and rape. One such form of sexual violence is acid attack. Acid attack or vitriolage refers to the act of hurling acid on to a person with the intention of

harming, injuring, torturing, disfiguring, or killing them (Yeasmeen, 2015). Laura (2013) reported that in most of the cases of acid attacks, the perpetrator intends to disfigure the individual instead of killing.

From the data compiled by the National Crime Records Bureau (NCRB) of India, 83, 85, and 66 cases of acid attack were reported in 2011, 2012, and 2013, respectively, and a steep rise was noted in 2014 when the number of reported cases of acid attacks shot up to 309 (NCRB, 2014). The recent NCRB (2018) report suggests that there were 307 victims of acid attack in 2016. The data further reveal that 85% of victims of acid attacks are women. Another report by Acid Survivors Foundation (2015) indicates that acid attacks are gendered because more than 70% reported cases involve women as victims. In most of these cases, women are victimized due to anger over rejection and are indicative of a tendency to dismiss any positive regard for women. It is seen that many women were targeted because they rejected the romantic and sexual advances of these men, consequently providing a sexual connotation to this kind of violence (Mittal & Singh, 2019). There are also instances where a woman of the family is targeted just because the offender(s) wanted to take revenge from her family members. This indicates a general (mis)conception of considering woman as men's property. Hence, it would not be farfetched to consider acid attack as a form of sexual violence in India.

Incidents of acid attacks have also been on the rise for various cultural and societal reasons. The prevalent patriarchy in society adds to the problem of acid attacks. Women are still considered subservient to males, and their identity is often limited to a face. Women have often been considered a beautiful object, the utility of which exists only till the time she is aesthetically appealing. She is rendered useless once she is devoid of her outward beauty. This type of objectification views women as objects of male sexual desire which result in animalistic dehumanization of women (Loughnan et al., 2009). Such objectification further perpetuates acid attacks.

Another factor responsible for this crime is the unavailability of strong legislation. The acid, for a long time, was loosely available at any general store and thus the easy and cheap availability was a significant reason for the increase in the number of incidents of acid attacks. It was only after the implementation of the Criminal Law Amendment Act of 2013, following the recommendation of the Justice Verma Committee, that vitriolage was recognized as a separate offence (Government of India, Justice Verma Committee on the Amendments of Criminal Law, 2013).

For a long time, victims of the acid attack have been ignored with little known about their needs and issues. Due to the fear of secondary victimization and reprisals at the hands of their perpetrators, many acid attack survivors do not report the crime and bear the horrible consequences of disfigurement and

maiming (Mittal & Singh, 2018). As a result, the victims of acid attacks remain largely underrepresented in the scientific and other literature (Mittal & Singh, 2018). Also, whatever literature available focuses more on the details about incidents and not on understanding the consequences of such victimization and the needs of the victims (Mittal & Singh, 2018). Their visibility is further reduced as they withdraw and become socially isolated for fear of being at the receiving end of prejudiced treatment by society.

Considering an increase in the reported incidents of acid attacks (NCRB, 2018) and their underrepresentation in the literature (Mittal & Singh, 2019), more researches aiming to understand the issues, needs, and coping mechanisms of acid attack victims must be carried out. However, a systematic review of the literature indicates that very few researches have focused on this segment of the population. Most researches focus on the impact of the acid attack on the victims (e.g., Micheau et al., 2004; Nair, 2014), but there is a dearth of researches focusing on the factors that play a role in their coping process and psychological rehabilitation. Most books on victims of acid attacks also narrate their stories, but provide little to no insight into their coping process (e.g., Kapur, 2017; Qureshi & Singh, 2018). Hence, this study attempts to understand the role of psychological makeup in the psychological rehabilitation of acid attack victims.

Method

Sampling

For this study, homogeneous purposive sampling was done, and a sample of 30 female acid attack victims residing in the state of Uttar Pradesh, India, was chosen. All victims were young adults between the age group of 18 to 25 years.

Researcher's Positionality

As a woman living in a society where women are still considered to be subservient to men, the first author too has been at the receiving end of some of the sexist remarks and objectification. Often women have been viewed as sexual objects. As a psychology student, when the first author read the psychoanalytic theory proposed by Sigmund Freud, she noted that even the most pious relationship, of that of a mother and child, was not considered to be devoid of sexuality. When the first author interviewed female victims of rape as a part of a training program and got an opportunity to gain an insight into their needs and issues, she realized that victims of sexual violence may

still receive legal aid, compensation, and their offenders might get punished, but there is a lack of professional psychological help for these victims. Due to the prevalent social stigma surrounding sexual violence, victims often do not report their crimes and also avoid contacting people to seek support. Consequently, the authors realized that mental health and other professionals who deal with victims of sexual violence lack an understanding of their psychological needs, and the factors that may contribute to their coping process. These observations led the authors to take up research that aims at understanding one of the most underreported and less researched population, that is, acid attack victims. With the objectification of women at the core of acid attacks, the authors were driven to gain an understanding of their victimization experience and to explore the factors that contribute to their coping mechanism.

Procedure

For this study, homogeneous purposive sampling was done, which focuses on recruiting participants that share specific characteristics. At the time of the study, the participants were working at a café in Uttar Pradesh, which was being managed completely by the acid attack victims. Participants for this research were contacted through a non-governmental organization (NGO) named Stop Acid Attacks Foundation. Informed consent was obtained from all the participants. The purpose of the research was explained to them, and they were informed that the information provided by them would be kept strictly confidential and will be used only for research purposes. To maintain the confidentiality of the participants, identity codes were assigned to them. The narratives of the victims were collected by the first author. During the first few visits, only casual conversations were had to form rapport with the participants. Once the rapport was formed, efforts were made to collect true narratives about their experiences prior to and after the acid attack. The narrative taking was done in several sittings considering their work schedule and their willingness to talk about their life. Although efforts were made to record their true narratives focusing on their experiences of trauma and responses to the incident of the acid attack, the impact of the trauma was such that sometimes it was challenging for them to continue their narratives. At such points, some probe questions such as “How did your family members react?,” “Did your friends support you after the attack?,” and “What problems did you face in finding a job later?” were asked to facilitate collection of narratives. Whenever the victims showed signs of extreme grief while sharing their experiences, the narratives were discontinued, and the researcher (first author) tried to counsel and to console them.

The Intervention Protocol

The rehabilitation services to these victims were provided by an external agency, which was the NGO (Stop Acid Attacks Foundation). The procedures utilized by the NGO involved need identification and use of various interventions focused at removing shame and guilt, enhancing self-esteem and self-efficacy, providing social support, encouraging catharsis, removing cognitive distortions, and promoting acceptance of their victimization experience.

Results

Thematic content analysis of narratives of acid attack victims was done, and common themes pertaining to their psychological makeup were identified. A total of seven subthemes relating to the psychological makeup of the victims were identified, which were categorized into adaptive and maladaptive psychological makeup. Table 1 presents the themes, subthemes, and their descriptions that have emerged from the victims' narratives.

Psychological Makeup

Psychological makeup in this research refers to the cognitive element that motivates and causes reactions. It refers to a pattern of thoughts that motivates an individual to react in a particular manner. Depending on whether it improves the functioning of the individual or not, psychological makeup can be adaptive or maladaptive.

Adaptive Psychological Makeup

Adaptive psychological makeup improves the functioning of an individual by enabling them to take decisions and react in a resilient manner. Components of adaptive psychological makeup manifested among victims of the acid attack include positive life orientation, belief in just world, and self-efficacy.

Positive life orientation. Positive life orientation refers to the tendency of an individual to make positive evaluations of life, future, and oneself. Some of the victims were able to find something positive even in their experience of victimization. This could be seen in various narratives such as

Had he not attacked me, I would have probably continued living in the village.
But today, I am independent. (Participant 5)

Table 1. Showing the Common Themes Constituting Psychological Makeup of the Acid Attack Victims.

Theme	Subtheme	Description
Psychological makeup	Adaptive	
	- Positive life orientation	It refers to the tendency of making positive evaluations about oneself, life, and future.
	- Belief in just world	It refers to the thought process in which the victim believes that the offender will be punished for the crime committed by him and will pay for the injustice done by him.
	- Self-efficacy	It refers to the victim's belief in her innate ability to deal with prospective situation.
	Maladaptive	
	- Cognitive distortions	It refers to the biased ways of thinking about oneself and the world around us.
	o Overgeneralizations	
	o Blaming	
	o Fallacy of fairness	
	- Hopelessness	It refers to the emotion typically characterized by feelings of despair and lack of hope.
	- Shame	It refers to a self-conscious emotion characterized by feelings of distress caused by some wrong or foolish behavior.
	- Suicidal ideation	It refers to thinking or planning one's suicide.

I am glad that I am a source of inspiration for other women. Though I was victimized, my experience gives them courage. (Participant 7)

Thus, the above narratives indicate that positive life orientation emerged as a subtheme of psychological rehabilitation and reduced the psychological distress of the victims.

Belief in the just world. In this study, belief in a just world emerged as a belief in which the victim believes that the offender would be punished for the crimes committed by him and for the injustice inflicted on the victim.

Narratives of several participants were indicative of a belief in a just world. For instance, one participant said,

They say that God might get a little late in serving the justice, but he is always just. It is true. I suffered, but he is also suffering now. He thought he would ruin my life by disfiguring my face. But look at me today. I have a loving husband and a beautiful daughter, whereas he is behind bars. (Participant 13)

The above narrative indicates that believing in a just world reduced psychological distress of the victims by helping them to make sense of the world around them.

Self-efficacy. In the context of this research, self-efficacy refers to an individual's belief in her capabilities to positively affect their lives by producing a certain level of performance. Narratives of various victims indicate that strong belief in their self-efficacy enables them to gain confidence and deal effectively with their circumstances. For instance, one participant said,

I have broken down several times, but I have not given up. These were testing times. And now I know that I can face anything in life. I will not be defeated by the circumstances. (Participant 15)

Maladaptive Psychological Makeup

Maladaptive psychological makeup refers to a thought pattern that increases the level of stress and fails to contribute to gaining control over the adverse situations. Instead, it would hinder the individual's recovery from the traumatic process. Maladaptive psychological makeup is manifested in the form of cognitive distortions, hopelessness, shame, and suicidal ideation.

Cognitive distortions. Biased perspectives perpetuating psychopathological states are called cognitive distortions which can take several forms such as overgeneralizations, fallacy of fairness, and self-blaming:

- **Overgeneralization:** This occurs when an individual takes a few instances and generalizes over all the patterns. Acid attack victims often tend to believe that they would remain a victim for the rest of their lives and that they are defined by their victimization experience:

He victimized me, and now the society continues to victimize me. My life is over, and my struggles will continue for the rest of my life. (Participant 20)

- **Fallacy of fairness:** Individuals with this cognitive distortion tend to believe that life is fair in general. Sometimes, this belief might become pathological in nature. For instance, a participant said,

I must have done something in my past to deserve this. God only knows what Karma I have had. (Participant 16)

- **Self-blame:** Victims of acid attack sometimes tend to blame themselves for their victimization experience. One participant said,

Sometimes I think had I dealt with the situation differently, had I not objected to what he wanted then probably my life would have been better. Sometimes I feel I made mistakes and bearing the consequences of those mistakes. (Participant 2)

Such biased ways of thinking become a source of psychological distress for the victims of acid attack.

Hopelessness. Often victims of acid attack experience hopelessness for various aspects of their future life. Some victims would feel hopeless about finding a job, prospects of marriage, or about life in general:

I have to save money for my sister's marriage. I know I will never get married. It is not because I don't want to but because I know that no one would want to marry me with this face. (Participant 9)

Such feelings of hopelessness prevent the victims from actively coping with their circumstances.

Shame. Victims of acid attack often experience feelings of shame and feel that they lost respect as a result of their victimization. Some even experienced shame for reporting the crime as they felt that because their husbands committed the act, it should have remained a private affair:

My personal life has become public. What happens between a husband and a wife should remain between them. I know of a survivor who still lives with her husband and kids even though he threw acid at her face and disfigured her. Sometimes I feel I wasn't loyal enough. (Participant 1)

Suicidal ideation. Several victims of acid attack experienced suicidal ideation and spent considerable time thinking and planning about suicide which is manifested in several narratives such as

Every single day I would think of killing myself. Although I never actually tried, I used to think of killing myself so that my pain ceases and so that my parents' money would not be wasted. (Participant 9)

These results indicate that victims of acid attack may develop adaptive or maladaptive psychological makeup. Depending on whether they help in reducing stress reactions or prevent them to recover from their trauma. Victims with maladaptive psychological makeup manifest cognitive distortions and experience hopelessness, shame, and suicidal ideation, which were observed to reduce their likelihood to participate in the psychological rehabilitation process and seek help from other people. However, victims with adaptive psychological makeup were more likely to seek help from others, thereby increasing their chances of psychological rehabilitation.

It was also observed that the psychological makeup emerged as a process and not as a condition. Due to the incidence of the acid attack, nearly all victims before participating in the rehabilitation program developed maladaptive psychological makeup. However, as they began participating in the rehabilitation program, they moved from having maladaptive psychological makeup toward having adaptive psychological makeup. Nonetheless, two participants who could not participate in the rehabilitation program continued to report having maladaptive psychological makeup.

Discussion

For a long time, acid attack victims remained ignored and underrepresented in the literature and media. Several reasons contributed to their skewed representation. Stigma, patriarchy, misogyny, and weak legislations all had their fair share contribution to the rise of acid attack incidents. Most of the available literature on acid attack victims focuses on the facts about what happened. Little is known about the causes of this particular crime. Further, less is known about the struggles, issues, needs, and the factors influencing their recovery process. This study attempted to understand the role of psychological makeup in the psychological rehabilitation of the victims of acid attacks. The narratives of 30 female victims of the acid attack indicated seven subthemes constituting the psychological makeup of the victims. It is observed from these narratives that an effective psychological intervention help these victims to move toward adaptive psychological makeup from their initial maladaptive psychological makeup. This process of recovery depends on whether the psychological intervention enabled the victim to act in ways that would help them to recover or further contributed to their psychological distress.

Adaptive psychological makeup enables an individual to make decisions and react in ways that would help them gain control over adverse situations and would help them to avoid behaviors that increase their level of stress or are harmful to them. Components of adaptive psychological makeup as emerged in the narratives include positive life orientation, self-efficacy, and belief in just world. Victims who utilized effective coping techniques also manifested positive life orientation over time. They were able to find something positive even in the adverse circumstances existing in the aftermath of acid attack victimization. Several participants revealed in their narratives that earlier they were dependent on their husbands, but became independent and empowered after their attack and were free to make their own decisions. Past researches have related positive life orientation to optimism, emotional vitality, and emotional well-being (Agarwal et al., 1995; Pitkala et al., 2004). Fagerstrom (2010) has also stressed the importance of positive life orientation as the inner health resource. Another component of adaptive psychological makeup is the belief in a just world, which enables the victims to restore balance in the otherwise seemingly unjust world where they became innocent victims. Victims reported feeling that God will punish the offender and that he would suffer for the crime committed by him. Belief in a just world also leads to justice-driven reactions and is associated with subjective well-being (Dalbert, 2001). Victims reported that they believed in the criminal justice system that would ensure punishment to the offenders. According to some researchers (i.e., Lerner, 1980; Messick et al., 1985), belief in just world lead to an optimistic outlook of the future. Findings of the research by Bulman and Wortman (1977) also suggest that victims of aggression who believe in a just world report more positive affect than those who do not believe in a just world. Adaptive components of psychological makeup help the victims to reduce stress reactions which further serve as a source of self-efficacy. Findings of research conducted in the past indicate that various forms of victimization are associated with lower levels of self-efficacy (Benight & Bandura, 2004). As a result of effective intervention, acid attack victims were able to reduce their stress reactions.

Consequently, beliefs about their self-efficacy were strengthened. Victims revealed in their narratives that they felt that they could succeed without a man in their life, and take care of themselves and their loved ones on their own. Past researches indicate that a higher level of self-efficacy enables people to perceive threatening situations as significant challenges resulting in lesser levels of stress (Bandura, 1994). Also, researches indicate that high levels of self-efficacy are associated with better mental health (Bandura, 1988; Kim, 2003; Muris, 2002).

Maladaptive psychological makeup is manifested in the form of cognitive distortions, shame, suicidal ideation, and hopelessness. Abdullah et al. (2011)

too reported that victims of sexual violence might have a certain level of cognitive distortions, which results in hopelessness, helplessness, and self-criticism. Three types of cognitive distortions commonly observed among victims of acid attack are the fallacy of fairness, overgeneralization, and blaming. Some acid attack victims fall for the fallacy of fairness and believe that they deserve to be in a state of misery because of the sins committed in previous lives. These victims also report resentment when they feel that life is unfair, and their offenders have not been adequately punished. It was also observed that the victims of acid attacks often tend to blame themselves for their plight even though the situation was not in their control. Owens and Chard (2001) reported that victims of sexual abuse tend to focus on self-blame attributions. Findings of research by Branscombe et al. (2003) suggest that blaming oneself leads to more significant distress among rape victims. Acid attack victimization and re-victimization in the same or other forms incubate feelings of powerlessness and hopelessness and the victims often overgeneralize these feelings. Victims shared that if not the offender, they would continue to be victimized by society. Hence, victims start believing that they would always remain a victim and that the victimization experience would define them for the rest of their lives.

Findings of past researches indicate that various cognitive distortions have been found to have adverse effects of mental health and recovery. Owens and Chard (2001) found an association between cognitive distortions and increased post-traumatic stress disorder (PTSD) symptoms among rape victims. Beck (1963) stressed the role of cognitive distortions in increasing the symptoms of depression. Weishaar (1996) has also linked cognitive distortions to increased suicide risk. In addition to cognitive distortions, acid attack victims often feel that they have lost respect as a result of victimization. Sometimes they would experience shame for behaviors that were not in their control. Some victims even reported feeling bad about filing cases against their husbands as they felt that the crime was part of their private and personal life and should have remained private. This also tends to explain why victims often do not report the crime initially and often continue to stay with their offenders until things get out of hands. Shame is associated with various mental health symptoms after victimization (Shorey et al., 2010). Gilbert et al. (2004) reported that Asian women believe that their actions can bring shame and honor to the family. They also reported that the importance of maintaining the honor of the family was also associated with personal shame, which leads to their entrapment in difficult relationships. Victims of acid attack also experience hopelessness at times, particularly about their future life. Some victims felt hopeless about finding a job, prospects of marriage or about life in general. Hopelessness is often the outcome of cognitive

distortions and in itself is associated with several negative influences on mental health. Past researches have linked hopelessness with depression (Beck et al., 1975) and poor problem-solving skills in addition to increased suicide risk (Weishaar & Beck, 1992).

Therefore, the findings of this research indicate that victims with maladaptive psychological makeup were less likely to seek help from an external agency, thus reducing the possibility of effective psychological rehabilitation. However, participants who accepted the psychological rehabilitation program proceeded toward adaptive psychological makeup and were more likely to lead to a healthy lifestyle.

Conclusion

Acid attack is a heinous crime which has serious long-term consequences for the victims. This study provides an insight into the role of psychological makeup of the victims in their psychological rehabilitation. The cognitive element that motivates and causes reactions is called psychological makeup, which can be adaptive or maladaptive. It is observed that the participants had maladaptive psychological makeup after the incident of acid attack. However, following their participation in the psychological rehabilitation program, which was developed by the NGO, the victims moved toward developing adaptive psychological makeup. As no information was available about the victim's psychological makeup prior to their victimization, it is difficult to conclude that the psychological rehabilitation succeeded to undo the victimization experiences and to restore the victim to the pre-victimization stage (Mittal & Singh, 2017). However, an effective rehabilitation program seems to help the victims to integrate the understanding of the victimization experience into their understanding of themselves and the world, and to gradually return to a daily life routine in a more healthy and happy manner (Mittal & Singh, 2017). The insights of this study would help the development an intervention protocol for the victims of acid attacks and would also help in improving the understanding of the mental health professionals who would be willing to work in this area. The trauma resulting from other forms of sexual violence is likely to have similar impacts, and hence the findings of this study may have implications for victims of other forms of violence. However, such an assumption would require further investigation involving other forms of sexual violence.

The results of this study also indicate that an effective psychological rehabilitation must involve timely and comprehensive program to identify elements of maladaptive psychological makeup and to help the victims regain the components constituting adaptive psychological makeup which has been found to increase the likelihood of utilizing resources available for

psychological rehabilitation. Considering the mental health consequences of such victimization a psychological rehabilitation program may also involve mindfulness-based cognitive rehabilitation training as a treatment component of depression and mental health problems as well as to provide essential life skill training (Raj et al., 2019). This research is also expected to increase the visibility of acid attack victims in the scientific literature.

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Lived Experiences of the Indian Stigmatized Group in Reference to Socio-Political Empowerment: A Phenomenological Approach

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Lived Experiences of the Indian Stigmatized Group in Reference to Socio-Political Empowerment: A Phenomenological Approach

Abstract

The authors present the lived experiences of the stigmatized castes in the context of the opportunities made available by the government of India for their Socio-Political Empowerment. The study aimed to gain an understanding about the respondents' unique experiences of caste-based stigmatization at their workplace, their overall experience of empowerment at work and the other spheres of their lives, and to capture their perceived importance of, and the success of reservation policy as well as several other initiatives taken by the Government of India for empowering the marginalized castes. Semi-structured interviews were conducted with 10 male Schedule Caste/Schedule Tribe respondents working at respectable positions in the government organizations situated in the National Capital Region of Delhi. The phenomenological approach (Langdrige, 2007) was used to unearth the essence of the participant's experiences of stigma driven treatments. The overall perceptions and experiences of the respondents included experiencing direct and indirect forms of caste-related discrimination at workplace; experiencing economic, social and psychological empowerment but not at the workplace; favouring the policy of reservation for Schedule Caste/Schedule Tribe in government jobs; and believing in the improper implementation of policies in India. The research findings indicate the incomplete success of the governmental policies for the holistic empowerment of the Indian marginalized castes.

Keywords

Stigma, Empowerment, Marginalised Caste, Stereotypes, Discrimination, Phenomenology

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Lived Experiences of the Indian Stigmatized Group in Reference to Socio-Political Empowerment: A Phenomenological Approach

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The authors present the lived experiences of the stigmatized castes in the context of the opportunities made available by the government of India for their Socio-Political Empowerment. The study aimed to gain an understanding about the respondents' unique experiences of caste-based stigmatization at their workplace, their overall experience of empowerment at work and the other spheres of their lives, and to capture their perceived importance of, and the success of reservation policy as well as several other initiatives taken by the Government of India for empowering the marginalized castes. Semi-structured interviews were conducted with 10 male Schedule Caste/Schedule Tribe respondents working at respectable positions in the government organizations situated in the National Capital Region of Delhi. The phenomenological approach (Langdridge, 2007) was used to unearth the essence of the participant's experiences of stigma driven treatments. The overall perceptions and experiences of the respondents included experiencing direct and indirect forms of caste-related discrimination at workplace; experiencing economic, social and psychological empowerment but not at the workplace; favouring the policy of reservation for Schedule Caste/Schedule Tribe in government jobs; and believing in the improper implementation of policies in India. The research findings indicate the incomplete success of the governmental policies for the holistic empowerment of the Indian marginalized castes. Keywords: Stigma, Empowerment, Marginalised Caste, Stereotypes, Discrimination, Phenomenology

Introduction

The social world, at the global as well as at the specific contextual level is stratified and organized on the basis of various attributes/characteristics of people and their belongingness for example, to particular religions, beliefs, customs, races, and genders. The ubiquitous presence of diversity across the globe has become the seed for a number of ill practices happening against those who fail to acquire dominant positions in the society. One such practice is stigmatization which triggers demeaning behavioural repertoire constituting of discrimination, atrocities, exploitation, and exclusion against the stigmatized. It has been like an epidemic across the world. However, the grounds of such treatments may vary. Generally speaking, race, religion, gender, nationality, sexual orientation, and language have been potential indicators on the basis of which people, all across the globe, segregate the ones who are considered non-potential or non-benefiting interaction partners.

The phenomenon has been evident in various forms. There are research evidences of ill discriminatory practices happening against racial minorities, including African Americans, Blacks, and Hispanics, in their daily lives (Schuman et al., 2001), at their workplaces (Schiller,

2004), in the form of harassment, exclusion, and other subtle forms of biases (Roscigno, 2007). An equitably parallel understanding could be drawn about the lives of the people in India.

Caste finds a central place in the lives of the people in India (Jaspal, 2011; Kumar, 2017; Vaid, 2014) similar to what race signifies in the Western world. Indian society has always been oriented in terms of hierarchical relationships among the various castes embedded in it. Caste is understood as a socio-psychological phenomenon having great influences on many spheres of human social living particularly within villages (Jaspal, 2011). The social identity that a person carries determines whether he/she would be looked at with grace or be disgraced and devalued in the eyes of others. The social identity of people in India draws heavily from the mutually exclusive, relatively permanent social castes, each having a set of rigid or unchangeable customs, norms, and laws of its own (Kroeber, 1950). In accordance with the concept of Social Identity Theory (Tajfel & Turner, 1979), this has created fertile grounds for inequality and injustice to prosper, leading to the stigmatization of specific castes in the society (e.g., Schedule Castes, Schedule Tribes, and Other Backward Castes). The present study is an attempt to venture into the lived experiences of stigmatization and/or empowerment of Scheduled Caste/Scheduled Tribes employees at their respective workplaces and society and also to understand their perspective on the importance and success of reservation (affirmative actions taken by the Government of India to uplift the lives of the economically, socially, and politically weaker and the underrepresented section of the Indian society) as a step towards achieving socio-political empowerment.

Caste Stigmatization in India: Review of Literature

Stigmatization can be understood as the devaluation of people based on the characteristic features associated with them. These characteristics might be overtly visible, for example leprosy, overweight, physical disability, facial disfigurement, or on the other hand, might be related to the position of an individual in the hierarchical structure of the society, for example, individuals belonging to particular castes (scheduled castes, scheduled tribes, and other backward classes), socio economic class (economically weak or poor), religion, and sexual orientation (sexual minorities). Caste stigma is strongly represented in power dynamics, as something brought into deliberate actions by those in power against the relatively powerless group of people (Parker & Aggleton, 2003). The lower castes are treated as ineffective interacting partners in the interpersonal relationships and are devoid of any kind of any positive regard from the rest of the society (Herek, 2009). On the contrary, they are devalued, considered as immoral, flawed, impure, and tainted in the eyes of others (Goffman, 1963).

Stigmatization of particular castes in the Indian society has its roots and origins from the ancient mythological and religious texts; for example, *Manusmriti* wherein the people in the society were hierarchically segregated on the basis of *Karma* (occupation) or the kinds of the duties they were expected to perform in the social realm of their living (Hutton, 1946; Nesfield, 1885), and then on the basis of birth in particular kind of family. Brahmins were considered to be more closely related to education. They were the priests and they assumed the highest status and power in the society. The *kshatriyas* were the warriors meant to protect the civilization during the times of wars. *Vaishyas* were the business class given the duty of being traders. The lowermost division were called *Shudras*. Considered to be impure and dirty, their main role comprised of being manual scavengers, rag pickers, and the other workers concerned with cleaning. These distinctions also led to the centralization of power in the hands of those that were higher up in the social ladder of the caste system.

This led to the creation of lot of social inequality (Ambedkar, 1987) in the Indian society wherein those higher up in the social ladder were enjoying most of the power and privileges than those who were at the lower strata. This ascription of belonging to a lower caste

made the society stigmatise them as an impure, dirty, devalued, unfit interacting member and hence restrained them from accessing the mainstream socio-economic rights, facilities, powers, and privileges otherwise enjoyed by the rest of the society.

Because of the centralisation of the power in the hands of the upper castes, the lower caste individuals, known as Untouchables/Dalits (now nomenclated as Scheduled Castes and Scheduled Tribes) were not even able to uplift themselves socially, economically, and politically as they were devoid of the right of education, non-traditional roles, social interactions outside their caste, and any kind of say in the decision making about the issues prevalent in the society. “Dalit” is the term use to represent the ambiguous position of certain groups or communities in the Indian civilization (Rajkumar, 2010), someone who is crushed, destroyed, scattered, torn, or broken (Chatterjee, 2009). The untouchables are understood as those who have been subjected to intense exploitation and ill-treatment by the upper castes (Devi, 2003; Singh et al., 2009). According to Tripathy et al. (2016), Scheduled Castes and Scheduled Tribes are officially classified as the underprivileged social groups in India.

Being a socially constructed phenomenon (Dovidio et al., 2003; Kurzban & Leary, 2001), the effects of stigmatization are highly mediated by the particular social contexts in which it manifests itself (Crocker et al., 1998). In Indian society, the stigmatized castes are subjected to certain types of stereotypes, prejudices, and discrimination (Channa, 2005; Ram, 2013; Sinha, 2020). The discrimination could take many forms like exclusion, marginalisation, atrocities, abuse, and inaccessibility to certain rights otherwise enjoyed by the rest of the society including lack of education, political power, housing facilities, and health services (Devi, 2003; Shah et al., 2006; Singh, Rai, & Yadav, 2009). The presence of these practices only during the older times is a myth. Researchers have identified the still prevalent caste-related ill practices in overt and subtle forms in the various spheres and dimensions of social relations and interactions (Sooryamoorthy, 2006).

There have been unbiased evidences that this segment of the society still lacks the lived experiences of social inclusion, dignity in the society (Festino, 2015; Ghose, 2003; Gorringer, 2005; Parekh, 2005). Thus, the attempts for their empowerment appear successful only in theory and not in practise (Sharma, 1985). There have been extensive studies to show the demarcation of physical spaces along with ecological segregation (Judge & Bal, 2009; Vithayathil & Singh, 2012) between Dalit localities and the higher castes in rural as well as urban areas. The discrimination is also deeply acknowledged to exist in organisations in addition to public and private spheres of life (Ram, 2008). They have been incorporated in the teaching institutions, or government organisations by using the legislative policies of reservation but that is actually incorporation in unfavourable conditions (du Toit & Hickey, 2007) where they have entered these institutions but could not become the part of it.

There are also seen variations in the projection of discriminatory treatments towards the stigmatized. These come from more overtly expressed and rude kinds of practices for the lower castes who are poor or reside in the villages (Ambedkar, 1989; Shah et al., 2006) against subtler expressions of exclusion and discrimination for the rich or urban habitants (Sooryamoorthy, 2006). Beating of Dalits for keeping a moustache, for watching *garba* during the *navaratri* festival in Ahmedabad, lashing them for going through certain streets in the village otherwise reserved for the higher castes, are a few evidences of the same (Dhar, 2017). As a measure for protection of lower castes, the Indian central government implemented The Scheduled Castes and The Scheduled Tribes (Prevention of Atrocities) Amendment Act 2018 (The Gazette of India, Ministry of Law, Legislative Department, 2018). The central government has re-amended the Act which was diluted in 2016 to be implemented in its original form in 1989, wherein provisions are made for the immediate arrest of the accused without investigation even on the verdict of the single complainant with no provision for applying for anticipatory bail, for example.

Upward mobility to better occupations has been very minimal with a large section of Dalits still working at lower ranked jobs and only a minimal number amongst them have been able to climb the ladder up-to upper occupations (Deshpande & Palshikar, 2008). Dalits' exclusion from the private sector jobs was investigated by Jodhka and Newman (2007). It was found that this is due to the ingrained assumptions and preconceived notions among the private sector organisations about their historical past and background.

There have been Right To Information reports that indicate that the private sectors in India are not willing to recruit lower caste candidates for work, however they are willing to pay for their education and scholarships (Khan, 2019). In the government sectors the central government has given 15% reservation to Scheduled Caste (SC) and 7.5% to Scheduled Tribe (ST) community in promotions in government jobs (Sarda, 2018).

A number of studies mentioned in the text bring forth the existence of prejudicial, and discriminatory practices against the Scheduled Castes and Scheduled Tribes in some or the other forms at various facets of their lives. These include news articles (Khan, 2019; Sarda, 2018), studies conducted using the techniques of meta-analysis (Leslie et al., 2014; Thorat et al., 2016), narrative analysis (Festino, 2015), analysing the secondary data available officially (Sabharwal & Sonalkar, 2015), and survey (Jodhka, 2010), to mention a few. The present study seeks to gain the primary data in the form of the participants themselves (in person) sharing their experiences related to the domain of investigation by employing Interpretive Phenomenological Analysis (IPA). It was assumed to yield the most proximate picture of the participants' unique experiences embedded in their respective individual and collective worlds (Larkin et al., 2006; Tomkins, 2017) and the meanings they assign to such experiences (Smith, Flowers, & Larkin, 2009; Smith & Osborn, 2003).

Rationale for the Study

Societies across the globe have witnessed a number of rigorous attempts, in the changing time and space, to bring notable upliftment in the lives of those who have been living in the dearth of equitable conditions. With the incorporation of certain laws and regulations, for example, civil rights law enforced during the 1960s, attempts have been made in uplifting the lives and status of Blacks in the Western world and providing to them adequate representation in the socio-political domain of their living. With the coming of the so-called backward people to the socio-political upfront like Barrack Obama and Nelson Mandela, people sharing the same social identity witnessed an increased social representation in the society.

Similarly, innumerable attempts have been made for the upliftment of the stigmatized castes in India who, since time immemorial have been living in extremely debilitating conditions in the society. During colonial rule too, Britishers', even if to suit their own benefits, enactment of Indian Council Act of 1909, Government of India Act of 1919, and the Government of India Act of 1935 (Jain, 2006), paved the way for recruitment of Indians in the British governance, education, and upliftment of the untouchables and their children. However, these attempts were not free from ambiguities about intentions to bring upliftment (Ghurye, 1970). Dr. B. R. Ambedkar has been a key figure to address the issues related to caste untouchability and discrimination (Raghavendra, 2016). He stressed upon the right of the untouchables to use the resources otherwise available to the rest of the society, decentralisation of power in the hands of the devalued castes and asked for a separate electorate for them as he believed that their upliftment could only have been possible if they were given certain powers in the society.

Post-independence, the laying down of the preamble of Constitution of India (Pal & Pal, 2010), tabled in 1950, was a strong step to bridge the gap existent among castes in the

society which stressed giving fundamental rights and political powers to all the citizens of India irrespective of their caste, class, race, or gender. Reservations were also introduced for the upliftment of the socio-economic and political status of the devalued castes of Dalits with the effort of Dr. B. R. Ambedkar (Raghavendra, 2016). Reservations are the affirmative actions that were taken by the Government of India in order to uplift the lives of the economically, socially, and politically weaker and the underrepresented section of the Indian society in order to bring their social position at-par with the already dominant sections of the society. Reservations for the backward castes like Scheduled Castes and Scheduled Tribes constituted, among others, provision of reserving a particular percentage of seats in the public sectors jobs, all government and non-government educational institutions, civil services, and the governmental departments of union and state. Special provisions for the same were laid Under Articles 15, 16 (4), 17, 46, 243 (D), 330, 332, 334, 335, 341 and 342 thereby also providing to them special representation in the lower (Lok Sabha) and upper house (Rajya Sabha) of the Parliament of India. With the establishment of the Mandal Commission in 1978, recommendations of reservation for Other Backward Classes were introduced. Prevention of Atrocities Act 1989, implemented on 30th January, 1990, declared the practise of untouchability as an intentional crime under the Indian Penal Code (Pal & Pal, 2010).

With affirmative actions like these, numerous people belonging to the backward castes (Scheduled Castes/Scheduled Tribes) like Babu Jagjeevan Ram, Mulayam Singh, Mayawati, Lalu Prasad Yadav, Krishna Teerath, and Udit Raj could make their mark to the political upfront. This paved the way for the possible opportunities of getting adequate social representation by the people belonging to the lower castes in the society. But have these measures of providing representation to the marginalized caste groups on paper been successful in providing the actualized experiences of empowerment to them? This is what is needed to be explored. The impetus to conduct the present study came from the deep-seated quest to understand the experiential correlate of those who have been explicitly accorded with the benefits of affirmative actions taken by the Government of India to uplift their lives.

There is no denying over the fact that ever since the nation got independence, the Government of India has been taking painstaking efforts, since the incorporation of constitution of India under article 341 (The Constitution (Ninety-eighth Amendment) Act, 2014, p. 153) and from time to time, for the integration of stigmatized segments in the mainstream social, economic, and political community of India. The idea behind all these efforts is to bring drastic social change and provide economic, social, and political empowerment to the stigmatized groups.

However, it is also true that even after more than 6 decades of providing constitutional reservation (the opportunities of positive discrimination), the country has not been able to achieve what it aspired to achieve within the initial 10 years since the constitution of India was tabled in 1950. Leslie et al. (2014) suggest that the stigmatization is an unforeseen consequence of the affirmative actions taken by the Government of India meant for the empowerment of the backward and downtrodden castes of the Indian society. There has been a clear rise in the discriminatory and dehumanising practices against the Scheduled Castes and Scheduled Tribes by those who do not fall under the constitutional provision of reservation.

Hence, it is extremely important to explore whether the policy makers have done enough towards the empowerment of stigmatized groups in the society, or whether there is a need to make certain revisions in the reservation policy so as to be able to bring equality to the actualized experience of those who have been living in dearth of it despite the constitutional provisions available for the same. The above assertion is supported by the research findings on Caste based discrimination in educational institutions (Thorat et al., 2016), in urban and rural sectors of India (Ambedkar, 1989; Shah et al., 2006; Sooryamoorthy, 2006), against Dalit women (Festino, 2015; Sabharwal & Sonalkar, 2015), Dalit children (Nambissan, 1996), and

Dalit in employment (Jodhka, 2010) in addition to evidences provided in the literature review section.

The present study aspires to understand the caste-based experiences of Dalits employed in government jobs. It wishes to unravel the ground level experiential reality of those who have had utilized the reservation policy in getting into the government jobs. An understanding of these is expected to supplement the policy makers, and social workers with an additional insight of how could things be worked out to head towards achieving a state of equality (in all facets) which is not only penned down on paper but also finds its existence in the experience of all. At this backdrop, the present study attempts to explore and uncover the perceptions and experiences of Scheduled Caste and Scheduled Tribe employees working in the government organizations in reference to the opportunities provided to them for their socio-political empowerment. The study sets to provide answers for the following laid down question of inquiry

Research Questions

1. What are the participants' personal experiences of casteism at their workplace?
2. Do they feel empowered in any way?
3. What is stand of the participants on the concept of reservation and the attempts made by the Government of India for providing them with the opportunities of socio-political empowerment?

Researchers' Positions

The present study is conducted with a research position that draws from the constructionism approach. Social constructionism emphasizes the relational nature of human beings (Gergen, 2009). According to this approach, there is no single, hegemonic, or objective truth or reality, nor it is a tangible existence (Gergen, 1994). Rather, there are numerous realities that are subjective in nature and constructed in the minds of those who experience it during the dynamic interaction with the social world they are situated in (Burr, 2003; Guba & Lincoln, 1994) and the way it is understood at particular times (Blaxter et al., 2006). That means that the realities are embedded in the particular social context as (Crotty, 2010). The present position in the research also draws from social identity theory that belongingness to a particular social group has certain implications onto the behavior of individuals in response to the differences they share with others with respect to their social status (Tajfel & Turner, 1986).

We hold a core interest in the field of social psychology and an inclination to understand more about the experiences of those who are generally left out or feel dejection from the society who may or may not be known to the target but the target is bound to bear the consequences in some form or the other just because of their belongingness to a group that the society in general does not consider worthwhile to include in the mainstream (e.g., caste). As the first author, I have often come across the reserved caste individuals sharing their experiences of subtle and direct cues of rejection, non-inclusion, and non-acceptance by the non-reserved caste individuals. This initiated a quest to understand their in-depth experiences at their workplace and general sphere of life.

The second author of the study belongs to the Other Backward Class Category, one of the beneficiary caste groups that has been granted the opportunities for reservation according to the policies of the Government of India. In general, people who do not belong to any of the reserved categories, believe that the reserved caste individuals who have been provided reservation have been able to empower themselves economically, and therefore, there is no need to provide reservation opportunities to their children. Being from a marginalized section of the society, the second author has observed that there is a general dearth of acceptance by

the social world that has also gone to the extent of people saying that the reserved caste need not to be worried for working hard because they would anyways get success due to their caste status and not the capabilities. The instances like these have intrigued the authors to explore that are these experiences of being “not-required” common to several those who have attempted to empower themselves through the reservation policies or are these the individually driven experiences. This quest provided a major initiation to understand their experiences and perspectives as per the objectives of the study.

Method

The present study adopted a qualitative approach as it intended to encapsulate the participants' experiences in their natural social environment to yield rich and substantial elucidation of phenomenon pertaining to the present study (Creswell, 2012; Patton, 2002; Strauss & Corbin, 1998). The process of studying and explaining the meaning of the perception and experiences about a particular phenomenon as they get registered in the conscious awareness of the experiencing beings is called phenomenology (Langdridge, 2007; Moran & Mooney, 2002). Interpretive Phenomenological Analysis (IPA) was used in the study to systematically explore and get the most proximate picture of the participants' unique experiences embedded in their respective individual and collective worlds (Larkin et al., 2006; Tomkins, 2017) and the meanings they assign to such experiences (Smith, Flowers, & Larkin, 2009; Smith & Osborn, 2003). IPA acknowledges an important aspect of symbolic interactionism, according to which the meanings that individuals assign to their encounters in their personal and social world are the subjective constructions emerging out of their interactions with others. That means that individuals derive meanings of their experiences while communicating these experiences to others during social interactions. The study was taken up as a pilot research work of the broader Ph.D. research study that has been approved by the Delhi University research committee (DRC, Department of Psychology).

Participants

In-line with the objectives, an equitably homogeneous sample was selected for whom the purpose of the present study carried personal relatedness (Noon, 2018). The technique of criterion-based purposive sampling (Patton, 1990) was used to identify and select the participants who are presently working in a government organization for the past 10 years at least and who have been the targets of casteism and were eloquent about the same (Creswell, 2007). It was done to make sure that the participants for the study had relatively adequate familiarity with dynamics of the organizational functioning so as to be able to produce abundant and detailed account of experiences for analysis (Noon, 2018).

The appropriate size of the sample for conducting a qualitative study at the doctorate level is 4 to 10 (Clarke, 2010). According to Coyle (2014), the average size of the sample for conducting IPA is between 1 and 12. For the present study, participants were 10 Schedule Caste/Schedule Tribe male employees having placed at nearly similarly high organizational positions in the government organizations, situated in the National Capital Region of Delhi, including Assistant law officer, Chief Superintendent, Commercial Railway Inspector, Assistant Accounts Officer, and Assistant Executive Engineer. There has been research evidence indicating the stigmatization of people on the basis of gender resulting in women falling prey to heightened practices of discrimination and stereotyping at their workplace (Cihangir et al., 2013) as well as in the other spheres of their lives (Glick & Fiske, 1996, 2001; Sabharwal & Sonalkar, 2015). Therefore, the present study purposefully recruited male employees so as to nullify the probability of the role of gender as contributing to the

experiences of stigmatization at the workplace. The criteria for including participants for the present study were (a) the participants had at least 10 years of experience working in their respective organizations, (b) the participants identified themselves with their castes as Schedule Caste/Schedule Tribe, and (c) the participants were eloquent about their experiences pertaining to casteism or caste related exclusion or discrimination at their workplace. The participants' ages ranged from 40-60 years with the average age of 40.8 years. The identification of the participants with their castes as Schedule Caste/Schedule Tribe was evident when the participants reported applying for their present job through the particular SC/ST caste category to which they belong. The participants also consented to discuss their personal experiences of the caste-based treatments in the society and their respective workplace.

Data Collection

Interpretive Phenomenological Analysis orients to elicit the depth and texture of the personal subjective meanings that individuals assign to their experiences in the various facets of their lives (Smith, Flowers, & Larkin, 2009; Wedlock, 2016). For this purpose, we conducted semi-structured interviews to elicit the interpreted world views of the participants by engaging in detailed conversation with them (Smith & Osborn, 2008). A semi-structured interview schedule constitutes the non-directive, open ended questions that are prepared beforehand based on what the researchers expect/hope to understand from the participants in terms of the specific experiences related to the research objectives specified for the study (Smith & Osborn, 2008). For the present study, we prepared a semi-structured interview schedule on the basis of the three research objectives specified for the present study to gain in-depth understanding of the participant's perception and experiences related to their personal experiences of casteism at their workplace, their overall experiences of empowerment, and their personal stand on the success of reservation and other policies meant for their socio-political empowerment. The questions were amended and re-amended as per how the conversation unfolded with the individual participants. However, overall the questions formed were inclusive of, but not limited to, "Tell me something about yourself, your journey until now. How have your experiences been at your workplace? How have your relations been with the fellow colleagues? What kind of changes have you experienced in your life after joining this job/coming to the workforce? What is your general stand on the concept of reservation? To what extent do you feel reservation is important in the contemporary world?"

Identifying and getting the approval of SC/ST participants was not an easy affair as caste-based experiences is something that does not constitute the day-to-day discussions of the lower caste individuals openly. A prior appointment was taken from the participants who were approached and/or introduced to through the known relatives. After the participants had the purpose of the study explained, and after convincing them about the importance and relevance of this study for their own benefit, an informed written consent was taken from the participants who were willing to participate without any remuneration. They were assured about the confidentiality of their responses and identity.

We prepared a flexible framework of a few questions, beforehand which was followed loosely and was re-amended based on the answers provided by the participants. The flexibility in following the interview schedule has been evident to have an advantage in providing unexpected directions that the researcher might not have thought to venture into but it later proves to be beneficial in providing details on the issue considered relevant from the vantage point of the participants (Noon, 2018). Similar insights were also drawn in the present study as it was observed that the participants sailed through the interview interacting about the issue and concerns that matter to them the most pertaining to the present study. Prompts are often considered to be an important component of the semi-structured interviews which can be used

in case the participants are not able to comprehend the questions or try hard to extensively verbalize their experiences or opinions (Noon, 2018). However, in the present study prompts were used barely as the participants were able to talk at length about their concerns. On the participant's permission, the interviews were audio recorded to avoid missing any important information while analyzing the content. The interviews were conducted at the participant's natural work settings but having an undisturbed and peaceful atmosphere so as to avoid the responses of the participants to get adulterated because of unintended factors. The interview took place in a face-to-face one-to-one setting and each interview lasted for about 50-60 minutes. The interviews were later transcribed and any information revealing participants' identities was deleted to maintain their anonymity.

Analysis

We adopted interpretive phenomenological analysis for the present study. It followed a methodical investigation of the personal experiences shared by 10 Schedule Caste/Schedule Tribe male employees working at respectable positions in the government organizations of Delhi NCR (Tomkins, 2017). The analysis was meant to gain a deeper understanding about how the phenomenon (Moustakas, 1994) of stigmatization is perceived and experienced by the participants at their workplaces. For this purpose, we analyzed the transcripts to identify all the apropos, non- iterative, and non-overlapping disclosures about how the participants have experienced the phenomenon of stigmatization at their workplaces. We then congregated the assertions into different themes reflecting the essence or textures of their experiences.

For analyzing the transcripts, we followed the steps delineated in Noon's (2018) paper *Interpretive Phenomenological Analysis: An Appropriate Methodology for Educational Research?* as a guide. We traversed through the process of analysis following an idiographic approach in a sense that it was aimed to understand in-depth the unique experiences of each participant, their thoughts, perspectives, and beliefs with respect to the phenomenon under study (Cassidy et al., 2011). After that, we finally arranged the individually extracted themes in the form of broad themes (Smith & Eatough, 2006).

The step-wise progression in the process of analyzing the data is described as follows. At first, to ingress deeply in the experiential domain of the participants, we read and re-read the transcripts a number of times. The reading of the transcripts was also complemented by listening to the audio recordings of the participants in order to gain as proximate an understanding of the data as possible. While reading and re-reading the transcripts, we added notes alongside the texts. Since, what should constitute the note making is not restricted (Sparkes & Smith, 2014), in the present study notes were made regarding the particular observations or comments that best reflected the text in the transcripts. For the convenience of understanding and maintaining uniformity in stating the verbatim of the participants, we translated the Hindi verbatim to English in this paper. An illustration of note-making is presented in Table 1:

Table 1.

Text from the Transcript	Notes
<p>Interviewer: What is your stand on the reservation policy in India? What do you think and feel about it?</p> <p>Respondent: I feel that the reservation is very important for the lower caste individuals. However, the purpose for which the Government of India gave reservation, that purpose has still not got fulfilled. At the time when the constitution of India was getting framed, Dr. BR Ambedkar had put the provision of reservation so that representation can be provided to those who were devoid of their political rights, who were the target of atrocities. But, if we see, the seats reserved for SC/ST are still not fully filled half in Government posts.</p>	<ul style="list-style-type: none"> • Has Positive or favourable attitude towards reservation • Feels that the purpose of reservations remains unsuccessful. • Considers Dr. BR Ambedkar as the key figure to bring reservation in India. • Argues that seats reserved for the SC/ST's are still not even half filled and are vacant.

In the subsequent step, we attempted to transform the notes which were made from the original transcripts, into a relatively succinct locution. It was done with an intention for the locutions to unravel the quintessence of the verbatim from the transcripts. In this way, the phrases moved distant from the initial verbal expressions and headed closer to the conceptual framework while still being deeply connected to the participant's original verbatim. For the convenience of understanding and maintaining uniformity in stating the verbatim of the participants, we translated the Hindi verbatim to English in this paper. An illustration of the same is provided in Table 2.

Table 2.

Notes	Emergent Themes
Has Positive or favourable attitude towards reservation	Favours reservation.
Feels that the purpose of reservations remains unsuccessful.	The purpose of Reservation remains unfulfilled.
Considers Dr. BR Ambedkar as the key figure to bring reservation in India.	Gratitude for Dr. BR Ambedkar for introducing reservations.
Argues that seats reserved for the SC/ST's are still not filled fully and are vacant.	The Seats reserved for lower castes are not even half filled.

We then congregated the emergent themes together according to their homogeneity at the conceptual level (Smith & Osborn, 2008). While clustering them, there were certain themes that emerged as the supreme themes under which the sub-themes could be subsumed. There were certain other themes that did not relate to or synchronize well with the phenomenon under study. Those themes were abandoned. At this stage, we once again visited the transcripts and made certain that the emergent themes had meaningful connections with the raw verbatim of the transcripts and made sure that the themes reflected the essence of the raw data. However, at this stage the themes were worded in a way that was different from the actual verbatim of the participants but still remained intact with quintessence of the original response.

Subsequently, we organized the themes and the superordinate themes in the form of a table thus creating a rich reflection of the voice of the participant (Denovan & Macaskill, 2012). This procedure is followed with the verbatim account of each of the 10 participants. In moving from one transcript to the another, we ascertained that the findings of the previous transcription interfere the least in extracting the themes in the subsequent transcription. Thus, each transcription was considered in its own unique terms (Smith et al., 2009).

The final step in the process consisted of making of the final table of the main themes under which several sub-themes were placed based on Smith and Osborn (2008) guidelines. This was a process in which the selection of the themes was done on the basis of how elaboratively it was discussed in the transcription and they have been repeated in at least half of the transcripts (i.e., five). Thus, the textural and structural descriptions were combined in the final table to create a rich reflection of the voice of the participants.

Table 3.

Themes
<ol style="list-style-type: none"> 1. Experiencing Direct and Subtle Expressions of Discrimination. <ul style="list-style-type: none"> • The core reality is different than the apparent. • Knowledge of one's caste determines the attitude of others towards them. • Caste favouritism among the upper caste officers. • Feeling of disgust held for them. • Subtle expressions of casteism personally experienced by them. • Biases or stereotypes about the potentials of the lower caste held by higher caste employees. • Explicit and direct form of discrimination experienced at the workplace. • Fear of decentralization of power among the higher caste employees. 2. Experiencing Economic, Social, and Psychological Empowerment but not at the workplace. <ul style="list-style-type: none"> • A sense of economic empowerment. • Rise in the living standard. • Can pay for children's education. • Clear indication of discrimination at the workplace. • Difficulty in implementing decisions at the workplace. 3. Favourable Attitude towards Reservation. 4. Improper Implementation of Policies in India.

Qualitative enquiry rests on the premise of trustworthiness (Hoyt & Bhati, 2007; Morrow, 2005). We do acknowledge that the same could be ensured by taking into account various methods or steps. We followed here, Williams and Morrow (2009) according to whom trustworthiness could be ensured by following the following three criteria: integrity, equilibrium between subjectivity and reflexivity, and clear reporting of the unearthed findings. The integrity (or the adequacy) of the data (Morrow, 2005) was decided based on the variability of the participants in terms of their belongingness to different government organizations so that diversity of viewpoints and experiences could be captured. Also, saturation of the responses was another means to decide upon the adequacy of the responses to the interview.

It is important that the rigorous efforts that researcher(s) put in an investigation yield the results that encapsulate the findings which reflect the most unbiased, realistic picture of the phenomenon under investigation. In order to account for subjectivity-reflexivity equilibrium,

we followed the method of seeking feedback from the participants at relevant phases of the research process (Lincoln & Guba, 1985). This was done to crosscheck that whether the reality as discussed by the participants (subjectivity) coincided with how we have understood that (reflexivity). In order to provide a clear reporting of the findings, we attempted to provide thick descriptions of the answers to the research questions specified in the beginning and supplemented the findings by the verbatim account of the participants.

Results

The approach of hermeneutics was followed in order to interpret the findings that have been articulated by the respondents while discussing their experiences and perspectives in accordance with the research objectives of the present study (Dallmayr, 2009). At first, an attempt is made to put, in clear terms, what has been expressed by the participants regarding the understanding that they have derived out of their social experiences. The emergent thematic analysis delineates a set of four broad themes presented under the Results section. This is followed by a discussion section constituting the way these experiences have been made sense of, in the light of the available research, thereby going by the process of double-hermeneutics (Smith, 2004).

The final organization of the articulated sense of the participants resulted in four major themes pertaining to the essence of the varied kinds of experiences that the participants had at their workplaces pertaining to the phenomenon of stigmatization, their experiences of empowerment, and their perceptions and or their stand on the concept of reservation and several other attempts made by the Government of India for the socio-political and economic development of the Scheduled Castes and Scheduled Tribes- experiencing direct and subtle expressions of caste-related discrimination, experiencing economic but not social and psychological empowerment, favourable attitude towards reservation, improper implementation of policies in India (Table 3).

Experiencing Direct and Indirect Forms of Caste-Related Discrimination at the Workplace

The present theme attempts to highlight the distinct ways in which the participants have come forth with their experiential understanding of having fallen prey to caste-based discriminatory practices at the overt as well as at the covert levels at their respective workplaces and also what according to them make them experience that. The true reality is almost always apparent to others in its disguised form. This assertion was one of the significant components in the experiential pool of the respondents. Commenting on the overall condition of the workplace a 40-year-old Commercial Railways Inspector gently smiled and said,

Madam the true reality of people like us at the workplace is completely different from what may be visible to the people outside. Everyone outside might feel that we have achieved a lot, we are working in government organizations. But only we know what we are going through.

Experience of caste-based discriminatory treatment saddens Mr. A (A is used as a pseudonym), a 44-year-old Assistant Law officer when he shares his experience that the caste of the other person is an important indicator of how that person has to be behaved with or treated in general.

Till the time people don't know that a particular person belongs to SC or ST category, everything is normal and fine. But, as soon as they are aware about the caste membership of the other person their mentality changes. Even though it doesn't get reflected in their overt behaviour so explicitly, their opinions change which tends to manifest in their backbiting behaviours.

Caste-based favouritism was one of the significant findings found as a concern amongst the respondents. It was felt by the respondents that the upper caste employees are biased towards the employees of their own caste which according to them was a seed cause of a rise in the prejudiced and discriminatory treatments towards the marginalized caste employees which they reported to have experienced at their workplace. Mr. B, an employee, working as a Chief Superintendent argues:

If the boss belongs to an upper caste, he/she supports the employees belonging to their own caste. Being an employee I have personally undergone through this experience. The employees at the workplace keep feelings of disgust for people like us. They might not always say things overtly on face, but they do talk about us at our back, criticize us, they mostly ignore us.

Apart from the caste-based favouritism, the other root concern that disturbs the respondents was the presence of biases or stereotypes among the higher caste employees in the organization related to their potentials and capabilities to deserve their present position in the organization. The respondents were increasingly disappointed to share that the upper caste employees and officers in their department or their workplace hold onto the stereotypes that they are not capable for what they are positioned at. According to them these biases played an important role in the way they are looked upon and treated by the rest of others. This instils the feeling of being humiliated in the eyes of others among them. An Assistant Executive Engineer working for more than 15 years shared,

If it becomes known to others already that a person is a Shudra or belongs to SC or ST caste, a presumption gets formed that he/she is not capable. People think that the only reason we have been able to make it to our present job is through reaping the benefits provided by the reservation policy in the Indian constitution, otherwise we do not possess the requisite capabilities and potentials to be in this job.

Not only the indirect discrimination constituted the respondent's personal experiences but the blatant or what we call the direct discriminatory treatments at their workplace were also part of their experiential discourses. An Assistant Accounts Officer was angry when he shared that the concerned department in the organization held his promotion and promoted the general category candidate.

When exams happened for promotion, the people whom I had taught and gave training to were passed and I was failed intentionally because I belong to quota unlike them who all belonged to the general caste. So, somewhere or the other I am the sufferer.

Another respondent, a Chief Railway Inspector having a work experience of 20+ years shared the kind of inhumane treatment he had to go through and overcome the strong resistance from the rest of the department to let him enter his workplace for a month.

My entry in the job was most challenging. I was not allowed to enter in the office for a month because I am a SC person. I opposed that and had to take the required help to be able to enter the organization.

The respondents also attributed their experiences to the strong inability of the upper caste employees to see them progress in their work. According to the respondents their success would instill strong fear among the higher caste employees of losing their long-held power and supremacy over the lower caste employees. One Senior Electrical Engineer working at the electricity unit for the past 14 +years stated,

The actual situation is not the way we see it. In today's date if the lower caste people are moving forward and progressing in their lives, then the anti-reservation voices are becoming strong. Actually, they don't have a problem with the existence of reservation but they fear that they will lose their domination by allowing us to progress. Sometimes this resistance is direct and many-a-times it is more at the level of subtle expressions.

Experiencing Economic, Social and Psychological Empowerment Not at the Workplace

The present theme discusses the findings pertaining to the respondents' experiences of empowerment in the various domains of their lives. The respondents were asked about anything good that has happened after their coming into their present employment. Without a doubt empowerment at the economic level constituted majorly all the experiential discourses of the respondents. The 44-year-old Assistant Law Officer shared that,

Reservation policies have helped us to become economically empowered. We are also now able to get job opportunities in the government sector. This has helped us to raise the bar of our living standards, we have been able to build our own house, can now fulfil our needs and desires more easily. Our children can go to good schools now, and we can bear the expenses of their education and can provide them the opportunities where they can learn and grow.

Divergence was seen as the experiential content pertaining to social and psychological empowerment began to surface. Increased economic condition as a result of joining the governmental workforce was operant in reaping respect and better relations with their family members and people in their locality. It also nurtured a sense of worth amongst the respondents of being capable enough to help someone in need. The Assistant Executive Engineer shared: "People in the society now give respect to us. We also feel increased status in the society where we live. The family members also respect us who used to consider us incapable and unworthy." While discussing one of the instances, the Commercial Railways Inspector discussed how he has been now contributing to the study of a poor child.

We can also help someone now. There is this one child of my maid who does not have enough money to pay the school fee. I have taken that responsibility. It feels good from inside when we are able to be a positive change in someone's life. We feel as if we are worthy now.

However, there was an evident dearth of social and psychological empowerment at the respondent's respective workplaces. The experiences of discrimination at the overt and the subtle levels clearly indicate social disempowerment. And regarding the psychological

disempowerment, experiencing difficulties in taking and implementing work related decisions in their respective department was reported by all 10 respondents. For example, the Chief Superintendent asserted: “At work people don’t give heed to our opinions and our decisions are not valued so we find it difficult to implement them.”

Favourable Attitude Towards Reservation

The present theme discusses the respondent’s general stand or perception about the reservation policy in India. All of them favoured the existence of the reservation policies introduced by the government for the betterment of the lives of the people who have been living as marginalized sections of society for so long. One of the respondents working as Assistant Executive Engineer shared:

Reservation is very important. It has given the opportunities to people like us for social empowerment in the form of providing opportunities for education in schools and colleges that has helped them to increase their social status in the society. I am working because of this policy. This has been a major catalyst in increasing the self-confidence of the individuals to stand with others in the society. India is not in the position to remove it.

The respondents had a lot of gratitude towards Dr. B. R. Ambedkar who proved to be an influential figure for the upliftment of the backward classes. They emphasized that due to the upliftment that has taken place in the lives of the people, they owe a great deal to Dr. B. R. Ambedkar whose rigorous efforts became successful in providing reservations to the backward sections of the society. The respondent continues to share that

Dr. B. R. Ambedkar is our hero. He has done a lot for the upliftment of Dalits. If he had not been there, probably I would have been where I am. He initiated conversion of religion of people from Hinduism to others so that he could prevent any harm caused by the discriminatory practices prevailing against them.

Improper Implementation of Policies in India

The present theme highlights the respondents’ concerns regarding the unsuccessful and improper implementation of the various policies in bringing upliftment of the lives of the marginalized caste. The respondents see the purpose of the reservation policies becoming futile through its improper implementation. The respondents were highly sensitized about the fact that the sole purpose of reservation to provide representation to those who remained unrepresented and underprivileged for years has remained unfulfilled until now. One of the respondents, a Section Accounts Officer notes,

See, policies are made but are not implemented properly. If our constitution of India is implemented properly into action, then these policies are not even required. Our constitution gives equal rights to all. Now, even if the policies of reservation are there, not even half of seats have been filled. Ma’am, we are given 15% reservation in recruitment to organizations. But, due to anarchy those seats are pushed towards others, who may be of general caste or can be an Other Backward Caste.

Lack of awareness amongst the people about the existence of such policies was another reason according to the respondents, contributing to the inability of the people to take the benefit of them. And education was emphasized to be a tool of gaining awareness. The Chief Railway Inspector says, “Ma’am law is there, all the policies are also present but how will the reform come? Who can make use of the formulated policies? The educated. The uneducated won’t even know about law and policies.” Whereas, the Assistant Executive Engineer blames poverty for all the failure. “A poor fellow who is busy in arranging for two meals in a day won’t even know and bother about the policies and laws.”

A Composite Discussion

Caste-based discrimination has been a common practice in India since the very beginning getting evidenced in varied kinds of behaviours. However, the way it is expressed has changed over the years by becoming subtle in its expression in contrast to the more blatant expressions in the past. This is probably because the laws enforced in India do not give the authorization to practice the blatant expressions. This explanation seems plausible on the level of objective discussions of having no understanding of the actual experiences. What is understood from the interaction with the respondents is that the truth lies deeply seated in the interaction dynamics of the lower caste with the upper caste but never surfaces. And what is evident to the world is considered the truth. In a country like India, which claims to be at the travel road of achieving progress, equality, justice, and matching to the advancements of the globalized world, caste still remains a significant teaser in the minds of the people when it comes to forming impressions or developing attitudes towards others in the society.

Social identity theory aptly justifies the experiences of discrimination by the respondents which they support with the evidence of caste-based favoritism by the upper caste employees. Since everyone wants to maintain a higher status of the group to which one belongs (in this caste caste-group), the phenomenon of ethnocentrism can explain the experiential findings of the respondents where they have reported experiencing direct as well as indirect forms of demeaning and discriminatory treatments from the rest of the upper caste staff, whether it be colleagues or their bosses. In this way employees are made to feel as if they don’t belong to the “whole,” as if they are different in negative ways.

“It is not the individual who is considered capable or incapable, but it is the caste of that individuals which signifies or validates the potentiality or capability of that individual” is what the several experiences of the respondents of being treated by others revolve around. They are just not considered capable enough and it makes them suffer at the emotional level. The upper caste people are not happy to see the lower caste progress; this was a deep concern that came forward as considered-to-be one of the root cause of the respondents’ negative experiences at their workplace. The fear of decentralization of power by the upper castes was strongly reflected in the verbatim of the respondents. The psychological non-acceptance of seeing the lower caste at par with them, standing on the same pedestal can be related to the way they deal with the lower caste employees. Whether this state of non-acceptance is conscious or the upper caste employees unknowingly do that is a matter that demands further exploration.

It is not only that the marginalized caste groups have had only been subjected to discrimination or stigmatization in its various forms. From literature available it should also be acknowledged that the condition is not always unfavourable for them (Verma et al., 2018). The same can be understood from the respondents’ shared experiences in the present study, but in a different form. The participants were considerate about experiencing empowerment in various domains of their lives. The economic empowerment was associated with an enhanced social and psychological empowerment in their familial and social life, but not at their work settings. The findings presented in the results section point towards an understanding that non-

marginalized caste individuals at large are positive about seeing the marginalized caste prosper, but at the same time become reluctant towards them when they are sharing the same social platform (in this case the platform is their work settings) where they are not socially and psychologically empowered. Probably, fear of dominance amongst the dominant caste individuals prevails here.

Highly favourable attitudes could be found towards reservation amongst the respondents as it was the only tool perceived by them that has brought changes that they are experiencing today. But, improper filling-up of the specified percentage of seats reserved, lack of awareness, lower levels of education and poverty were important elements, according to the respondents of the present study, creating hurdles in actualizing the socio-economic, psychological, and political empowerment in various domains of their lives. Education makes an individual informed about what is going on around. And when we do not know if something is going wrong, it cannot be corrected. Above all, poverty hinders the path of achieving education which can make an individual aware. Thus, the loopholes are at the side of the system of not doing justice to what has been specified (Rajivlochan, 2019). Also there are certain loopholes at the side of the people at large who are not able to identify the loopholes of the system to correct it.

Limitation and Future Implications

We do acknowledge that the study was endowed with certain limitations. The present study focused upon the experiences of the participants working in the government sector only. The researchers could also be benefitted by expanding their understanding of the experiences at the private sectors as well. The sample size for the present study was only restricted to 10. Triangulation methods could also be used to ensure the reliability of the findings from various other sources. Further research can be directed to understand the coping techniques employed by the people for dealing with the various kinds of ill experiences related to their caste. Also, women and men's experiences could be studied separately so as to find if their experiences vary or come similar in the similar contexts. However, the results of the study have important implications in terms of providing a reality check of the extent to which the policies formulated by the government for uplifting the social status of the marginalized or disempowered have been successful or unsuccessful.

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Episodic Measurements of PM_{2.5} during Crop Residue Burning and Diwali Periods at Delhi

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ABSTRACT

This study reports the variation of PM_{2.5} levels during the episodic events i.e. Crop Residue Burning (CRB) and Diwali at Delhi. The PM_{2.5} samples (n=90) were collected on daily basis during Oct-Nov, 2018 and Dec, 2018-Feb 2019, at Central Delhi. The levels of PM_{2.5} during CRB were noticed higher ($200.1 \pm 12.1 \mu\text{g}/\text{m}^3$) than normal days ($180.5 \pm 10.1 \mu\text{g}/\text{m}^3$), showing significant atmospheric loading due to crop residue burning (CRB) and local sources of emissions. The sudden spike in PM_{2.5} mass concentration during the episodic event Diwali ($674.8 \mu\text{g}/\text{m}^3$), suggested that the local emissions due to burning of firecrackers deteriorated the air quality significantly. The concentration of PM_{2.5} was observed ~3.3 times higher than its average level during CRB period. However, the precipitation events during the study period had a major role in scavenging of the atmospheric pollutants and lowering the PM_{2.5} mass abundance as low as $53.5 \mu\text{g}/\text{m}^3$ and $60.9 \mu\text{g}/\text{m}^3$ during CRB and post CRB periods respectively.

Keywords: PM_{2.5}, Episodic events, Diwali, Crop residue burning, Environmental air pollution, Delhi

INTRODUCTION

In recent years, PM_{2.5} has become a severe environmental and health hazard in Indian megacities like Delhi (Tiwari et al., 2013; Gorai et al., 2018). The increasing occurrences of haze and smog episodes in Delhi (George et al., 2013), have not only accentuated national concern due to its adverse effects on health and climate, but also elicited the Indian government to develop some practical strategies to curtail the deteriorating air quality of the region. Furthermore, the geographical location, topography, and prevailing meteorological conditions, especially during post-monsoon and winter season, has made high particulate loading visible over Delhi and thus making the region one of the most extensively studied areas in the Upper Indo-Gangetic Plain (Sawhani et al., 2018). Several studies have reported that the levels of PM_{2.5} in Delhi have exceeded National Ambient Air Quality Standard (NAAQS) many times throughout the year (Guttikunda and Gurjar, 2012; Dey et al., 2012; Singh et al., 2016a; Chowdhury et al., 2017). Thus, increasing our understanding of the mass abundance of aerosols and their chemical composition of this region, is of utmost importance. Prevailing local meteorological conditions in any region, can influence day to day variability in the mass concentration of particulate matter. Meteorological parameters like temperature, relative humidity (RH), rainfall, wind speed, and wind direction have a complicated relationship with particulate matter levels that can vary with space and time (Wang and Ogara 2015; Schnell et al., 2018). For example, high RH and reduced wind speed can affect the dispersion of PM_{2.5}, which may be conducive for the formation of secondary aerosols. Tie and Huang (2017) explained the self-amplification mechanism by atmospheric moisture in which the shallower planetary boundary layer (PBL), resulted in increased RH and higher aerosol content. These aerosols undergo aqueous growth, and subsequently, secondary

aerosols are formed. These secondary aerosols dim the solar radiation reaching the Earth's surface, which further enhances RH, suppresses the planetary boundary layer (PBL), exacerbating the particulate matter concentration by forming a positive feedback cycle. Similarly, precipitation is one of the most effective scavengers in the atmosphere that washes out the air pollutant loading, thus lowering the particulate matter concentration in the atmosphere.

Various studies (Tiwari et al., 2012, 2013; Singh et al., 2016a; Chowdhury et al., 2019) conducted over Delhi, suggested that the ambient air quality of the region drastically deteriorates during CRB period as particles remain suspended in the atmosphere for a longer duration. Low temperature and the inversion layer caused by radiative cooling, weaken convection during this period. Moreover, during this time, the region also experiences reduced wind speed and decreased atmospheric turbulence; in these circumstances, the atmospheric particulate matter remains suspended in the atmosphere, leading to higher atmospheric particulate matter concentrations (Tecer et al., 2008). The presence of hygroscopic aerosols during this time, uptake the atmospheric moisture and get enhanced in their size, thus resulting in haze or smog formation leading to reduced visibility (Chen et al., 2012). The source apportionment studies of PM_{2.5} by many researchers (Pant et al., 2015; Singh et al., 2016a; Saxena et al., 2017), suggest that one of the significant phenomena that are responsible for deteriorating Delhi's air quality is crop residue burning (CRB), occurring in the neighboring states of Punjab and Haryana, during post-monsoon season. The particles and smoke emitted during CRB are easily transported to Delhi (Singh et al., 2016a; Sarkar et al., 2018) due to favorable wind direction. Additionally, the post-monsoon season coincides with Diwali festival in India, which is celebrated by burning firecrackers resulting in the emissions of gases and PM_{2.5} consisting of many toxic

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LCT BASED INTEGRAL TRANSFORMS AND HAUSDORFF OPERATORS

P. Jain, S. Jain, V.D. Stepanov

Communicated by R. Oinarov

Key words: LCT, linear canonical cosine transform, linear canonical sine transform, Hausdorff operators.

AMS Mathematics Subject Classification: 44A35, 26D20.

Abstract. In this paper, it is shown that certain Hausdorff operator and its adjoint are connected by linear canonical sine as well as linear canonical cosine transforms. The results have been proved in one as well as in two dimensions.

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1 Introduction

The Fourier cosine transform of a suitable function f is defined by

$$F_c f(y) = \sqrt{\frac{2}{\pi}} \int_0^\infty f(t) \cos yt \, dt.$$

According to a well known result of Titchmarsh ([16], Theorem 69), if $f \in L^2(\mathbb{R}_+)$ and $g = F_c f$, then the Fourier cosine transform of the Hardy averaging operator

$$Hf(x) = \frac{1}{x} \int_0^x f(y) \, dy$$

is the adjoint operator of the Fourier cosine transform of g

$$H^* g(y) = \int_y^\infty \frac{g(x)}{x} \, dx,$$

i.e., $F_c Hf = H^* F_c f$. By the same way one can prove that $H F_c f = F_c H^* f$.

Goldberg [4] extended this result by considering more general operators replacing H and H^* by, respectively,

$$G_\psi g(x) = \frac{1}{x} \int_0^\infty \psi\left(\frac{y}{x}\right) g(y) \, dy$$

and

$$G_\psi^* f(y) = \int_0^\infty \psi\left(\frac{y}{x}\right) \frac{f(x)}{x} \, dx,$$

with some restrictions on the function ψ . It is obvious that for $\psi = \chi_{(0,1)}$, the operators G_ψ and G_ψ^* become H and H^* , respectively. The above results of Titchmarsh and Goldberg are also true for the Fourier sine transform

$$F_s f(y) = \sqrt{\frac{2}{\pi}} \int_0^\infty f(t) \sin yt \, dt.$$

Intake of Ultra-processed Foods Among Adolescents From Low- and Middle-Income Families in Delhi

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Objective: To assess the contribution of ultra-processed foods to the macronutrient intake of adolescents from low- and middle-income families in Delhi.

Method: Adolescents ($n=1030$) aged 12-16 years from four private and four government schools of Delhi were interviewed using 24-hour recall (repeated on three days), and a food frequency questionnaire.

Results: The mean energy intake from ultra-processed foods was 371 kcal (16.2%) of the total energy intake. The mean intake of macronutrients from ultra-processed foods was 7.1 g (16.3%)

fat, 78.9 g (18.6%) carbohydrate and 4.8 g (10.9%) protein. Children from middle-income families consumed significantly higher ($P<0.05$) amounts of macronutrients coming from ultra-processed foods, as compared to those from low-income families.

Conclusion: Adolescents reported regular consumption of variety of ultra-processed foods, and measures to reduce this consumption and encouraging healthy food choices are urgently needed.

Keywords: Diet quality, Fast food, HFSS foods, Obesity.

A new classification of foods based on the extent and purpose of their processing has been developed as per a tool known as NOVA [1]. Foods are classified as minimally processed foods like pasteurized milk, packaged grains *etc.*, processed culinary ingredients like flours, sugar *etc.*; processed foods like butter; and ultra-processed foods, which are "extraction of substances from whole foods followed by their subsequent assembling with lots of additives and processing aids enabling the manufacture of products with long shelf-life, improved palatability *etc.* like breads, cookies, biscuits and ready to serve beverages [1]. Adolescents in India face a triple burden of malnutrition, overweight and micronutrient deficiency [2]. Excessive intake of energy from foods high in fat, sugar and salt (HFSS) leads to obesity and associated co-morbidities [3,4]. Ultra-processed foods tend to be high in fat and sugar and increase the energy density of the diet [5,6].

Indian studies on the consumption of ultra-processed foods are few and are focused on limited foods. The present study assesses the contribution of ultra-processed foods to the macronutrient intake in diets of adolescents (aged 12-16 year) from low- and middle-income families in Delhi.

METHODS

The study was conducted in one purposively selected

private and government/government-aided school each from North, South, East and West zones of Delhi between July, 2014 and July, 2016. Children from government schools belonged to low-income group and children from private schools belonged to middle-income group, which was verified using Kuppuswamy scale of socio-economic status (SES) classification [7]. Adolescents aged 12-16 years were enrolled by random selection of one section each from 7-11 grades in the respective schools.

A diet survey was carried out by using a pre-tested food frequency questionnaire and a 24-hour food record. The respondents were asked to record their frequency of consumption in the questionnaire, and actual consumption of foods and beverages for three days *i.e.* two working days and one holiday, in a food record. Intake of a food at least three times or more per week was considered as frequent consumption. The amount of food products consumed was assessed by using three and two-dimensional food models of standardized plates, glasses, spoons, ladles and bowls. For foods like chips, ready-to-serve beverages and confectionery, pack sizes were noted in order to assess the child's dietary intake for that food product. Ethical clearance was taken from the institutional ethics committee of Lady Irwin college. Written consent was taken from parents and assent from the school children.

Nutrient intake was calculated by using dietary assessment software, Diet Cal Version 5 (Profound Tech

Solutions Pvt. Ltd., Delhi, India) utilizing the nutrient composition data given by National Institute of Nutrition [8]. The contribution of all ultra-processed foods to the macronutrient intake in day's diet was assessed and compared across the income groups using an independent *t*-test or Mann-Whitney U test. P values less than 0.05 were considered as statistically significant.

RESULTS

Out of 1200 children recruited, 1030 (86%) adolescents (46% from private schools) were present on the day of collection of forms and provided completed forms.

The majority of adolescents (92%) consumed ultra-processed food items frequently. The mean daily intake of ultra-processed foods across income groups is shown in *Web Table I*. It was higher in middle-income group than low-income group. The contribution for macronutrients from ultra-processed foods across income groups was higher in middle-income group as compared to low-income group *Table I*. About 11-19% of daily macronutrient intake was from ultra-processed foods. The maximum contribution to energy intake from ultra-processed foods was by bakery products, followed by beverage concentrates.

DISCUSSION

The present study shows high intake of ultra-processed foods in the majority of adolescents, which was higher in middle-income group than low-income group. Intake of few ultra-processed food products has been reported in literature [2,5,9-13]. The mean consumption of carbonated beverages, fruit juices, ice creams and ready to serve fruit beverages was higher in a study [10] from developed countries than the present study. Previous studies [5,12] have reported lower mean intake of carbonated beverages than the present study. Data show a higher consumption of aerated drinks and chips regularly in school children in Delhi than the present study. This may be due to the difference in sample, age and income group studied.

Data from Comprehensive National Nutritional Survey [2] and National Nutrition Monitoring Bureau [13] reported that the intake for macronutrients and micronutrients was less than the recommended dietary intake (RDA) (10-19 year old children). Similar findings were reported in a study done in Delhi [9]. The present study did not look at the nutritional status of participants. However, a high consumption of ultra-processed foods, most of which are high in fat, salt and sugar and lacking in micronutrients, is disturbing. The fact that half the sample size was from low socio-economic groups shows that income is not a limiting factor and ultra-processed foods have penetrated all segments of society.

A limitation of the study was the difficulty in assessing portion sizes when respondents did not eat a full packet of the packaged product (e.g. chips) or a full portion size (e.g. piece of cake rather than a defined slice). Assessing the nutritional status of the respondents would have added more information.

Many reasons have been proposed for the high consumption of ultra-processed foods by children [2,5,13-15]. Consumption of these foods in excess could increase the risk of obesity and associated co-morbidities at a younger age. Attention needs to be given to availability of energy dense and HFSS ultra-processed foods in the home and school food-environment so that these foods do not replace fresh home cooked meals. Early introduction to the concept of healthy food choices in schools could help in ensuring better eating habits among growing children. The food industry also needs to pitch in by making available healthier food and beverage options which improve the nutritional quality of the diets of children of this country.

Contributors: AJ: design of study, data collection, data analysis and interpretation, writing paper; PM: design of study, data interpretation, writing and review of paper.

Ethics clearance: Institutional Ethics Committee of Lady Irwin College; ECR/12/INDT/DL/2014 dated May 06, 2014.

Table I Contribution of Ultra-processed Foods to Total Macronutrient Intake of Adolescents

Macronutrients	Middle-income family (n=475)		Low-income family (n=555)		All adolescents (n=1030)	
	Intake, mean (SD)	% Contribution	Intake, mean (SD)	% Contribution	Intake, mean (SD)	% Contribution
Energy (kcal)	*433 (245)	19.1	*315 (220)	13.5	371 (239)	16.2
Total fat (g)	*8.4 (6.9)	16.0	*6.0 (4.1)	16.7	7.1 (4.9)	16.3
Carbohydrate (g)	*91.3 (53.4)	21.4	*67.9 (48.4)	16.2	78.9 (51.7)	18.6
Protein (g)	*5.4 (5.0)	12.2	*4.2 (3.9)	9.8	4.8 (4.5)	10.9

Percent (%) contribution = nutrient intake from ultra-processed foods / Total nutrient intake; *Significant difference in mean intake between middle- and low-income adolescents ($P < 0.001$).

Akshay Jain

WHAT THIS STUDY ADDS?

- Adolescents from middle-income families consumed significantly higher amount of energy, fat, carbohydrate and protein coming from ultra-processed foods, as compared to those from low-income families.

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Web Table I Intake of Ultra-processed Foods in Adolescents From Low- and Middle-income Families

Food Items	Middle-Income group (n=475)		Low-Income group (n=555)		P value
	Frequent consumers, n (%)	Intake, g or mL	Frequent consumers n (%)	Intake, g or mL	
<i>Preserves and accompaniment*</i>					
Jam/Marmalade	190 (40)	*20.7 (10-33.3)	212 (38)	*20.4 (12-33.3)	0.88
Sauce/chutney	114 (24)	8.6 (2.4)	90 (16)	7.2 (3.3)	<0.01
<i>Confectioneries</i>					
Candies	67 (14)	*4.6 (1.3-4.6)	54 (10)	*4.2 (1.3-8)	0.02
Chocolate	18 (4)	16.7 (9.2)	12 (2)	15.5 (3.9)	0.68
<i>Bakery products</i>					
Biscuit	314 (66)	32.7 (13.4)	305 (55)	28.3 (15.1)	<0.01
Cake/pastries	40 (8)	23.5 (2.3)	0	0	-
Breads	252 (53)	56.2 (14.1)	216 (39)	55.1 (16.7)	0.54
<i>Beverage concentrate</i>					
Syrup/sherbet	185 (39)	49.9 (25.5)	164 (30)	45.3 (20.7)	0.07
Squash	49 (10)	75 (0)	0	-	-
<i>RTS beverages</i>					
Carbonated beverage	229 (48)	224.8 (85.9)	207 (37)	175.9 (51.8)	<0.01
Non-carbonated fruit beverage	66 (14)	193.9 (61.4)	48 (9)	127.7 (54.3)	<0.01
Fruit juice	17 (4)	169.8 (83.3)	0	0	-
Milk based beverage	5 (1)	60 (0)	0	0	-
<i>Miscellaneous food items</i>					
Breakfast cereals	77 (16)	42.1 (20.1)	28 (5)	30.9 (2.9)	<0.01
Sweetmeats	40 (8)	36.5 (12.1)	8 (1)	25.6 (8.3)	<0.01
Ice cream	59 (12)	37.5 (16.2)	109 (20)	16.7 (5.7)	<0.01
Savories (chips/namkeens)	35 (7)	18.7 (5)	30 (5)	17.5 (6)	0.43
Noodles/pasta	15 (3)	30.8 (12.9)	20 (4)	22.2 (11.5)	0.01

Intake in mean (SD) except *median (IQR); Intake of solid and semi-solid foods in grams (g) and beverage concentrates and RTS beverages in milliliters (mL); RTS: Ready to serve beverages; frozen vegetarian snacks and packaged meat products were consumed by 5 children each in only in middle income group and the median (IQR) intake was 10 (9,10) and 7 (6,7).

Alusrijan

Sex Differences in Mate Preferences Across 45 Countries: A Large-Scale Replication

Kathryn V. Walter , Daniel Conroy-Beam, David M. Buss, Kelly Asao, Agnieszka Sorokowska, Piotr Sorokowski, Toivo Aavik, Grace Akello, Mohammad Madallh Alhabahba, Charlotte Alm, Naumana Amjad, Afifa Anjum, Chiemezie S. Atama, Derya Atamtürk Duyar, Richard Ayebare, Carlota Batres , Mons Bendixen, Aicha Bensafia, Boris Bizumic, Mahmoud Boussena, Marina Butovskaya, Seda Can, Katarzyna Cantarero, Antonin Carrier, Hakan Cetinkaya, Ilona Croy, Rosa María Cueto, Marcin Czub, Daria Dronova, Seda Dural, Izzet Duyar, Berna Ertugrul, Agustín Espinosa, Ignacio Estevan , Carla Sofia Esteves, Luxi Fang, Tomasz Frackowiak, Jorge Contreras Garduño, Karina Ugalde González, Farida Guemaz, Petra Gyuris, Mária Halamová, Iskra Herak, Marina Horvat, Ivana Hromatko, Chin-Ming Hui, Jas Laile Jaafar, Feng Jiang, Konstantinos Kafetsios, Tina Kavčič, Leif Edward Ottesen Kennair, Nicolas Kervyn, Truong Thi Khanh Ha, Imran Ahmed Khilji, Nils C. Köbis, Hoang Moc Lan, András Láng, Georgina R. Lennard, Ernesto León, Torun Lindholm, Trinh Thi Linh, Giulia Lopez, Nguyen Van Luot, Alvaro Mailhos, Zoi Manesi, Rocio Martinez, Sarah L. McKerchar, Norbert Meskó, Girishwar Misra, Conal Monaghan, Emanuel C. Mora, Alba Moya-Garófano, Bojan Musil, Jean Carlos Natividade, Agnieszka Niemczyk, George Nizharadze, Elisabeth Oberzaucher, Anna Oleszkiewicz, Mohd Sofian Omar-Fauzee, Ike E. Onyishi, Baris Özener, Ariela Francesca Pagani, Vilmante Pakalniskiene, Miriam Parise, Farid Pazhoohi, Annette Pisanski, Katarzyna Pisanski, Edna Ponciano, Camelia Popa, Pavol Prokop, Muhammad Rizwan, Mario Sainz, Svjetlana Salkičević, Ruta Sargautyte, Ivan Sarmány-Schuller, Susanne Schmehl, **Shivantika Sharad**, Razi Sultan Siddiqui, Franco Simonetti, Stanislava Yordanova Stoyanova, Meri Tadinac, Marco Antonio Correa Varella, Christin-Melanie Vaclair, Luis Diego Vega, Dwi Ajeng Widarini, Gyesook Yoo, Marta Zat'ková, Maja Zupančič

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Abstract

Considerable research has examined human mate preferences across cultures, finding universal sex differences in preferences for attractiveness and resources as well as sources of systematic cultural variation. Two competing perspectives—an evolutionary psychological perspective and a biosocial role perspective—offer alternative explanations for these findings. However, the original data on which each perspective relies are decades old, and the literature is fraught with conflicting methods, analyses, results, and conclusions. Using a new 45-country sample ($N = 14,399$), we attempted to replicate classic studies and test both the evolutionary and biosocial role perspectives. Support for universal sex differences in preferences remains robust: Men, more than women, prefer attractive, young mates, and women, more than men, prefer older mates with financial prospects. Cross-culturally, both sexes have mates closer to their own ages as gender equality increases. Beyond age of partner, neither pathogen prevalence nor gender equality robustly predicted sex differences or preferences across countries.



Reasons for Facebook Usage: Data From 46 Countries

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INTRODUCTION

Seventy-nine percent of internet users use Facebook, and on average they access Facebook eight times a day (Greenwood et al., 2016). To put these numbers into perspective, according to Clement (2019), around 30% of the world's population uses this Online Social Network (OSN) site.

Despite the constantly growing body of academic research on Facebook (Chou et al., 2009; Back et al., 2010; Kaplan and Haenlein, 2010; McAndrew and Jeong, 2012; Wilson et al., 2012; Krasnova et al., 2017), there remains limited research regarding the motivation behind Facebook use across different cultures. Our main goal was to collect data from a large cross-cultural sample of Facebook users to examine the roles of sex, age, and, most importantly, cultural differences underlying Facebook use.

Cultural Differences

According to Clement (2019), the current total number of active monthly Facebook users is ~2.45 billion, including 183 million from the USA and 307 million from Europe, together constituting only 2% of the total number of Facebook users. Nevertheless, most previous research has focused on these two populations (e.g., USA: Ellison et al., 2006, 2007; Lampe et al., 2006; Stern et al., 2007; Raacke and Bonds-Raacke, 2008; Sheldon, 2008; Ophus and Abbitt, 2009; Pempek et al., 2009; Valenzuela et al., 2009; Smock et al., 2011; Europe: Joinson, 2008; Brandtzaeg and Heim, 2009; Madge et al., 2009; Selwyn, 2009). This leaves the remaining 98% of the world's population of Facebook users almost unattended.

Among a few noteworthy exceptions, Abbas and Mesch (2015) investigated the role of cultural values in motivations for using Facebook among Palestinian youth in Israel. Blachnio et al. (2016) explored cultural and personality determinants of Facebook intrusion among eight countries from three continents. Jackson and Wang (2013) compared American and Chinese societies on the use of social networking sites. Finally, Ji et al. (2010) examined the use of social network services across American, Korean, and Chinese populations.

It is, thus, not surprising that many scholars stress the importance of cultural differences with regard to Facebook usage (Nadkarni and Hofmann, 2012; Wilson et al., 2012; Hsu et al., 2015), as cultural norms affect one's behavior in the context of online communication (Gevorgyan and Manucharova, 2009). For instance, people from individualistic cultures more often seek out information on social media sites, while people from collectivistic cultures tend to use social media more with an aim to obtain emotional support (Kim et al., 2011; USA & South Korea). The results of a study by Hsu et al. (2015; Australia, Austria, Japan, Taiwan, and USA) provided similar results, highlighting a major role of socialization and self-presentation in Facebook use among users from collectivist cultures.

Not only do scientists acknowledge the likely existence of cross-cultural differences in general motivations to use Facebook among distant and distinctive cultures (Wilson et al., 2012), studies also report differences in Facebook behaviors between seemingly similar countries (e.g., Strayhorn, 2009; Tsoi and Chen, 2011; Nadkarni and Hofmann, 2012). For example, people

using Facebook in the UK value group-related content more than American users do, whereas Italian users rate groups and games as their most important online activities. It has also been reported that Greek Facebook users are less concerned with status updates in comparison with British, Italian, American, and French users (Vasalou et al., 2010). French users rate the motive of keeping in touch as more important than do Hong Kong users, while Hong Kong users display stronger preferences for communication, seeking and sharing information through Facebook (Tsoi and Chen, 2011). Finally, ethnic minorities appear to use Facebook more often than Caucasians do (for a review see: Nadkarni and Hofmann, 2012); scholars of a non-Caucasian origin also use Online Social Networks more frequently than their Caucasian counterparts (Strayhorn, 2009).

Sex Differences

Are there sex differences in Facebook usage? According to Clement (2019), 54% of Facebook users declare to be a woman. Research conducted by Lin and Lu (2011; Taiwan) showed that the key factors for men's Facebook usage are "usefulness" and "enjoyment." Women, on the other hand, appear more susceptible to peer influence. This is concurrent with the findings of Muise et al. (2009; Canada), in which longer times spent on Facebook correlated with more frequent episodes of jealousy-related behaviors and feelings of envy among women, but not men. Similarly, in Denti et al. (2012), Swedish women who spent more time on Facebook reported feeling less happy and less content with their life; this relationship was not observed among men.

In general, women tend to have larger Facebook networks (Stefanone et al., 2010; USA), and engage in more Facebook activities than men do (McAndrew and Jeong, 2012; USA; but see Smock et al., 2011; USA, who reported that women use Facebook chat less frequently than men). Another study (Makashvili et al., 2013; Georgia) provided evidence that women exceed men in Facebook usage due to their stronger desire to maintain contact with friends and share photographs, while men more frequently use Facebook to pass time and build new relationships.

Age Differences

Early research showed that younger Facebook users tend to spend more time on Online Social Networks, and have a greater number of Facebook friends compared with older users (Joinson, 2008; UK). At the same time, young people are more likely to increase their profile's privacy. This may be due to the fact that older users have a relatively limited number of friends on their online friends list, typically invited, or accepted more carefully, thus, their need to secure their privacy is lower than among young users, who have a wider variety of friends, some of whom they met online (Dhir et al., 2017). This course of explanation is in line with Quinn et al. (2011; UK), who provided evidence that younger users (aged 15–30) have on average 11 times more Facebook friends than do older users (aged 50+).

Despite the fact that not all Facebook users are adolescents or young adults, most studies to date have been conducted specifically among such populations, leaving more mature users unattended (Manzi et al., 2018; Italy, Chile). Among the few

exceptions are the studies of Oleszkiewicz et al. (2017), who examined emoticon usage on a large, diverse sample; Ancu (2012), who investigated motives for Facebook usage among American elders (50+); Newman et al. (2019), who attempted to develop a measurement of social network site use in older adults (UK); and Rattanasimakul (2015), who compared motivations and gratifications of Facebook use among three age groups (Thailand). Thus, building on the aforementioned research, one of our goals was to examine Facebook activities among different age cohorts (including middle-aged and senior adults).

The Current Data

Conducting studies within only a limited number of countries or only within “Western” countries limits general conclusions about online social networking, as culture is an important predictor of various aspects of human behavior, including Facebook use (Nadkarni and Hofmann, 2012; Wilson et al., 2012; Hsu et al., 2015). To fill this gap, we aimed to investigate differences in reasons for Facebook usage (i.e., individual activities that draw people to use Facebook), using a large-scale cross-cultural sample (examining also sex and age of our participants).

MATERIALS AND METHODS

Participants

A total of 16,465 individuals from 46 countries (68 study sites) participated in this research. Of these, 11,765 participants reported using Facebook and thus were included in analyses (see **Table 1**), whereas 4,700 (28.5%) were excluded from further analysis as individuals who did not meet the study criteria (i.e., do not use Facebook), or did not complete the questionnaire.

In order to create as diverse and yet comparable samples from each country as possible, members of the research team were instructed to recruit half of their participants from samples of local students, and the other half from the local community at large. From study sites that kept records of the source of their samples (22 countries), 47.14% of participants came from community samples. We exercised great care to ensure similar recruitment methods in all study sites, which included poster adverts, emails, and word-of-mouth. Participants were not compensated for their participation in the study.

Procedure

Prior to data collection, the corresponding author discussed the questionnaire with all the collaborating research groups. In those countries where English was not a first or primary language, participants could complete the questionnaire in their native language. This procedure involved translating the measures from English into the native language, and then, by a different collaborator, back-translating the questionnaire items into English. Any differences in translated versions were then discussed until an agreement was made on the most appropriate translation (Brislin, 1970). If there was more than one study site from each country, all local groups were asked to participate in the translation process.

As internet surveys tend to be under-representative, especially in developing countries (Batres and Perrett, 2014), all data

were collected in person by a network of research teams. The instructions for participants were as follows: “You are being asked to participate in an anonymous survey study. Your participation is entirely voluntary. This survey was designed to compare various variables and constructs around the world—it will be completed by participants in 40 countries. Please remember that there are no right or wrong answers in this survey (what matters are your opinions). If you wish to participate, please continue with the questionnaire. If not, please do not complete the questionnaire” (English version). After providing informed, written consent to participate in the study, participants were given a set of questionnaires, including the current Facebook scale, and several unrelated questionnaires in the context of a broader cross-cultural research project (see e.g., Conroy-Beam et al., 2019a,b). (1) The instructions for completing the Facebook scale were as follows: “Do you use Facebook? Yes/No (if no, please continue to the next scale); (2) Please use the scale below (ranging from 1—very rarely, to 5—very often) to assess how often you use Facebook for the following purposes” (see *Measures* below). Participants completed questionnaires in ~30 min. Data were collected simultaneously across all locations, and then coded, standardized, and merged into one dataset.

Measures

We examined individual reasons for Facebook usage using a 13-item scale, constructed for the purpose of this study and based on previous research (Steinfeld et al., 2008; Vasalou et al., 2010; Wilson et al., 2012; Krasnova et al., 2017). The scale listed the most common and recurring reasons for Facebook use: to keep in touch with friends, reconnect with people with whom one has lost contact, relieve boredom, organize or join events, join groups, to present one’s opinions and beliefs, see what friends are doing, inform others of what one is doing, post and share photos, write private messages, make new friends, date new people, and look at the profiles of people one does not know (see <https://figshare.com/s/68f306f31958d9a5c0c0>, for English version of the scale). Participants reported how often they use Facebook for each of the 13 aforementioned reasons (on a Likert scale, ranging from 1—very rarely, to 5—very often). The questionnaire also included basic socioeconomic measures (e.g., sex, age, material situation, see database under the link: <https://figshare.com/s/68f306f31958d9a5c0c0>).

Strengths and Limitations

The present dataset has several strengths, which distinguish it from other studies: (1) it was conducted on a large number of participants ($N = 11,765$); (2) we considered six different regions of the world (Africa, Asia, Australia, Europe, Latin America, and North America), some of which have only been included in a handful of previous studies (e.g., Australia & Asia: Hsu et al., 2015; Asia: Kim et al., 2011; Makashvili et al., 2013); (3) all participants filled in the same questionnaires; (4) all persons took part in the study in the same years; (5) we measured additional variables, which may be useful in further analyses, replications and extensions of the current research (i.e., sex, age, education level, years of study, economic situation, and religious affiliation).

अनुवाद Anuvad

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Tasneem Khan
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Harbinger-of-Spring

I must have been about nine or ten years old when I heard about *iddat* for the very first time. Grandpa had passed away and grandma was in mourning. She grieved his loss for a couple of days in a dark room. But on the third day, she became highly agitated and wanted to step out to take in some fresh air.

My elder granny i.e., grandma's mother was trying to pacify her daughter asking her to calm down telling her that she'd have to be staying that way for the next four and a half months. But she was not willing to listen to any advice. So much so that the other women who were present there started sniggering that she was more concerned about going out rather than moaning the loss of her husband's death.

'Arre, when you are in your *iddat*, it is a grave sin to even let the rays of sun fall on you! You'd be damned if you even see the light outside your room. God sees everything,' Mariam *Dadi* curled her lips to express her displeasure.

All the other women present there also nodded their heads in unison. They agreed whole heartedly with *Dadi*.

'Yes, who can observe it the way that we used to observe in our times? We had to keep our head bent for full four and a half months. I got so accustomed to it that even to this day I'm unable to hold my head up. And we never thought of questioning the veracity of *iddat* even in our wildest dreams.'

Among the women sitting there, the older ones agreed vociferously but the middle-aged ones looked piteously towards my grandmother. Listening to all this, her sister's eyes also filled up with tears and spilled over her cheeks but she quickly wiped them off with the corner of her *duppatta* and went out to wash the clothes.

None of these scathing comments seemed to reach grandma's ears. She was in a daze, lost to the world. Her eyes wore a blank look. The women too were completely unaware of her plight. In fact, they gossiped as to why her tears have dried up within merely three days of her husband's death. Had it been any other woman, her eyes would have swollen with tears by now. She became the talk of the *Haveli*.

Soon *Dadi* was shifted to a small room on the ground floor. There was open space on either side. On one side was a *verandah* and on the other side was

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विशेष स्मरण मुकुन्द लाठ



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दार्शनिक कवि और चित्रकार : मुकुंद लाठ

मूल : शैल मायाराम

अंग्रेजी से अनुवाद : ज्योतिका एलहेंस

दार्शनिक, कवि, चित्रकार मुकुंद लाठ (अक्टूबर 8, 1937 - अगस्त 6, 2020) अब हमारे बीच नहीं रहे। वे मेरे लिए एक मित्र, भाई और शिक्षक की तरह रहे हैं, परन्तु व्यापक तौर पर उनकी पहचान उस से भी बढ़कर एक विशिष्ट इंसान के रूप में होती रही है। आज के बौद्धिक प्रचंडता तथा स्वहित के लिए मेल-जोल रखने वाली दुनिया में, उनकी पहचान एक अत्यंत ही प्रतिभाशाली, उदार हृदय, विनम्र तथा संकोची स्वाभाव के व्यक्ति वाली थी। जैसा कि कुछ मित्रों ने मुझे याद दिलाया, एक समय में वे शानदार तेज गेंदबाज भी रह चुके थे !

उनके नैतिक विचार सम्बंधित लेखन से, भारतीय परम्पराओं में निहित अवधारणाओं तथा कोटियों को किस प्रकार से सर्वव्यापी बनाया जा सकता है, यह मैंने उनसे ही सीखा है। उनकी पुस्तक *धर्म संकट, आनृशंस्य* अर्थात् गैर-क्रूरता की अवधारणा को एक नैतिक आदर्श के रूप में प्रस्तुत करती है।

गाँधीजी के साथ संवाद करते हुए मुकुंदजी स्पष्ट करते हैं कि अहिंसा निवृत्ति मार्ग का धर्म है, जो कि संन्यासी के लिए उपयुक्त है। क्योंकि गृहस्थ जीवन में कुछ हिंसा तो निहित होती है। आनृशंस्य प्रवृत्ति मार्ग का

मुकुंद का शोध-कार्य दत्तिलम पर है, जो प्राचीन भारत के पावन संगीत पर आधारित ग्रन्थ है। उनका शोध कार्य इतना सघन था कि जब उनके एक परीक्षक को दिल का दौरा पड़ा, तो हम उन से यह कह कर मज़ाक करते थे कि संभवतः इसका कारण उनकी थीसस का वजनदार होना है।

धर्म है।

महाभारत में आनृशंस्य कई कहानियाँ हैं। व्याघ्र धार्मिक कसाई है जो ब्राह्मण शिक्षा देता है कि प्राणी हिंसा उस जीविका से जुड़ी है, लेकिन उसमें आनंद नहीं लेता और स्वधर्म का पालन करता है।

एक कहानी तोते की है उस मुरझाए पेड़ को नहीं छोड़ क्योंकि उस पेड़ ने हमेशा उस

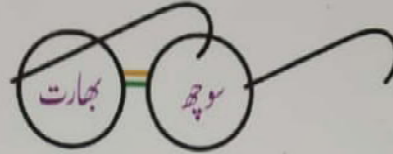
शरण दी थी और अंत में इंद्रदेव से उसके लिए वर माँगता है जिस के फलस्वरूप वह पुनःहरा-भरा हो जाता है।

यक्ष धर्म के रूप में जो पाण्डवों से प्रश्न करते युधिष्ठिर कहते हैं *आनृशंस्य परोधर्मः* और सब सवा का गहन अर्थ जिसके बदले में यक्ष उनको वरदान देते सो वे माद्री पुत्र नकुल को जिंदा करने की बात रखते इसको वे अपना स्वधर्म मानते हैं। क्योंकि कुंती ने मा से कहा था कि उसके बेटों की रक्षा वह करेगी। आनृशंस्य हमारे भी स्वधर्म बन सकता है।

आनृशंस्यता के नकारात्मक अभिप्रायों से अ बढ़ कर जो अर्थ हमारे समक्ष आता है, वह है भाव

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Biodiesel from Used Frying Oil: A Review

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Abstract Disposal of discarded used-frying oils in lakes, rivers and use as feed for animals is a matter of serious concern because it can result in the return of harmful compounds back into the food chain. It is therefore necessary that discarded fried oil is recycled carefully and efficiently. One of the alternatives to recycling is conversion of discarded frying oil into biodiesel. Biodiesel, a fatty acid methyl ester, is a nontoxic biodegradable alternative to fuel (oil/gas). Cooking oil which is discarded after use in food industry can be employed as an economical resource for the production of biodiesel. Biodiesel obtained from discarded frying oil has been found to give better engine performance and lesser carbon emission as compared to other fuels. However, the properties of biodiesel manufactured by using discarded cooking oil are dependent upon the content of free fatty acids, polar compounds and polymerized triglycerides. This review paper covers the key concerns associated with conversion of waste frying oil into biodiesel. In this review paper scientific research and review papers (N=50) were collected via several electronic database such as Medline (Pub-med Version), NLIST (Program of INFLBNET) and DELNET-India (Developing library network).

Keywords: biodiesel, used- frying oil, waste-cooking oil, environment, transesterification

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1. Introduction

Frying is a popular method for cooking because of the high sensory appeal of fried foods to the consumers. High demand for fried foods, increased consumer awareness regarding food safety and greater surveillance by the food regulatory authorities is concomitantly resulting in more and more accumulation of waste generated from discarded cooking oil. During frying, oil is heated repeatedly at high temperatures (160-190°C) under atmospheric conditions for relatively long duration of time [1]. This results in deterioration of oil. Several physical and chemical changes occur in the oil such as (i) increase in viscosity, (ii) increase in specific heat, (iii) increase in surface tension, and (iv) darkening of colour [2]. The common chemical changes which occur in oils when they are heated repeatedly at high temperature are given briefly in Table 1.

Table 1. Salient chemical changes in oil during the process of frying

Sr. No.	Chemical Reactions	Compounds formed
1	Hydrolysis	Hydrocarbons, ketones, aldehydes, alcohols, esters, lactones, free fatty acids, glycerols, monoacylglycerols, diacylglycerols
2	Oxidation	Alcohols, ketones, aldehydes
3	Poymerization	Dimers, trans-fatty acids, trimers, hetro/ epoxy/ hydroxyl aldehyde

2. Used- Frying Oil: Health Concern

Oils undergo three types of reactions during frying, mainly polymerization, oxidation and hydrolysis [3,4]. As mentioned in Table 1, these three reactions result in the formation of several compounds many of which can harm the human body. Certain studies have indicated that regular consumption foods fried in oils with compromised quantity (such as if TPC is more than 25) can increase the risk for the development of chronic diseases, particularly diabetes and liver disorders [5]. Frequent consumption of foods (i.e., four or more times per week) fried in abused oil have been found to increase the risk of cellular damage, growth retardation and hypertrophy of organs such as liver and kidney [6]. In view of strict regulatory standards pertaining to quality of oil to be used for frying, food manufactures are being recommended to discard used cooking oil when the level of total polar compounds reaches above 25 per cent [7]. This has resulted in inappropriate disposal practices.

2.1. Used-Frying Oil: Environment Concern

Discarding and recycling of used-frying oil or waste cooking oil (WCO) is a major concern all over the world. European Union produces approximately 700,000-1,000,000 tons WCO annually. It has been estimated that about 40,000 tons of used cooking oil is produced

annually by Asian countries such as India, China, Malaysia, Indonesia, Thailand, Hong Kong, etc. [8,9]. Dumping and pouring of discarded cooking oil in natural water bodies such as lakes, rivers, sea etc. is increasingly becoming rampant. To curb this malpractice and protect the environment many developed countries have set policies that penalize the disposal of waste frying oil through the water drainage system [9,10]. European Union (EU) in 2002 [11] enforced a ban on the use of feeding mixtures containing waste cooking oil for commercial/domestic animals because its use could result in the return of harmful compounds back into the food chain through animal meat. Studies have indicated that use of recycled cooking oils in animal feeds can result in increased risk for several diseases. This is so because WCO contains PAHs (polycyclic aromatic hydrocarbons), PCBs (polychlorinated biphenyls), dioxins and dioxin related substances. These compounds have been found to be present as contaminants in foods of animal origin (milk, meat, poultry, eggs etc.) which enter the human body upon consumption [6]. Thus, WCO should not be used for manufacturing animal feed. It should instead be disposed-off safely or be used in a way that is not harmful to human beings [9].

3. Biofuel-a Solution to Recycling Used-frying Oil

The annual consumption of diesel fuel in the United States is 178 million tons and global consumption is 934 million tons [9]. According to the reference [12] shows that, India is the fourth largest energy consumer in the world; oil and gas provide for nearly 35.61 percent of total energy consumption in India. It is expected that by the year 2035, India shall need 1,516 million tons of oil as a primary source of energy which would be nearly 3 times of the current requirement.

Biodiesel is an alternative to other fuels such as petrol and gas. It is a biofuel which is increasingly gaining attention. Biodiesel is a good lubricant; about 66 percent better than petro-diesel [13]. It can be manufactured from used or discarded vegetable oils and animal fats [14]. Discarded frying oil can be recycled and used for the manufacture of biodiesel (monoalkyl esters). The data on the requirement of diesel fuel and availability of waste cooking oil in any country indicate that the biodiesel obtained from waste cooking oil may not replace diesel fuel completely. However, a substantial amount of diesel fuel can be prepared from waste cooking oil [15]. The production cost of biodiesel is very high which may be partially solved by using waste cooking oil as a raw material [16]. According to reference [17] shows that, global production of waste cooking oil is sufficient enough to produce about 10 million tons of biodiesel. Use of biodiesel helps to reduce the emission of carbon dioxide. Further, the use of biodiesel would help to reduce our dependency on fuel imports. Since it is renewable in nature and safer to handle, it is therefore a sustainable source of energy. According to references [6,18] biodiesel obtained from waste cooking oil is most environment friendly as compared to other liquid fuels. Biodiesel has no aromatic compounds, negligible sulphur content, and

oxygen atoms. There is considerable reduction in the emission of carbon monoxide (CO) and tetrahydrocannabinol (THC) upon its combustion as compared to other regular fuels [10].

Government of India in its National Policy on Biofuels [7] has laid stress on increasing the production and use of biofuels. *"Biofuels are liquid or gaseous fuels produced from biomass resources and used in place of, or in addition to, diesel, petrol or other fossil fuels for transport, stationary, portable and other applications"*. They can be produced from Biomass. According to this policy *"Biomass are the biodegradable fractions of products, wastes and residue from agriculture, forestry and related industries as well as the biodegradable fraction of industrial and municipal wastes"*. Used cooking oil is a natural bio degradable resource or biomass which can be utilized for producing biodiesel- a biofuel.

4. Methods for Producing Biodiesel from Waste Cooking Oil

Biodiesel is most frequently prepared through the process of transesterification. Transesterification is a process in which primary (linear monohydroxy) alcohols react in the presence of a catalyst with triglycerides of free fatty acids to form glycerol and esters. Transesterification is dependent upon several factors such as reaction temperature, type of alcohol used, rate of agitation, amount of alcohol, and type of catalyst [19]. The triglyceride component necessary for biodiesel production can come from various bio-sources such as edible and non-edible oils including waste and used cooking oils/fats. Commonly used alcohols are butanol, methanol, or ethanol while the catalysts employed can be alkaline, acidic or enzymatic. The choice of catalyst is dependent upon the presence of undesirable compounds especially free fatty acids (FFAs) and water. Subsequent to the transesterification reaction, alcohol esters of vegetable oils are formed. Alcohol esters of vegetable oils have properties similar to those of diesel fuel, and therefore the product formed is known as 'Biodiesel'. Waste cooking oils are usually vegetable oils which are more viscous than diesel and hence cannot be used as such in a diesel engine. However, the transesterification process helps to decrease the viscosity of waste cooking oils and hence the resultant biodiesel has improved fuel properties [20]. Glycerin is the principal by- product obtained during the transesterification of waste cooking oil and is often used in the soap industry [21].

4.1. Catalytic Transesterification Methods

The transesterification reactions can be catalyzed by alkalis, acids or enzymes by heating them with large amount of anhydrous methanol and a catalyst [22,23,24]. They are being discussed below:

4.1.1. Alkali- Catalyzed Transesterification

Alkaline catalysts such as sodium hydroxide (NaOH), potassium hydroxide (KOH) and sodium methoxide (NaOCH₃) can be used for transesterification of edible oils. Transesterification process carried out by using alkaline

catalyst is much faster than that catalyzed by acidic catalyst because alkaline catalysts are lesser corrosive to industrial equipment [25]. However, the application of an alkaline catalyst in the transesterification of waste cooking oil is limited, because the FFA in waste cooking oil reacts with alkaline catalysts (KOH, NaOH) to form soap. The soap formed during the reaction prevents the separation of glycerol, which reduces the yield of biodiesel. The presence of water in waste cooking oil affects the yield of methyl ester by favoring saponification reaction. Despite these problems many researches are available on alkali catalyst transesterification. Study conducted by reference [25] indicates that when sodium hydroxide is used as a catalyst there is 85 percent yield of biodiesel and the quality of the end product is within the recommended standard values for biodiesel. Several other studies have also indicated similar results and are listed in Table 2 and Table 3.

4.1.2. Acid- Catalyzed Transesterification

Acid catalysts can also be used for transesterification and are usually preferred over alkali- catalysts. Commonly used acid- catalysts are sulfuric acid, hydrochloric acid and sulfonic acid [26,27]. Alkali-catalyzed process is sensitive to the purity of reactants, especially to the presence of water and types of free fatty acids (FFAs) [28]. According to reference [29] has reported that an acid catalyst is insensitive to the type of FFAs present in WCO and is better than the alkaline catalysts especially in case of vegetable oils containing >1 percent FFAs. The only disadvantage of an acid catalyst is a slower rate of reaction. Now-a- days solid acid catalysts are increasingly being used. They have a strong potential to replace liquid acids; eliminating the problem of separation, corrosion and

environment. Solid acid catalysts such as tungsten oxide, molybdenum oxide etc. are commonly being used now a days [30].

4.1.3. Acid- and Alkali-Catalyzed Two-Step Transesterification

Acid and alkali catalysts have their own merits and demerits in the transesterification of waste cooking oil. Therefore, several researchers have used both; acidic and alkaline catalysts, for the production of biodiesel from waste cooking oil. An acid catalyst is usually used first to convert FFAs to the esters and to decrease the FFA level to ≤ 1 percent. In the second stage, the transesterification of oil is done by using an alkaline catalyst [31].

4.1.4. Enzyme-Catalyzed Transesterification

Chemical (acid or alkali) catalyzed transesterification of waste cooking oil has several disadvantages, such as pretreatment of feedstock, recovery of glycerol and removal of the catalyst. It is also an energy-intensive process (high stirring speed, and the temperature required for good conversions). Therefore, enzyme catalyzed transesterification is being done. Enzyme (such as lipase) catalyzed transesterification have several advantages over the traditional chemical-catalyzed ones. There is no generation of byproducts, easy recovery of biodiesel, mild reaction conditions, and the catalyst can be recycled. Also, enzymatic reactions are insensitive to FFA and water content in waste cooking oil. In view of these advantages greater work is being carried out in this area. Newer methods of producing biodiesel from cooking oils are being explored such as the co- solvent process and super critical alcohol transesterification process [32,33,34].

Table 2. Salient researches conducted on production of biodiesel from waste cooking oil

Author(Year) [Reference]	Types of WCO	Types of transesterification	Yield (%)	Molar ratio	Time(minutes)	Temp (°C)
Gendy et al.(2015) [35]	Sunflower oil	Heterogeneous bio- catalyst produced from eggshell	97.5	6:1	30	60
Akhtar et al.(2014) [20]	Unspecified	Two step acidic- alkali catalyst (Sulphuric acid & Methanol)	84.0	9:1	75	60
Saifuddin et al. (2009) [36]	Unspecified	Enzymatic (lipase) hydrolysis followed by acid- catalyzed transesterification (sulphuric, hydrochloric, nitric, phosphoric, acetic acid)	88.0	15:1	60	50
Hossain et al. (2010) [37]	Canola oil	Alkali- catalyzed transesterification	49.5	1:1	120	55
Chen et al. (2006)[38]	Unspecified	Enzymatic (R. oryzae lipase)	88-90	4:1	-	40
Hirkude et al.(2014) [39]	Unspecified	Transesterification (Potassium hydroxide)	85.0	6:1	--	--
Jacobson et al.(2008) [30]	Unspecified	Solid acid catalyzed	98.0	18:1	600	200
Refaat et al.(2008) [40]	Sunflower oil	Catalyst transesterification (Potassium hydroxide)	96.15	6:1	60	65

Table 3. Salient researches conducted production of biodiesel from cooking oil

Author (Year) [Ref]	Type of oil	Type of transesterification	Yield (%)	Molar Ratio	Time (minutes)	Temperature (°C)
Onukwuli et al.(2017) [41]	Refined cotton oil	Alkali catalyst (Methanol and Potassium hydroxide)	96	6:1	60	55
Akhtar et al.(2014) [20]	Cotton seed oil	Two- step acid- alkali catalyst (sulphuric acid and methanol)	91.7	6:1	60	60
Akhtar et al.(2014) [20]	Rice bran oil	Alkaline catalyst (sulphuric acid)	87.0	6:1	90	55
Hossain et al. (2010) [37]	Sunflower oil	Base- catalyzed transesterification	99.5	4:1	180	40
D'Cruz et al.(2007) [42]	Canola oil	Heterogeneous base catalyst	96.3	6:1	120	40
Sinha et al. (2008) [43]	Rice bran oil	Transesterification	90.1	9:1	60	55

Some of the researches carried out on converting cooking oil/used cooking oil into biodiesel have been summarized in Table 2 & Table 3 respectively. The results of various studies indicate that the yield of biodiesel from waste cooking oil generally ranges from 84.0-97.5 percent while the yield from fresh cooking oil is slightly higher i.e. 87.0- 99.5 percent. The yield from canola oil has been reported to be exceptionally low. The reasons for such low yield need to be reviewed further. It can also be noted from these studies that the duration required for production of biodiesel is longer in case of cooking oil (60min- 180 min) as compared to waste cooking oil (30min-120min) except in case of one study which reports the duration to be 10 hours. As reported, there is no major difference in the temperature required for production of biodiesel from waste cooking oil (40-65°C) or other cooking oils (40-60°C).

5. Quality Parameters of Biodiesel

Several studies have indicated that the thermal performance of biodiesel production from waste cooking oil closely resembles that of biodiesel produced from fresh oil. Hydrocarbon emissions of waste cooking oil have been found to be 35 percent lower as compared to emissions from diesel produced from fresh oil [6,35,39]. Standard values for various parameters of biodiesel are given in Table 4 such as density, flash point, cetane number, calorific value and specific gravity. Density of fuel refers to the mass per unit volume, measured in a vacuum at 15°C. Several factors influence density of biodiesel such as molar mass, FFA and water content

of substrate and the temperature used during the transesterification process. The density of fuel directly affects performance of fuel, because some of the properties which affect engine performance, such as viscosity, cetane number and heating value are closely related to density. The density of the fuel also affects the quality of atomization and combustion. Knowing the density is also necessary in the storage, transportation and distribution process of biodiesel as it is an important parameter to be taken into account in the design of these processes. As biodiesel is made up of a small number of methyl or ethyl esters that have very similar densities; variability in their amounts in the feedstock does not affect the density of final product. Thus, a very high value for density of biodiesel could be an indicator of contamination [44]. Another important parameter which is an indicator of biodiesel quality is flash point. According to ASTM-D-93, flash point is the temperature at which a fuel must be heated so that a mixture of the vapor and air above the fuel can be ignited. Although the flash point does not affect combustion directly; higher values make fuels safer with regard to storage, handling and transportation. Flash point varies inversely with the fuel volatility. The minimum flash point prescribed for biodiesel by various countries is 93°C in the United States, 100°C in Brazil and 120°C in Europe. The flash point of biodiesel decreases rapidly as the amount of residual (un-reacted) alcohol increases. Since the flash point of methanol and ethanol is usually between 11-12°C and 13-14°C respectively; thus, the flash point of biodiesel is an indicator of its methanol or ethanol content. The higher their content; lower is the flash point [44].

Table 4. United States (ASTM) and European Standard values for various properties of biodiesel

Fuel properties	Standard Values	Organization	References
Density (Kg/m ³ , at 15°C)	860-900	(EN 14214)European standard	Demirbas, [26]
Flash point (°C)	100-170°C	ASTM (D6751) United states	Onukwuli et al., [41]
Cetane number	48-65	ASTM (D6751) United states	Onukwuli et al., [41]
Calorific value (MJ/Kg)	35(min)	(EN14213) European standard	Barbás and Todorut, [44]
Specific gravity at 15.5°C	0.88	ASTM (D6751) United states	Onukwuli et al., [41]

Table 5. Physiochemical properties of biodiesel produced from waste cooking oil

Author (year) [reference]	Type of waste cooking oil	Density (g/cm ³)	Specific gravity (g/cm ³)	Calorific value (MJ/kg)	Cetane number	Flash point (°C)
Gendy et al. (2015) [35]	Sunflower oil	0.884	0.885	39.37	43	161
Sudhir et al.(2007) [6]	Palm oil	0.870	0.893	39.76	50.54	160
Akhtar et al.(2014)[20]	Unspecified oil	--	0.870	--	55.8	188
Chen et al.(2006)[38]	Unspecified oil	0.890	--	32.00	56.6	171
Dorado et al.(2003) [46]	Olive oil	0.882	--	39.67	58.7	169
Widyan&Shyoukh (2002) [21]	Palm oil	--	0.8737	39.30	--	109
Hirkude et al.(2014) [39]	Unspecified oil	--	0.8700	39.00	--	140

Table 6. Physiochemical properties of biodiesel produced from fresh cooking oil

Author (year) [reference]	Types of cooking oil	Specific gravity (g/cm3)	Calorific value (MJ/Kg)	Cetane number	Flash point (°C)
Onukwuli et al.(2017) [41]	Refined cotton oil	0.8817	39.54	56.06	173
Akhtar et al.(2014) [20]	Cotton seed oil	0.8400	--	58	172
Akhtar et al.(2014) [20]	Rice bran oil	0.8600	--	59.5	185
Sinha et al.(2008) [43]	Rice bran oil	0.8700	42.2	63.8	183

Cetane number is also a widely used parameter for checking quality of biodiesel. It measures aromaticity of fuels. Cetane number of biodiesel is influenced by the composition of oil or fat feedstock [45]. Cetane number is a measure of its ignition quality. The cetane number of biodiesel depends on the oil or fat feedstock. Cetane number increases with chain length, decreases with number and location of double bond and changes when the location of the carbonyl group changes in the carbon chain. Calorific value which is a measure of the energy content of the fuel is also a very important property of biodiesel, because it determines its suitability as an alternative to diesel. The calorific value of biodiesel has been found to be comparable with that of diesel. For instance according to a study conducted by reference [43] the calorific value of biodiesel produced from rice bran oil is 42.2 MJ/Kg which is almost 94 per cent of the calorific value of diesel (44.8 MJ/Kg). A slightly lower value could be attributed to the comparatively higher oxygen content of biodiesel. Specific gravity of a fuel determines its performance and hence is used as a quality assessment parameter. The specific gravity of biodiesel is influenced to a great extent by the composition of the feedstock. The specific gravities of biodiesel and diesel have been found to be very similar [45].

Salient researches carried out on converting cooking oil/used cooking oil into biodiesel and the resultant physiochemical properties have been summarized in Table 5 & Table 6 respectively. The results of various studies indicate that specific gravity of biodiesel produced from waste cooking oil generally ranges between 0.873 – 0.893 while the specific gravity of biodiesel obtained from fresh cooking oil is slightly lower i.e. 0.88-0.84. The calorific value of biodiesel produced from waste cooking oil is 32- 39.76 MJ/Kg which is a little lower than the calorific value (39.54 - 42.2 MJ/kg) of biodiesel produced from fresh cooking oil. Cetane number between 48-65 (ASTM D6751) is related to better fuel consumption, horse power, torque and haulage rates. As can be seen in Table 5 and Table 6, the cetane number of biodiesel produced from waste cooking oil is 43- 56.6 which is slightly lower than that of biodiesel obtained from fresh cooking oil i.e. 56.06- 63.80. According to the U.S department of transportation flash point of 93°C or higher is considered to be non-hazardous [45]. As mentioned above in case of biodiesel produced from waste cooking oil flash point ranges from 109-188°C as compared to biodiesel obtained from fresh cooking oil 172-183°C.

6. Effects of Various Products Formed in the Frying Process on Biodiesel Quality

Several undesirable substances such as polar compounds are formed due to repeated and prolonged heating/ frying of oil. Reference [3] shows that, refined rapeseed oil was heated at 180°C for ≥20 hours, due to which the polar content of oil increased above acceptable levels. This, heated rapeseed oil was transesterified with methanol using alkali (KOH) catalyst at room temperature. Analysis of resultant biodiesel by high performance size exclusion chromatography (HPSEC) indicated the presence of dimeric fatty acid methyl esters. This could be attributed to the fact that during heating the polymers formed get

cleaved to result in the formation of monomeric and dimeric fatty acid methyl esters. The formation of these compounds results in increased molar mass and reduced volatility of the biodiesel. Thus, it can be said that the presence of fatty acid esters present in waste frying oil influence the fuel characteristics (such as increased viscosity and reduced burning characteristics), leading to formation of greater amount of Conradson carbon residue (CCR). Higher CCR amount is linearly related to an increase in glycerides as well as FFAs, soaps, remaining catalyst, and other impurities [47]. According to the ASTM standards, the upper limit for CCR value is 0.05 percent. Studies indicate that, in the case of methyl esters obtained from heated rapeseed, as the amount of dimeric and polymeric fatty acid methyl esters increases from 0.7 weight percent to 5.7 weight percent, the CCR value also increases from 0.02 to 0.17 percent [9]. In a study conducted by Reference [3] shows that dimeric and polymeric methyl esters were found to have no negative influence on engine performance in long-term performance tests when 100 percent ester obtained from waste frying oil was used as fuel in two city buses.

To produce biodiesel by transesterification process, the vegetable oil (feedstock) should preferably have an acid value less than 1 and all other materials should be substantially anhydrous. If the acid value is greater than 1, more NaOH or KOH is required to neutralize the free fatty acids. Free fatty acids and water always produce negative effects if transesterification is carried out by alkali catalyst. The presence of free fatty acids and water is related to greater soap formation and higher use of catalyst. It also reduced effectiveness of catalysts [26]. Reference [48] shows that observed during their experimental study that the presence of water can pose a greater negative effect as compared to the presence of free fatty acids and hence the feedstock should be water/moisture free. Thus, if either acid or alkali catalyst is used alone the quality and type of FFAs can have an influence on the quality of resultant biodiesel. The type and amount of FFAs present in WCO however, do not influence the biodiesel quality if transesterification is carried out by enzymatic method or if both acid- alkali catalysts are used together [20,49,50]. Thus, the amount and type of FFAs, polar compounds, and water present in the waste cooking oil, must be taken into consideration during transesterification as they greatly affect the quality of biodiesel.

7. Conclusion

Government of India under the Swachh Bharat Abhiyan and the Food Safety and Standards Authority of India under its EEE (Education, Enforcement, Ecosystem) strategy are increasingly emphasizing upon the use/recycling of food waste by employing economically productive and sustainable solutions. Use of discarded frying oil for the manufacture of biodiesel is one possible solution to sustainable development. Production of biodiesel from WCO can address three key concerns viz. health, environment and energy demand. To facilitate this, it is necessary to create awareness among the masses regarding the concept of recycling WCO into biodiesel. There is also need for non-governmental support so that

WCO generated in various food service units and households can be collected and transferred to biodiesel manufacturing units. Intensive research for conversion of waste cooking oil to biodiesel locally and at low cost needs to be given impetus. There is also a need to develop quality standards for production of biodiesel from WCO. International and National support from both public and private sector can be helpful in developing and implementing technologies necessary for effectively producing and utilizing biodiesel from waste cooking oil.

Conflict of Interest

The authors declare that they have no competing interests.

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FLRW cosmology with EDSFD parametrization

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Abstract In this paper, we study a cosmological model in the background of Friedmann–Lemaître–Robertson–Walker (FLRW) space time by assuming an appropriate parametrization in the form of a differential equation in terms of energy density of scalar field ρ_ϕ , which is defined as Energy Density Scalar Field Differential equation (EDSFD) parametrization. The EDSFD parametrization leads to a required phase transition from early deceleration to present cosmic acceleration. This parametrization is used to reconstruct the equation of state parameter ω_ϕ in terms of redshift z i.e. $\omega_\phi(z)$ to examine the evolutionary history of the universe in a flat FLRW space time. Here, we constrain the model parameter using the various observational datasets of Hubble parameter $H(z)$, latest Union 2.1 compilation dataset *SNeIa*, *BAO*, joint dataset $H(z) + SNeIa$ and $H(z) + SNeIa + BAO$ for detail analysis of the behavior of physical parameters and we find its best fit present value. Also, we discuss the dynamics of reheating phase after inflation, analyse the behaviors of the physical features using some diagnostic tools, and examine the viability of our parametric model.

1 Introduction

Since 1998, a substantial amount of observational data coming from various probes such as Type Ia Supernovae (*SNeIa*) [1], Cosmic Microwave Radiation Background (CMB) [2], Large Scale Structures (LSS) [3,4], Wilkinson Microwave Anisotropy Probe (WMAP) [5,6], Sloan Digital Sky Survey (SDSS) [7], Baryon Acoustic Oscillations (BAO) [8], weak lensing [9] and recent Planck collaboration [10,11] has shown and confirmed the accelerating expansion of the Universe. Figuring out the reason of acceleration of the Universe has been a major challenge to our cosmologists. To deal with this problem, there could be two possible actions:

the first approach is to modify the energy momentum tensor (EMT) which likely contribute some amount of anti gravitational force to produce acceleration in the Universe, another way is to modify the geometry part in the Einstein Hilbert (EH) action, which is same as to modify General Theory of Relativity (GR).

In order to keep GR unaltered and yield an acceleration, a negative pressure fluid must be added to the content of the Universe. In this structure, Einstein suggested the cosmological constant Λ , which comes into sight as the most fascinating candidate to the dark energy (DE) because it acts on the field equations like a fluid with $p_\Lambda = -\rho_\Lambda$ and it can be related with the point of zero energy in the quantum fields. However, the Λ leads to a huge variation between observation and theory despite its constancy with numbers of the cosmological data [16]. This variation has generated DE models beyond the Λ . Such DE models construct some unspecified symmetries which reduce the effect of the vacuum energy (VE) contribution. If the vacuum energy (VE) cannot be dropped off, then an additional attempt to reduce the inconsistency between theory and observation is to assume that Λ develop gradually with time. This expectation signify that the dark matter (DM) and the vacuum energy (VE) are not conserved independently. The phenomenological DE models specified by $\omega = \frac{p_{DE}}{\rho_{DE}}$, the ratio of pressure to density, and the vacuum decay scenarios are built to get the standard Λ CDM model with equation of state (EoS) $\omega_\Lambda = -1$ as a special case. This is due the success of the Λ -term in describing the current observations. Several authors have discussed the DE models using various recent observations [12–15].

The issues related to the fine tuning problem and cosmic coincidence problem, which are connected with standard Λ CDM motivate us to work on some other types of DE models [16,17]. The DE phenomenon as an effect of dissipation like bulk viscosity investigated in cosmic medium are available in many articles in the literature [18,19]. Therefore, the dynamical dark energy models came in to existence to the resolve the difficulties related Λ CDM model [20,21].

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