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Editorial

This is the Volume 12, Number 02 of the OUSL Journal, the Journal of the Open University of Sri Lanka which is published biannually. The articles published in this Volume include research based on Folklore, Education, Health Sciences, Law, Zoology and Language.

Folktales are stories that grow out of the lives and imaginations of a specific speech community, or 'folks.' The paper titled '*Folk Ideas' and' Worldview' Inscribed in a Selection of Folktales Attributed to the Muslim Community of the East Coast of Sri Lanka,*' is the preliminary version of a larger study intended to locate, identify and analyze the 'world' as conceived in the imaginations of a group of people living in a specific socio-economic space in Sri Lanka. This research engages the folktales created/narrated/heard by the males and females of this community in a close reading, motivated by the folkloric scholarly assumption that folklore is the 'autobiographical ethnography' of a group of people—or that folklore is people's own descriptions of themselves.

E-learning can be considered an efficient education system for knowledge sharing in developing countries. Ozawa *et al*, in their paper titled '*Renovation of Research and Education in South Asian Countries by Means of ICT*' discuss the present status of the higher education system in South Asia based on the results of KISSEL (Knowledge Integration Servers System for E-learning) project that has been carried out by the authors during the past ten years. Further, the paper reviews the state of application of the KISSEL and illustrates their relevance in renovation of research and education in South Asian Countries. It elaborates on how a scientific project, based on an ICT platform helped and could continue to help researchers to collaborate and share knowledge. The discussion makes clear some future problems that can be solved with the aid of E-learning and E-research techniques, especially the development of a new mobile application technique which would be important for solving various local and transnational problems in South Asian countries.

A phenomenological study based on female's experiences of menopause focuses on the physical, psychological and social effects of this condition. Menopause is the permanent termination of menstruation resulting in critical symptoms that could affect the quality of life of the victim. This study undertakes a close reading and interpretation of the 'experience' of females who have undergone menopause and attempts to understand both the physical and psychological 'realities' of the victims. The researchers also offer the possible means by which a female could manage this condition and they also contextualize menopause by drawing in the socio-economic factors that also shape the 'experience' of the victims.

The importance of journalists in a society, especially those who report armed conflicts cannot be underestimated. They play a vital role in 'witnessing' and 'representing' the conflict to the rest of the world. Inevitably, such journalists are drawn into the vicious cycle of violence and mayhem. Journalists are protected under International Humanitarian Law, primarily under the Geneva Conventions. However, Article 79 of the Additional Protocol I of the Geneva Conventions guarantees journalists the same protection available to civilians, if they resist from taking 'Direct Participation' in hostilities. The research paper titled '*Protection of Journalists in Armed Conflicts: An International Law Perspective*' explores the notion of providing 'special protection' to journalists who risk their lives for their profession in conflict zones of the world. The paper calls for adequate definitions for the terms 'journalist' and 'Direct Participation in hostilities' to facilitate the identification of the journalists who should be protected under the Humanitarian Law.

Ecological studies of seahorses in the Indian Ocean are limited. The vulnerability of seahorses to overfishing and increased anthropogenic impacts on coastal habitats necessitate better management of wild seahorse populations that in turn requires understanding their habitat preferences and population structure. The distribution patterns and population structure of two species of seahorse (*Hippocampus fuscus* and *Hippocampus spinosissimus*) were assessed in this study conducted in a tropical estuary in north-western Sri Lanka. Both species have not been studied in the wild previously and have not been known to occur in estuaries. The study by Perera *et al*, observed that *H. fuscus* was the most abundant and widely distributed species, and was


significantly larger than *H. spinosissimus*. Both species had significant differences in size between sexes. Seahorses occurred in low densities with patchy distribution, with abundance being higher in areas with the seagrass species *Enhalusacoroides* and *Cymodoceaserrulata* which appear to be the favored habitat of seahorses within the study area. The study suggests that basic life history parameters for the two species of seahorses could be more diverse than previously reported in the literature.

The ubiquitous mobile phone and the modalities of texting, known as the SMS language, come under scrutiny in the paper titled “*Does the SMS Language Have an Effect on Teenage Spelling? – A Study Conducted on a Selected Group of Students Studying in Colombo.*” As the title indicates, this study undertakes a close study of the SMS language and its possible effects on the English spellings of a selected group of students and teachers. Contrary to what most people believe, the study implies that SMS language and spelling errors are unrelated. It also suggests that children have the ability to adjust their writing styles in accordance with the context they are writing in. However, as the study was restricted to a small group belonging to a particular socio-economic stratum in Colombo, it could be considered as an opening for broader studies relevant to the subject.

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'Folk Ideas' and 'Worldview' Incribed in a Selection of Folktales Attributed to the Muslim Community of the East Coast of Sri Lanka

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Abstract

Seeming absence of focused scholarly intervention has not deterred folklorists from considering, orally transmitted imaginative speech acts—such as folktales—as a specific community’s “autobiographical ethnography” (Dundes, 2007) or their “own descriptions of themselves” (Dundes, 2007). In Sri Lanka, (Sinhala) folktales are an essential feature in school texts books, children’s newspapers, mass media, and Sinhala folktale collections are frequently released for public consumption with some prominent bookshops offering exclusive shelf space for this genre. A collection of Sri Lankan folktales attributed to a specific geography and an ethnic community is the focus of this study. The collection is titled *Digamadulle Muslim Janakatha* and its collector/compiler is Gunasekera Gunasoma, a popular folktale collector in Sri Lanka, and a fiction writer. Gunasoma offers 16 folktales collected from Digamadulle in this book and his endeavor could possibly be the first such collection of folktales attributed to the Muslim ethnic community living in Digamadulle, or for that matter anywhere else in Sri Lanka. The present study attempts to extract the cultural postulates featured in these tales, theoretically identified as ‘folk ideas’ and ‘worldview’ by folklorists. Using definitions of the folklorist Allan Dundes, this study undertakes a close reading of the folktale sample under consideration to comprehend how the Muslim story tellers/creators/listeners of

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Digamadulle perceived and imagined the ‘world’ and its nature. Scholar Samarsinghe’s (2014) view that folktales facilitate ‘social cohesion’ would also play into the motivations of this study, whose primary objective is cultural comprehension.

Key words: Folk Ideas, Worldview, Cultural Postulates, Social Cohesion

Introduction

Folklorists commonly agree that traditional ideas shared by a group of people living in a specific socio-cultural context tend to underpin their imaginative speech acts such as folk songs, folk proverbs, folk games and folktales. A folktale, the focus of this study, is a “traditional narrative” (Samarasinghe, 2014) in speech or writing that offers “advice, entertainment, amusement and warning” (Samarasinghe, 2014). Presently, there is a resurgence of public interest in folktales, specifically in southern Sri Lanka, as apparent from the large number of folktale collections—both local and global—that are released for public consumption¹. The present study focuses on a collection of folktales attributed to the followers of the Islam faith in Sri Lanka, identified as ‘Muslim,’ living in a specific geographical space, Digamadulle in the Eastern Province. The collection is titled *Digamadulle Muslim Janakatha* (Folktales from Digamadulla) and the collector/compiler is Gunesekera Gunasoma, a prominent folktale collector in Sri Lanka. This study attempts to engage this collection of tales in a close reading to extract cultural axioms, which are identified as ‘folk ideas’ by folklorists. According to Dundes (2007), ‘folk ideas’ are “traditional notions that a group of people have about the nature of humanity, of the world, and of life in the world” (Dundes, 2007). Rather than being a living genre of folklore (like folk songs or folk proverbs), Dundes (2007) further argues that, ‘folk ideas’ underlie the thoughts and actions of a group of people. Many individual ‘folk ideas,’ Dundes suggests, are the “building blocks of worldview” (Dundes, 2007), and he defines ‘worldview’ as “cognitive, existential aspects of the way the world is structured” (Dundes2007). These definitions, one could argue, are helpful as

¹¹*Majority of these folktale collections are tales from the Sinhala ethnic community, and are written in Sinhala; there are few collections attributed to the South Indian Tamil ethnic community—the most notable ones being those translated by Sunil Ariyaratne,*

well as problematic. The terms 'nature of humanity' and 'life in the world' might not be expedient when it comes to sieving specific ideas from the general; a term like 'cognitive' could be complex when it comes to interpretation. Yet, the open-ended nature of these definitions aids the present study: rather than imposing distilled theoretical models upon the tales told/created/heard by rural folk, the definitions permit flexibility of interpretation, and facilitate the inclusion of more beliefs and value systems in the present discussion.

Story telling/creating/hearing is not a neutral act. Orally transmitted speech acts tend to reproduce, according to Bronner (2005), "biases, prejudices, belief and values through time and space," and this process happens often "unconsciously or unselfconsciously" (Dundes, 2007). Both these scholars, and others specializing in folkloric gender studies (J.M. Taggart, Fumihiko Kobayashi and Vera Mark), agree on gender dichotomies as one of the frequently disseminated biases in folklore. Folktales are textual locations for unearthing lost historical narratives for the historian John Man and the anthropologist Gananath Obeyesekere. While Man turns to folklore whenever he runs out of traditional textual sources in his attempt to narrate the history of the Genghis Khan's empire², Obeyesekere uses folktales collected from the region of Sigiriya villages to build an alternative account of the last days of the patricidal King Kassapa³. For Sri Lanka's foremost 20th century Sinhala novelist, Martin Wickramasinghe folktales are "born out of people's real-life experience" (Wickramasinghe, 1948) a suggestion reflected in Dundes's argument that folklore is "autobiographical ethnography...people's own description of themselves" (Dundes, 2007). The present study attempts to add to the existing folklore scholarship in Sri Lanka by locating and interpreting cultural postulates inscribed in tales disseminated among a specific ethnic community of the nation. This writer is of the view that such imperatives might facilitate deeper reflective understandings of the Muslim ethnic community in Sri Lanka. The writer's view is further enhanced by Dundes's (2007) postulate that a careful identification of 'folk ideas' and 'worldview' in folktales could lead to better understanding between

²See *Genghis Khan—Life, Death and Resurrection* by John Man, Bantam Books: London,

³Quoted from *History Writing: New Trends and Methodologies* by Nira Wickramasinghe. See References for the full citation.

cultures and peoples by reducing the “misunderstanding” (Dundes, 2007) that could result when different cultures come into contact with each other.

This study will first offer a short commentary on how the ‘Muslims’ are represented in the folkloric imagination of a sample of Sinhala folktales. This will be followed by a close reading of the folktale sample under focus leading on to the findings and conclusions. The term ‘Muslim’ is largely used in this study to refer to the story tellers in Gunasoma’s collection, and wherever applicable, to the characters bearing that ethnic identity in the tales themselves.

Representation of ‘Muslims’ in a sample of southern folktales

Males from the Muslim⁴ community are featured in one of Sri Lanka’s largest and the first folktale collections compiled by the British colonial irrigation officer Henry Parker. His 266 folktales, collected from the south and published in the early 20st century—when exoticizing of the colonies by British writers was frequent—feature Muslim characters identified as ‘moorman⁵,’ ‘Muhammadan trader,’ *thambi elder brother* (Parker’s translation *Thambiaiyyaa*), ‘Tambi,’ or ‘Arab traders.’ Muslim males—not females! —are drawn into few of these tales by the story tellers/creators primarily as traders who journey into southern villages with their consumer goods. Yet, the representation of these fictitious characters falls into the realm of negativity: they are dim-witted, credulous—in one story, physically repulsive, and in another, a Muslim man is represented as reproducing in excess (a common stereotype attributed the Muslims in Sri Lanka even at present). Though only few tales feature the Muslims in Parker’s collection, and this sample is not adequate to come to far-reaching and focused conclusions about the way the ‘Muslim male’ could have been perceived by the Sinhala story teller/creator and listeners, the existing evidence is suffice to say that they do not

⁴According to Siriweera (*Facetsof 50*) the Arabs were in contact with Sri Lanka even prior to the advent of Islam as part of their trading assignments. The Muslim traders established settlements here from the tenth and eleventh centuries onwards

⁵The ‘Moor’ identity, according to Nuhman (04), was imposed upon the Muslims by the colonial rulers—first by the Portuguese, then by the Dutch, though the term gained currency during British rule.

necessarily find positive representations in the imaginative spaces of the Sinhalese. In this context observations recorded by two colonial writers might be interesting. John Davy, a British writer describes 'moormen' as "active, shrewd, enterprising race" (Davy, 1821); and the Portuguese writer De Bussche, while citing the Sinhalese as "not the most industrious part of the population" (De Bussche, 1817), presents the moormen as "by far [the] most industrious class of natives" (De Bussche 1817). As questionable as the colonial textual enterprises on the colonized Lanka might have been, these descriptions signal the notion that the moormen could have been adept at winning the confidence of the colonial rulers—and therefore, access to wealth creation—which might not have been appreciated by the Sinhala story tellers/creators/listeners, particularly in the light of their own resistance against the colonizers. With the fictitious moormen in the Sinhala imagination at its backdrop, this study will now analyze the possible means and modes by which the moormen might have understood the 'world' around him/her through their own folktales.

Digamadulle Muslim Janakatha – a critical evaluation

Gunasoma's folktale collection features 16 tales that he had collected from Digamadulle. He is quick to identify the numerical poverty of his slim collection—the reason being the difficulty in locating Muslim folktale narrators. His tales were collected from the villages of Kalmunai, Waripathchena, Akkaraipattu and Nindavur, with Akkaraipattu giving him the most number of tales. The time period of collection is the early eighties. Of the 17 story tellers, two are female, and the rest males, majority of the narrators are over the age of 50 years. Gunasoma, in the spirit of scientific tale collection, has electronically recorded the folktales directly from the narrators. He has faithfully noted down the basic biographical details of the narrators (name, address, gender, age) and the place of recording of the tale. However, there are certain lacks in Gunasoma's mode of tale collection. For instance, rather than recording a natural story-telling event in the presence of an active audience, Gunasoma has recorded the stories direct from the story teller. As a result, the important details of an act of storytelling, such as physical gestures and vocal modulations of the teller, the gender of the audience and their response to different aspects of a tale are not recorded. Most importantly, Gunasoma does not identify the language in which the stories were narrated—since the Muslims of Sri Lanka tend to be fluent

in both Sinhala and Tamil, it is possible that they might have narrated the tales in either one of the languages; or a story teller might have resorted to mixing of the languages (code mixing) for better articulation of a plot event. Gunasoma does not offer us any such useful information. Yet, methodological deficiencies of tale collection in Sri Lanka is not a condition that only afflicts Gunasoma—he happens to be the most prolific folktale collector in the country, with over 300 tales to his credit, the other two prolific collectors being S. Wijesuriya (331 tales) and Henry Parker (266 tales). Neither Parker nor Wijesuriya have pursued comprehensive scientific methods of tale collection either. Yet, despite these shortcomings, Gunasoma has offered the reading public of Sri Lanka a hitherto untried endeavor of visiting far-flung villages occupied by the Muslims, locating tale tellers, recording and publishing them. His is (possibly) the only collection of folktales attributed to the Muslims (of a specific geographic location) in Sri Lanka.

Results and Discussion

For ease of discussion and understanding, the ‘folk ideas’ inscribed in the tales are located, identified and presented as sub-headings.

Sanctity of a ‘grave’

The ‘grave’ (*sohona*) is a recurring motif in these tales and is imputed with the notion of sacredness, which inevitably grants the ‘grave’ power over human affairs. Thus, in the tale *Kandulu Mala* (The Weeping Flower), the grave of a young male who was unfairly killed by his own family gives birth to a flower of hypnotic beauty which resists attempts by many people to possess it. Subsequently, this flower narrates, in verse, the injustices committed to the deceased male, or the owner of the grave.⁶ In *Yakada Yakka* (The Metal Devil), a train undertaking its maiden journey along a newly-built track comes to a halt at a specific location and all attempts to rectify the issue end in failure⁷. The

⁶The Sinhala folktale *The White Turtle* in Henry Parker’s *Village Folk Tales of Ceylon Vol I* features a similar motif, suggesting that the notion of the ‘restless dead’ who seek justice for their unfair death is commonly shared among both the Sinhala and Muslim communities.

⁷Popular folklore has it that the prominent Buddhist monk *Kondadeniye Hamuduruwotoo* caused a train to stop using magical incantations. This

train was part of the ambitious transport initiatives of the (British) colonials, or the 'suddho', in Ceylon. Unwittingly, the rail track had been constructed over the grave (*Siyaram*) of a sacred man (*avuliyavarayek*).⁸ The village elders advice the authorities to ensure that the rail track circumvent the sacred grave; the authorities have no choice but to heed this advice. The tale *Varipathchena* is a creation myth about the village identified in the story title. The central attraction of this village is a sacred *Siyaram* which emanates bright light. All these tales offer the suggestion that the 'grave' of a pious man, and that of one who was unjustly dispatched to the other world, possesses super natural power and energy. The 'grave' of a pious person is sacred and demands respect; and the one belonging to an ordinary man who was unfairly killed demands justice. Such graves have the ability to manipulate the laws of physics and even disrupt the power dynamics between the colonizer and the colonized (a 'grave' undermines the forward path of a train). The underpinning 'folk idea' in these tales is that graves are sites that demand respect and reverence. Of course, one needs to read the tales metaphorically—they do not capture a 'literal truth,' but a 'projected state of affairs'; this 'projected state of affairs might be a response to a condition in 'reality' that might not be to the liking of a story creator/teller/listener. Thus, the motif of the 'grave' of a sacred man valorizes a specific 'mode of living'—one based on the tenants of Islam. The virtuous adherents of Islam are 'alive' even though they are 'dead.' At the same time, the 'grave' allows a story teller/creator/listener a mode of subverting the power equations of the material world: the sacred 'grave' of the pious Islamic man negates the power of the British colonial motivated industrialization and scientific innovation, represented by the 'train.' Thus, a 'grave' becomes a mode of absorbing the tensions of the subjects living under colonial rule; it also becomes a site of resistance for a human being seeking justice over his mode of death; the 'grave' assumes anthropomorphic qualities, becomes a witness and articulates the injustice meted out to the dead person.

story is also appears in *Kondadeniye Hamuduruwange Viskam*. See the References for the complete citation.

⁸Gunasekera (40) in his text *Nagenahira Muslimwarunge Sanskruthiya* identifies *Siyaram* as a place where religious leaders who have committed themselves to propagating Islam are buried.

Power of religion

Some of the tales directly disseminate the profound respect and veneration of the tale tellers/creators/listeners towards Islam. Six (06) tales draw Islam into their main plots, thus creating a religious presence in relaxed intimate spaces where folktales were obviously narrated. Thus, in *Vishmitha Dehemi Minisa* (The Miraculous and Pious Man), a man who was ambushed and seriously injured by thieves in a jungle manages to evade imminent attacks from wild animals by chanting religious verses. In *Maha Palliye Divuruma* (The Oath in the Grand Mosque), an adulterous man who deliberately uttered lies inside a mosque loses his eyesight. A pious man in the tale *Aruma Puduma Thel Ulpatha* (The Miraculous Oil Spring), grants a poor woman generous quantities of cooking oil, a feat he achieves by pouring a little oil onto his palm.⁹In *Jeevaka Palliya* (The Jeewaka Mosque), a man of different faith who harbored intentions of destroying a mosque dies a mysterious death; this same mosque features a Tamarind tree that never grows beyond a particular height and a stone that possesses healing properties. The underlying 'folk idea' in these tales is that Islam offers protection to its followers—and death to those who attempt to negate it; thus, the religion has power over worldly events. The graves of deceased pious persons have power over the living; as for the living, those who adhere to the teachings of the Islam, exert certain powers over their external circumstances.

'Physical strength' and perceived 'threats'

At least two tales in this collection feature males of extraordinary strength committing incredible deeds. *Adam Lebbe*, featured in the tale *Adam Lebbegae Weerakatha* (The Heroic Tales of Adam Lebbe) is capable of outrunning Elephants, bludgeoning a Leopard, and overcoming a Bear with his bare hands. The giant in the tale *Muslim Yodhaya* (The Muslim Giant) is capable of Herculean tasks like carrying two massive trees on his shoulders a long distance to build a well. His grave is considered a sacred site and is believed to be 60 feet long. The 'folk idea' at play here is the valorizing of masculine physical strength that could transform and manipulate

⁹This motif of creating larger quantities of food from a minuscule food sample is a common motif in the Sinhala folktales collected by Henry Parker.

the physical world. Since spirituality also achieved the same purpose in the above-discussed tales, one could assume that sheer physical capacity is also considered as a sacred ability—an idea further reinforced by the sacredness granted to the grave in the tale *Muslim Yodhaya*. The incredible deeds ascribed to these two characters also remind one of the characters from King Dutu Gemunu's army, popularly known as the *Dasa Maha Yodhaya* (Ten Great Giants). The writer of the *Mahavamsa*,¹⁰ *Ven Mahanama*, could have exaggerated the strengths of these ten men in order to disseminate the idea of the intensity and the difficulty of the struggle that lay ahead for the hero of the Sinhala race, Dutu Gemunu. And by creating such mighty men he might have offered some kind of 'textual consolation' for his readers in the 5th Century ACE, when the nation faced imminent threats from South India. Similar motivations could have governed the Muslim story tellers/creators as they created stories that narrate the presence—rather than the absence—of males with enormous 'physical strength' in their community. The stories could have been inspired by perceived threats to the Muslim community from outside. In the tale, *Sinhala-Muslim Premaya* (The Sinhala-Muslim Romance), Sinhala villagers confront a Muslim man who had married a female from their village; in *Jeevaka Palliya*—already discussed above—a man from a different faith attempted to destroy a mosque. Perhaps such perceived threats from outside might have motivated the creative energies of the story tellers/creators to conceive the idea of the existence of exceptional masculine strength and courage within their community.

Power of the dream

The story tellers have positioned the 'dream' as a powerful conveyor of crucial information. Thus, in the tale *Sagarayak Meda Dutu Sihiniya* (A Mid-Sea Dream), a fisherman whose boat had overturned follows the imperatives given in a dream and saves his life. In *Jeevaka Palliya*, a voice heard in a dream directs a man to build a mosque in his private land. Both these dreams involve a 'voice'—not 'images'—and play into the idea of the absence of images in Islam. These tales are built on the 'folk idea' of the 'dream' as a sacred space where communications could happen

¹⁰Chapter 13 of the *Mahavamsa* (Wilhelm Geiger translation) offers descriptions of these warriors

between the human realm and other 'superior' ones.

The 'Other' as a 'threat'

The treatment of non-Muslims by the Muslim story tellers offers interesting insights about the 'folk idea/s' created around and inspired by the presence of the 'others' amidst their community. In *Sinhala-Muslim Premaya* the story tellers experiment with the idea of inter-communal romance between a Muslim male and a Sinhala female. The intensity of that romance is tested when an armed Sinhala mob attempts to abduct the Sinhala female. The issue is settled through negotiations and the marriage stands as it is. The story teller concludes the tale by suggesting the subsequent generations who were a result of that marriage could be seen at present, and that the Muslim identity of such people could be verified by their superior physical attraction (*Lassana*). The underlying 'folk idea' at play here is that people from the Muslim community are physically attractive. In *Jeevaka Palliya*, a man from an unidentified faith, who attempted to destroy a newly-built mosque, dies of a tragic accident merely 24-hours after his original intention. Here the Muslim story tellers/creators have violently dispatched a man who had harbored destructive ideas against their religion—this act is underpinned by the 'folk idea' that violation of Islam is resisted by forces beyond human comprehension. In the tale *Handunkuru Gura* (The Incense Stick Ascetic), a Muslim man, who was previously a butcher, finds better means of earning money: he mimics a 'sacred man' by carrying a bunch of incense sticks and walking across the village. His long beard, the time of his sudden appearance (evening) in the village and the presence of the 'incense sticks'—an object used in prayer in both the Buddhist and Hindu places of worship—all help him convince the villagers of his soothsaying ability (*penabelima*). The gullible villagers believe him and consult him with their mundane worldly issues. He predicts their future, not through psychic means, but by gathering information about his customers through an ingenious mode of spying. He ends up becoming rich. This story suggests the gullibility and credulity of the non-Muslim people who believe in the magical arts. The causal 'folk idea' at play here is that deliberate human interaction with the unseen events of the future and the past (which is what a *penabelima* offers an interested participant) is a non-event; such beliefs can make one vulnerable to be misled and cheated.

Conclusions

Collective thoughts inscribed in these 'folk ideas' could be analyzed to build the possible 'worldview' shared of the Digamadulle Muslim community. The 'world' as perceived by this community consists of two different, yet overlapping spheres of influence—one material and the other spiritual. The material sphere is a space of defects: this space is under 'threat' from outsiders. The perceived 'threats' could be from government authorities, other communities, and misguided elements in a society like thieves. However, these perils are negated to a larger extent by the presence of the spiritual dimension, which is defined by Islam. The Islam-inspired spirituality offers the means to counter such ills and imperfections of the material 'world'; the difficulties of life in the material sphere could be absorbed by the sacred spiritual sphere. These folktales, in essence, are a call for intense spiritual engagements with Islam from the listeners. They valorize the religion as the answer to worldly imperfections and also signal that those who are outside the sphere of Islam will not be offered such sanctuary. The dissemination of such notions of religiosity in common folktales might indicate the importance the religion plays in the lives of the Digamadulle Muslim community on the one hand; on the other hand, such imperatives could also be interpreted as motivated by the fear of the lack of interest in the religion among the younger generation. Either way, these tales narrate the ideas that are intimate to the Muslim community of a specific time/space dimension—and might offer us the means to understand their existential postulates when it comes to living. Here is a community who attempts to/prefers to view the world through the spiritual lenses of Islam and who resist any attempts to disrupt that view. Any engagement with this community—national or individual—needs to take this concern into account. Perhaps, the following narration from *Sinhala-Muslim Premaya*, a story that espouses the notion of ethnic blending—narrated by a relatively young Muslim male from Akkaraipattu—might offer some ideas when it comes to post war ethnic integration in Sri Lanka. He narrates the moment of the arrival of a child in the Sinhala-Muslim marriage: "Her parents, meanwhile, heard that their daughter had given birth to her first child. The arrival of the child managed to subdue the anger that the parents have harbored against the couple. They both came to Eragama with gifts to see their grandson." Metaphorically, the 'grandson' in the tale—whose presence negates the notions of aggression and

fosters peace and harmony—could represent a fresh mode of perceiving, understanding and engaging with the ethnic communities in modern Sri Lanka.

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Renovation of Research and Education in South Asian Countries by Means of ICT

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Abstract

Human resources are one of the most important factors for industrialization of developing countries. This is true especially for highly populated countries in South Asia. The point is the quality of education and how efficiently the education sectors provide the society with high quality workers. At present, rapid increase of demands for higher education can be seen in these countries. This is a remarkable trend because the production of well-educated people is the starting point of modernization of industries. E-learning can be considered as an efficient education system for knowledge sharing in developing countries. This paper discusses the present status of the higher education system in South Asia on the basis of the results of KISSEL (Knowledge Integration Servers System for E-learning) project that has been carried out by the authors in the last ten years. Further, the paper reviews the state of application of KISSEL and illustrates its relevance in renovation of research and education in South Asian Countries. The discussion addresses some future problems that can be solved with the aid of E-learning and E-research techniques. The second phase of the KISSEL project is also noted

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in relation to the future problems. In particular, development of new mobile application technique would be important for solving various local and transnational problems in South Asian countries.

Keywords: E-Learning, E-research, ICT, KISSEL, South Asia

Introduction

In the last few decades, there has been a rapid development of industries in South Asian countries. One main driving force for the phenomena has been low cost of labors in developing countries. For this reason, many foreign companies shifted their manufacturing centers to developing countries. Most of the workers are engaged in rather simple jobs in which no specialized abilities are required (Copps & Plimmer, 2013). This process commonly happened in the first stage of industrialization of developing countries. The need for large numbers of low cost workers has been an advantage for highly populated South Asian countries. In the next stage of the industrialization, however, well-educated good quality workers with specialized abilities are required. These people are expected to play important roles in developing their industries further in their own way. The point is the improvement of the higher education systems so that they can produce workers who have enough abilities for performing leadership in the higher stages of industrialization.

The academic staffs of higher education sectors in South Asian countries are making continuous efforts to improve their research and educational activities so that they suit for the requirements of various industrial sectors. In order to assist this, the authors have been working for the KISSEL project (Warnajith *et al.*, 2012). The KISSEL stands for Knowledge Integration Servers System for E-Learning. It is a web portal network for teachers and researchers in Asia and Pacific countries. It works as a communication platform where they can share the knowledge and experiences of improving education methods with the aid of Information and Communication Techniques (ICT). This paper summarizes the planning and the practice of KISSEL project that has been carried

out in the last ten years. As a result, it makes clear the future problems that could be solved with the aid of ICT. The strategy of the second phase of the KISSEL project is also noted in relation to the future problems.

Research and Education by Means of ICT

In the long history of South Asian countries, a considerable amount of knowledge has been successfully accumulated in various fields of natural, social and human sciences. They have established suitable research methods for studying individual topics of sciences, which are now called “traditional methods” in this paper. If the traditional methods are combined with the latest ICT, new powerful scientific approaches can be established. E-research refers to the use of advanced ICTs to support research. E-research aims to ensure research processes are more effective, efficient and collaborative. Let us show this in the following examples of KISSEL contents: i.e., environmental science, Sri Lankan archaeology, social and cognitive psychology, and language education.

Environmental Science and ICT

ICTs such as satellites, mobile phones or the Internet play a key role in addressing the major challenges related to environmental science including climate change and sustainable development. ICTs are fundamental for monitoring climate change, mitigating and adapting to its effects and assisting in the transition towards a green and circular economy. Further, environmental benefits of ICT applications are evident in areas such as water management, biodiversity protection, pollution reduction and preparedness of climatic change impacts including global warming etc. Applications on ICT related to environmental science in South Asian countries, seem to be meager, which is the one of the key interest areas of the authors.

Currently, South Asian countries are rapidly experiencing fast economic growth, which often causes considerable environmental changes. Therefore, environmental considerations are taken into account in all spheres of economic development in the region. ICT can be integrated in long-term studies, both retrospective and predictive, in order to anticipate degradation and to take mitigating measures at an early stage. It is also imperative to collect and integrate data from different disciplines. These are essential in the spirit of sustainable development and management, particularly in developing countries, which are often more vulnerable to environmental degradation.

To increase awareness on environment-related problems among the general public including students, researchers, academics and policymakers, ICT can be used as an efficient and effective tool for education. By raising awareness on the role of ICTs, KISSEL is promoting transformative solutions for environmental science that can ensure a sustainable future for South Asian Countries. All the research findings should be easily accessible and presented in a user-friendly manner. Further, these research data in the form of electronic media can be easily used in education or training in environmental science. Therefore, development of a database on the water environment of Asian countries on KISSEL server system was initiated, for the benefit of all interest groups including the general public (Dahanayaka *et al.*, 2015).

This sector describes application on Remote Sensing Research on water environments on KISSEL, which were used as multimedia data sharing platform for benefit of several stake holders especially in Asia. We already developed Sri Lankan Coastal Water Body Database (CWBDS) (Figure 1), Asian Water Environment Database (AsiaWED) and Satellite-based Lake and Reservoir Temperature Database (SatLARTD) on KISSEL server system based on Remote Sensing Studies, and presently it contains water quality data of lakes, reservoirs, lagoons and estuaries for over three decades (Dahanayaka *et al.*, 2013; Dahanayaka *et al.*, 2012a; Dahanayaka *et al.*, 2012b; Dahanayaka *et al.*, 2011). To develop databases, research works parallel to satellite overpass were conducted on

selected Asian water environments considering its economic and ecological importance.

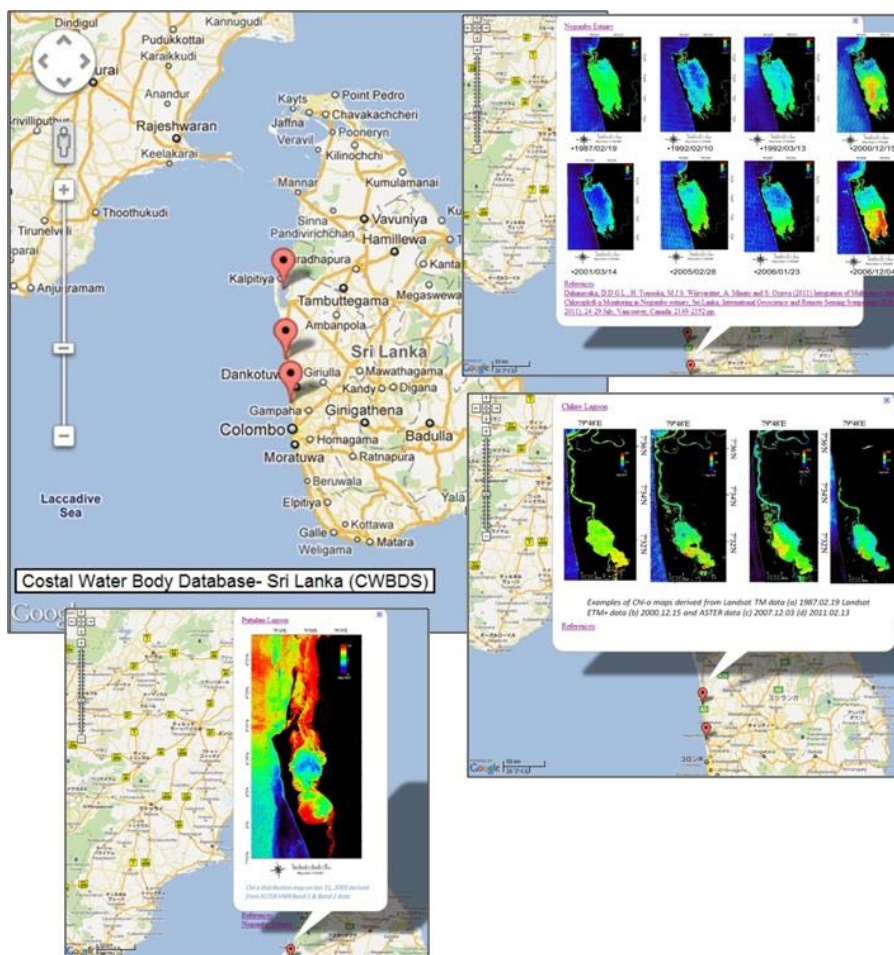


Figure 1. Coastal Water Body Database (CWBDs) of KISSEL showing Chlorophyll-a distribution in selected estuaries and lagoons of Sri Lanka

Local Universities and/or Research Institutes collaborated in field data collection, and in future continuous monitoring programs of water bodies and KISSEL-related activities. Combination of remote sensing and the traditional method (field work method) can be used as a powerful research method by using data that is uploaded to KISSEL.

Monitoring long term changes of water quality and land use changes using satellite data, improvements of water body databases and deriving of future predictions and recommendations will be conducted. At present, the contents related to environmental science of the KISSEL are concerned to use as E-learning techniques and early warning preparedness and mitigation of natural disasters.

KISSEL is an e-Learning platform for South Asian countries where teachers and researchers of this region can share their knowledge and collaborate in education and research activities in order to face the challenges of the rapidly changing natural environment. The databases will be useful for their future academic and research activities. Further, these research data in the form of electronic media can be easily used in education or training in environmental science. Workshops, seminars, conferences and field work trainings on environmental science education have been carried out in the member countries by the members of the KISSEL group and following can be highlighted among them.

- Research work on environmental monitoring of Taal Lake, Tagaitai and Manila, Philippines, 28th February – 2nd March & 8th – 12th March 2014.
- Research work on environmental monitoring of Musi River and conducting guest lecture (Sriwijaya University, Palembang), Indonesia, 02nd -08th March 2014.
- Workshop on long-Term Monitoring of Mangrove Ecosystems Response to Climate Change, University of Science, Ho Chi Minh City, Vietnam, 10-11 October 2013.
- Research work on environmental monitoring of inland water bodies, Hanoi, Vietnam, 23 – 27 May 2013
- Introductory lectures on KISSEL server system at the Kathmandu University, Nepal, 18-21 August 2012.
- Introductory lectures on KISSEL server system at National University of Science, Ho Chi Minh City, Vietnam, 07-12 April 2012.
- KISSEL Technical Seminar- 2015, Ibaraki University, Japan, 20-23, Mar 2015.
- International Symposium on ICT for Environmental Sustainability (ICTES 2014) - University of Kelaniya, Sri Lanka, 23-25, Jun 2014.

- KISSEL Technical Seminar- 2014, Ibaraki University, Japan, 17-19, Feb 2014.
- International Symposium on Sustainability Science and ICT (ISSICT 2012), Ibaraki University, Japan, 26-28, March 2012.
- International Symposium on ICT for Sustainable Development 2016 (ICTSD 2016), University of Kelaniya, Sri Lanka, pp. 11, 10-12 August 2016.

Sri Lankan Archaeology and ICT

Over the last two decades, there have been significant efforts in various fields of archaeology for improving the research methods with the aid of ICT. The new approach of using computer for the analysis of conventional archaeological data by developing specially designed computer applications is known as “computational archaeology”, of which examples are 3D modeling in archaeology (López *et al.*, 2016), satellite remote sensing (Tapete & Donoghue, 2012), GIS applications (Duke & King, 2012), and writer recognition of inscriptions (Panagopoulos *et al.*, 2009). Sri Lanka is fortunate because of the richness and the diversity of remaining archaeological artifacts. Among the archaeological written resources, inscriptions have inestimable value because they are contemporaneous unlike most of the literary sources. This subsection summarizes points of a computational archaeology study applied to Sri Lankan inscriptions in the last few years (Bandara *et al.*, 2012).

Up to present, estampage has been a main and popular copying method of inscriptions in Sri Lanka. This method comprises the following steps: (1) putting some water on to the inscription and laying a special paper on it (2) chopping on the paper, until the shapes of letters are engraved on the paper (3) putting ink on the paper, and rubbing the surface of the paper with a piece of cloth with ink, letting the paper dry to some extent, and (4) removing the paper from the stone. Some of important inscription data have been digitized and are stored in the KISSEL system together with the developed ICT technique for analysis. It is shown there that application of computer pattern recognition technique is useful for

studying the inscriptions of Sri Lankan Brahmi letters. The digitized inscription data, new analysis method and new findings are being shared with many researchers through KISSEL communications. In the following section, let us show an example of the analysis of estampage by means of a computer.

The source data of the analysis are grayscale photo images of inscriptions (Perera, 1964) shown in Figure 2. They are a part of the paper copies of inscription estampages. Firstly, the standard shape of each Brahmi letter alphabet would be decided as follows: 1) scanning and separating of sample letter images, 2) binary coding (0, 1 or white and black coding) of each letter image, 3) removing noises from the letter images, and 4) determining the standard shape of alphabet of Brahmi letters from a lot of estampage data and the computer analysis based on majority algorithm (Bandara *et al.*, 2012). Figure 3 shows binary images of the inscription letters: (a) before and (b) after noise reduction processes by computer.

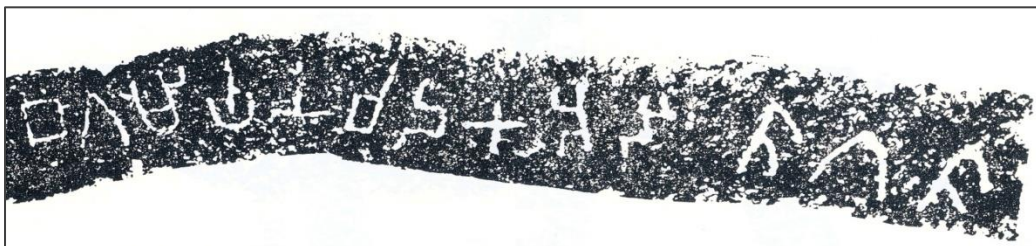


Figure 2. Photo image of original inscription found in Nācciyārmalai area in Trincomalee district, Eastern province, Sri Lanka (Paranavitana, 1970)

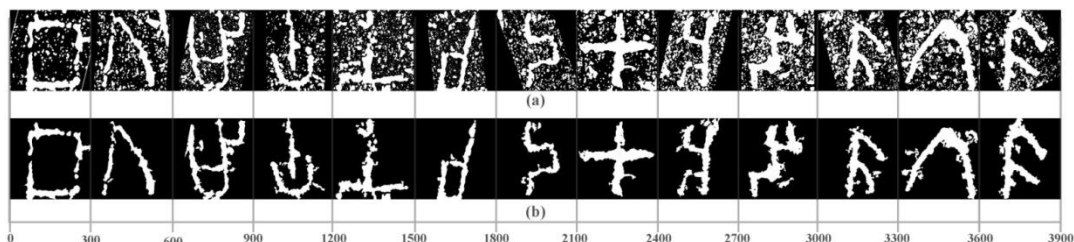


Figure 3. Two kinds of processed inscription images (a) with noises, (b) without major isolated noises. Here, the horizontal position is shown in units of the pixel numbers along the images

Once the standard shape of each Brahmi alphabet is decided in the form of “standard Brahmi letter fonts”, automatic identification of Brahmi letters of inscription is possible by studying correlation between sample image and the font image by computer. This opens the way to semi-automatic analysis of huge amount of data stored in the form of estampages. Authors have started to produce digital data repository of Sri Lankan ancient letters on KISSEL where the traditional estampage data, computationally processed images, and other important information such as place of the inscription, latitude-longitude data, the text expressed by standard fonts, meaning of the text, period, literature references, etc. are included. The KISSEL is a completely open system. The digital repository data can be used freely by researchers, teachers and also students of South Asian countries. If the study is carried out in such a way, i.e., internationally with the aid of ICT, it will be not so long before we can fully understand the development of South Asian languages in their historical contexts.

Social Decision-making Process and ICT

Decision-making can be regarded as the psychological processes (cognitive process) resulting in selection of a course of action among several alternative scenarios. Every decision-making process produces a final choice (Reason, 1990). According to Wang & Wang (2004), decision making is one of the fundamental

cognitive processes of human beings that is widely used in determining rational, heuristic, and intuitive selections complex scientific, engineering, economical, and management situations, as well as in almost each procedure of daily life. Since decision making is a basic psychological process, it occurs every few seconds in the thinking courses of human mind consciously or subconsciously (Wang & Ruhe, 2007). Some of the decisions we make every day are personal decisions and the others are social. An example of personal decision making is to decide what to take for lunch or how to spend the weekend. An example of social decision making is to decide on a future energy source for producing electricity. It can be nuclear energy plant or some sort of renewable sources such as solar energy plant. Both personal and social decision making are quite complicated processes and stochastic in nature. In social decision making, various messages are exchanged among people, which influence their ideas. In personal decision making, various ideas come to our minds and a kind of negotiation occurs between them. This process is nothing but “talking” in our mind, or internal message transfer. In communication studies, this process is called “intrapersonal communication” (Luria, 1961). We can understand that even though the personal and social decision making differ in their dynamics, both types of decision making have a similar mechanism which is based on message exchange, i.e., message formation and message transfer.

The basic sciences related to decision making are cognitive psychology and social psychology (Anderson, 1981). Emotional factors sometimes play an important role even in rational decision making. The basis of any decision making is knowledge regarding the given problem, namely information about the problem obtained before. This is true for emotional decision making as well as for rational decision making. Here, we try to express the decision-making process in a society in terms of mathematics. With this, we focus our attention on application of computer simulation method for studying the decision-making processes in a society. Here the key issues are articulating knowledge and creating and exchanging of messages through mathematical

functions. It should be noted that knowledge and messages to be expressed mathematically are only those which are related to the given problem that is to be studied.

In order to carry out the computer simulation, a multi-agent artificial society model was proposed. In general, an artificial society is a synthetic representation of a society (Epstein & Axtell, 1996). It consists of agents, which act in an environment by following given rules. According to the standard terminology, an artificial society is a particular case of the so-called agent-based models. Such models address ‘possible societies’, their general processes, dynamics, and emergent properties (Gilbert & Conte, 1995). Such artificial society models could be very useful tools to analyze and understand social processes as Hales (1998) noted. He says that the aim of artificial society modeling is to model features and processes which characterize societies in general: co-operation, specialization, group formation, hierarchy etc. Artificial society work does not strive for superficial realism or direct correspondence with existing societies but for abstract logical relationships that characterize whole categories of phenomena. Figure 4 illustrates the artificial society model in general.

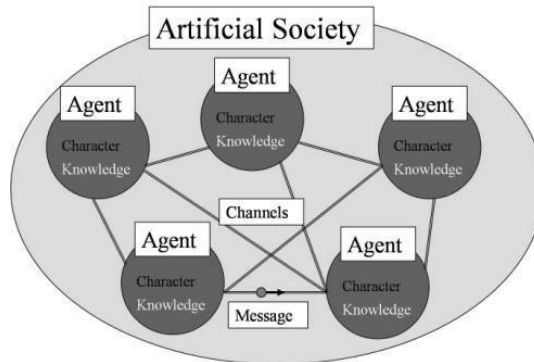


Figure 4. Artificial society model regarding ‘a given problem’ which is used for mathematical formulation in the decision-making processes of a society.

The model that we propose, namely psychology-oriented artificial society model, provides an algorithm of computer simulation for the decision-making process in a society. In order to formulate a mathematical formulation for the personal decision making it was necessary to create an algorithm and a linkage model of cognitive psychology (Weiner, 1980). The model was implemented to analyze the decision-making process in Bangladesh regarding the acceptance of nuclear power plants. More details of the model and its application can be found in Quarmal *et al.*, (2012a), Quarmal *et al.*, (2012b), and Quarmal & Ozawa (2013).

Programming language C together with a graphics tool, SGL-Simple Graphics Library (Ozawa *et. al.*, 2010), has been used in the program code of the computer simulation. Also, a web-based tool titled “Keyword Extractor” was developed to assist the process of computer simulation of social decision-making process using the psychology-oriented artificial society model, which was freely accessible through the KISSEL website.

Computer simulation method for psychology could be a very effective tool to understand social trend for (1) psychological phenomena that can be described quantitatively (2) dynamics of the psychological phenomena that can be described scientifically by modeling the process occurring inside of human brain (3) forecasting future results of psychological phenomena.) By changing the parameters of the model, it is possible to study the phenomena for various situations.

Language Education and ICT

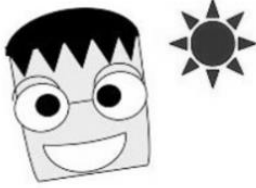
ICT Language laboratory systems are popularly used in public schools, language schools and also in university-level education. Many commercial packages for various methods of language education have already been distributed all over the world. In this paper, one special problem in language education was studied. The Ritsumeikan University group of KISSEL project noted the importance of mother tongue education for young children of foreign workers who live only few years in foreign countries (Ozawa, 2013). Young children of foreign workers, for example in Japan, quickly master the Japanese language, but they are

usually cut off from the environment of their mother tongue. After coming back to their country of origin, they have difficulties in adjusting to the language and culture at home. Special E-learning materials have been developed for such persons and were opened to the public in the form of E-books via KISSEL. The E-book library of KISSEL contains libraries of English-Japanese, Chinese-Japanese, Spanish-Japanese, Portuguese-Japanese, Tagalog-Japanese and Japanese (KISSEL, 2017). The contents of each library could be further classified into **three categories: Storybook, Flashcard (small E-book of few MBs) and Vocabulary book (E-book for expanding one's vocabulary)**. These are multimedia type E-learning materials in Daisy format and a special browser AMIS is used to open the Daisy file. The users are requested to 1) get AMIS from <http://www.daisy.org/amis/download>, 2) download an aimed E-book file from the libraries in KISSEL contents and unzip the file, and 3) open the initial page (ncc.html) by AMIS. In each library, several storybooks are included of which topics are selected for young children. When the E-book is opened, recorded voice of reading appears together with illustrations and texts of the story in two languages. Figure 5 illustrates one page of the E-book. This example is taken from a storybook in the English-Japanese Daisy library. Japanese sentences and corresponding English sentences are printed there. The both sentences are read in sequence. The shade bar on the text shows the textual location of that is being read.

The Ritsumeikan University group of the DAISY project is engaged in volunteer work of language education for young children of foreign workers in Japan (Ozawa, 2013). They organize small language classrooms in local societies. The students of the university work as illustrators of the classes. This example shows that E-learning method is suited for education of selected group of peoples. It is noted that the same technique can be applied to the education of refugees or immigrants who are cut off from the language and the culture of their mother countries. The authors are planning to include this topic into the next phase of KISSEL project with the aid of mobile learning technique (Ozawa & Ualesi, 2017).

いろいろなホットケーキ

Make different kinds of pancakes



いろいろなホットケーキをつくってたのしもう。いろいろなかたちにつくれるよ。

Let's make different kinds of pancakes. We can make various types of pancakes.

みぎのは、おおきいホットケーキ

The one on the right is a big pancake.

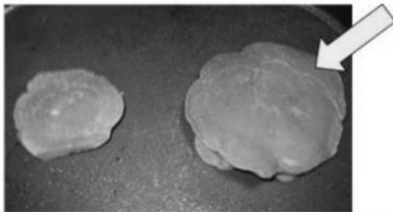


Figure 5. A page of an E-book taken from Daisy library in KISSEL

Emergent Digital Culture

We live in the age of information. Hardly any sector can be found where ICT does not have strong impacts, be it communication, business, education, agriculture, medicine, entertainment or any other sector. As such, rapid changes triggered by ICT can be observed everywhere, even in developing countries like Bangladesh where the number of people having access to ICT is really low. Considering this, KISSEL group in Bangladesh is working on exploring the ICT impacts in different sectors as well as in people's lives. One such study on "Mobile Phone as Parenting Device in Dhaka City" (Khan & Quarmal, 2015) explored the usage of mobile phone as a parenting device in Dhaka City and its impact

on parenting. The study revealed that mobile phone has become an inseparable part of life in Bangladesh. Parents of teenage children in Dhaka City are nowadays providing mobile phones to their children that they could track their where about, get updates and provide directives to them. However, its use as a parenting device is not yet mastered by the parents in Dhaka City because as 'digital immigrants' they are not well acquainted with all the features mobile phones such as surveillance features. On the other hand, providing teenagers with mobile phones can be really harmful as the parents cannot fully control the usage of mobile phones by teenagers.

In another study entitled "Role of Social Media in Shaping Communication Behavior of Urban Youth in Bangladesh", Quarmal & Osmani (2015) have analyzed the role the social media play in shaping communication patterns and behavior of the urban youth in Bangladesh and the factors that contribute to this process. In this study, over 300 young adults were surveyed in three cities (Dhaka, Rajshahi & Barishal) across the country. To gain more insight out of the survey, academics were interviewed as well. The study revealed that social media has become a part and parcel of the lives of young people in the country. They spend a significant amount of time (about one-fifth of the day) in social media and some of them literally live 'online'. Social media has become such an integral part of their lives that unavailability of access to social media makes them 'feel lost' even 'crazy'. Nowadays, they use social media not just for communicating with distant friends and relations; they use it for communicating with near-by people as well. They also use social media extensively for education and entertainment. Such extensive usage of social media affects the pattern of youth's day-to-day communication in physical spaces as well; the findings show that their interaction-time with people in physical spaces such as hanging out with friends, visiting family and relatives, is much lesser than that in the virtual space. The study revealed that one of the most important reasons behind such popularity of social media as a communication platform among the Bangladeshi youth is the convenience of time and space, especially in Dhaka where physical

mobility is highly challenged due to bad traffic and lack of public transport. Also, many of the respondents from Dhaka mentioned that due to the dearth of spaces for outdoor sports and other social interactions, they prefer to spend time and interact with other people using social media even though many of them “miss the warmth of face to face interaction”. The study revealed that, the young people in Dhaka city are more dependent on social media for their day to day communication than the youth living in the other two cities. Their interaction with friends, family and relatives in physical spaces is much lesser than that in the other two cities as well.

The experts who were interviewed during the study also reflected on the social media usage of young people, they agreed that it seems a double-edged sword. On the one hand, it opens up opportunities for easy and convenient communication around the globe, provides a channel for education and entertainment, creates a discursive space for expressing opinions on different issues, and creates a ‘comfort zone’. But, on the other hand, the experts say that extensive use of social media could lead to lack of interaction in physical spaces and that could negatively affect communication skills. Extensive use of social media may have some negative effects; many might think of putting a bar on their children’s social media activities. According to the experts, that’s not the proper way to deal with it. One of them, a practicing psychologist, recommended the creation of a ‘healthy’ environment in the family by providing young people a sense of belonging and quality family time; they should be allowed to use social media but should be discouraged from finding an ‘escape zone’ in it.

Undoubtedly, a digital culture is emerging globally and ICT has become an integral part of life and is making an impact on the way people live their lives on a day-to-day basis; the way they connect with the people surrounding them; the way they undertake activities such as governance, health, commerce, agriculture, education, etc. As such, it is important to explore the trends in this emergent digital culture. Having similar eco-social-cultural

realities, the above-mentioned studies are important for other South Asian countries. Researchers in those countries may undertake similar work which may help the general public as well as the policy-makers with the notion of the proper utilization of ICT.

Discussion

As suggested in above discussion, new powerful scientific approaches can be established by combining the traditional methods with the latest ICT. The merits of the new research methods of using ICT are:

- 1) Analog data (for example, printed data of estampages (Bandara *et al.*, 2012) are converted in to digital. Digital data can be easily processed by a computer. As a result, the process of data analysis becomes speedy and precise, free from human error. Sometimes semi-automatic data analysis is available with the aid of computer programing.
- 2) The digital data is easily distributed to other people through networks or via electronic media. This is convenient for people in distant places to carry out research or educational collaborations.
- 3) The systematic management of huge amount of scientific data accumulated becomes available through the usage of the database technique. Various data analysis methods, for example, taking correlation between different data can be applied to the database.
- 4) Most of the scientific data are numerical. Once the data is fed to the computer, such data can be represented in different ways by using various graphic tools. This process helps to understand the meaning of the data.
- 5) Theoretical modeling combined with computer simulation can be a powerful method for studying complicated natural or human systems. It is sometime possible to forecast future states of the system from knowledge parameters of the initial condition.

The new ICT approaches not only improve the traditional research methods but also produce good effects on educational activities because the fruits of research can be easily integrated into education as far as the education is also carried out through an ICT method. The results of researches stored on KISSEL servers can be used as educational materials for schools and universities. In this sense, E-learning and E-research are important. Students should master such abilities to handle the new ICT approaches.

Here it is worthwhile to note that the primary ability that is required by today's industries is the application of specialized knowledge by means of ICT. If high education systems are upgraded this way, industrialization in South Asian countries will grow. Actually, a considerable amount of effort is already divested in ICT education in South Asian countries. Authors are aware of the connection between academic and industrial sectors in South Asian countries. If highly educated people are not employed in industries, it raises serious issues. In the Japanese society, a seamless connection is established between educational sectors and industrial sectors. Most of university students find their jobs before graduation. There are social rules and well-established system for various recruiting activities in Japan. Each university has a recruiting center that takes care of student's job hunting. Many companies adopt internship methods that provide opportunities for students to experience working in the company before they graduate from a university. In order to realize such seamless connection between academic and industrial sectors in South Asian countries, a considerable amount of efforts must be invested. Here, ICT may be a useful tool for improving the connectivity between the academic and industrial sectors. This can be one of the main targets for the next stage of the KISSEL project. The details will be reported elsewhere.

Conclusions

The present paper discussed how a scientific project, based on an ICT platform, helped and could continue to help researchers to collaborate and share knowledge. In South Asian countries, the

continuing efforts are needed for the innovations of research and educational methods by means of the latest ICT. In order to carry out the innovations efficiently, communications between researchers and/or teachers are important. The KISSEL system is so designed that they can share ideas, knowledge, experience, technique that are needed for innovation. One common problem in South Asian countries is that they do not have seamless connectivity between the educational and industrial sectors. The problem should be solved in collaboration with various researchers and/or teachers in South Asia. The KISSEL system will support such future collaborations.

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Women's Experiences on Menopause: A Phenomenological Study

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Abstract

Menopause is the permanent termination of menstruation resulting specific symptoms such as hot flashes, mood swings, sleep disturbances, forgetfulness, vaginal dryness and weight gain. Women suffer from these symptoms because such symptoms affect their day-to-day life and finally lead to decrease in the quality of life. Therefore, it is pivotally important to study the experience of women during menopause. The aim of this study is to explore women's experiences of menopause. Purposively selected 20 women who experienced menopause were recruited for this qualitative phenomenological study at the Gynecological Section of the District General Hospital, Matale. Data was collected by semi-structured interviews conducted during a period of one month and data analysis was done using Colaizzi's analysis method. Four (04) themes emerged from the findings, which are: unbearable discomfort in the body, emotional instability and memory problems, problematic issues in family relationships, and increased expenditure for the treatments. Hot flashes, sleep disturbances, joint pain, vaginal dryness and weight gain were the physical experiences. Further, there were psychological experiences of menopause such as difficulties in making decisions, forgetfulness, fits of anger, mood swings and frustration. Moreover, women's menopausal experiences also affected their family life and economy. Women noted that

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decreased libido and lack of motivation were affecting their family life, while experiences of poor time management and additional expenditure on medical treatment were adding to the existing burdens of family economy. The findings revealed that women suffer from different experiences during menopause and they suffer because, those changes reduce the quality of their lives. Such personal changes, though they are manageable, could lead to issues such as rupture in personal roles within the family and immediate society. Hence, these study findings can be used to provide them with better health care and knowledge.

Key words: women, menopause, experience, discomfort, emotional instability, mood swings, hot flashes

Introduction

The word 'menopause' is derived from the Greek words 'men' and 'pause' and it is referred to as a series of the psychological and physical changes in women's life after termination of menstruation (Hoda *et al.*, 1993). Usually, it is identified by the absence of menstruation for duration of 12 months (Soules, 2005). This is often regarded as a significant event in a woman's life and it is accompanied by a series of biological and psychosocial changes (Bernis & Reher, 2007) and they have to adapt to a new biological state (McKinney *et al.*, 2012; Speroff & Fritz, 2005). The mean age of menopause is around 51 years and it ranges from 45-55 years in many countries (Ramakuela, 2015; Gharaibeh, Al-Obeisat & Hattab, 2010). In Sri Lanka women's life expectancy has extended upto 79 years (Ministry of Health, 2012) and the mean age of menopause is around 51 years. Therefore, women in Sri Lanka will spend around 1/3 of their life after their menopause. So, it is important to pay more attention to the quality of their lives (Inceboz *et al.*, 2010).

Women usually experience menopause after facing many coincidental changes in their lives. These include, children getting married and leaving home, parents becoming ill or dying and personal health problems. These events force women to cultivate coping skills and behave in a mature and respectable manner. Menopause is a crucial turning point of a woman's life and it is naturally designed as an aspect of the aging process (Ramakuela, 2015). So, this is the entry point for old age and it reduces the

quality of life of women, and so women are not ready to accept these manageable changes at once (Ramakuela *et al.*, 2014; Kilaf & Kirchengast 2010). However, menopause is considered a taboo subject and people are discouraged from discussing it (Formanek, 1990).

Menopause results from the reduction of secretion of ovarian hormone levels, including estrogen and progesterone due to the changes in the urogenital epithelium (Ramakuela, 2015). It also causes the decrease of other hormones as well (Jones & Boelaert, 2015). This leads to the arising of various biological and psychological changes in women (Speroff & Fritz, 2005; McKinney *et al.*, 2012) and they could suffer from these symptoms in various degrees that could eventually disrupt their lives (Hoda *et al.*, 1993). With the reduction of sex hormones, a woman experiences physical changes including hot flashes, vaginal dryness, vaginal atrophy and insomnia. It also results in cognitive changes and changes in memory (Bernis &, Reher, 2007; Greenblum *et al.*, 2013). A hot flush is a symptom which suddenly results in a feeling of warmth that spreads throughout the body, especially over the face, neck, and the chest. This often arises with profuse sweating followed by a chill and could last for 2-3 minutes. Around 65% of women suffer from hot flush (Gold, Sternfeld & Kelsey, 2000) while about 47% have reported vaginal dryness, itching, discomfort, and dyspareunia during the later postmenopausal period (Dennerstein, *et al.*, 2000). The above-mentioned changes have a negative impact on a woman's sexual life, family relationships and socio-economical life (Genazzani, 2000). Around 85% of females suffer from these symptoms (Goodman *et al.*, 2011). With the reduction of these hormones, there is a tendency for unhealthy conditions like osteoporosis, obesity, diabetes mellitus and heart diseases to occur.

Today, women increasingly contribute to the labor force and play roles in higher key positions in the commercial sector. So, they engage in activities like driving, which increase the risk of injury. Women who are un-employed raise children and engage in other household activities. Therefore, it is essential to pay attention to the quality of their lives. Understanding women's experiences are important to improve their quality of lives through providing better care.

Methodology

A qualitative phenomenological design was utilized in this study to explore women's experiences of menopause. The experiences are qualitative and difficult to quantify. Also, this is the best type of study design which could be used to explore women's 'lived experiences' adequately and in-depth because people are allowed to talk freely (Hancock, Ockleford, & Windridge, 1998; Marriam, 2009).

Study Settings and Participants

The participants of this study were women who sought medical treatment for their menopausal symptoms at the Gynecological Section in the District General Hospital, Matale. Twenty women, who were purposively selected, were recruited for the study. They were in the age category 45- 60 years and have experienced menopause for a period less than one year. Their willingness to discuss experiences of menopause was also considered when selecting the sample. Women who had bleeding disorders and a surgical history were excluded from the study.

Ethical Consideration

Ethical approval was obtained from the Ethics Review Committee of the General Hospital, Kandy and the permission for this study was taken from the Director of the District General Hospital, Matale. All the participants were fully informed about the purpose of the study prior to conducting the study. Informed consent was obtained from each and every participant before collecting the data and voluntary participation was encouraged. Anonymity and confidentiality were assured by securing the information only among the research team and labeling them with a specific code for collected data.

Data Collection

Semi-structured interviews were used for data collection. A theme list was used to guide the interviews validated by referring appropriate literature and expert opinions (Polit & Beck, 2013). It was translated into their mother tongue and it facilitated the covering of all the required parts in the interviews. Supplementary

words such as “How, What, why...” were added accordingly to encourage women to explain their experiences in detail (Burns & Grove, 2016). Consistency and accuracy were maintained by conducting all the interviews by the first author.

During the interviews, the women were separated from friends and family members to facilitate the free expression of their experiences without bias. The interviews were conducted in a calm and quiet place, chose flexible times for the participants and treated them in a respectable manner to minimize stress or physical tiredness. Listening well, encouraging them by demonstrating positive affirmation of their viewpoints, looking at them in an interested manner and other tried and tested interview skills were used to conduct more effective interviews (Merriam, 2009). High quality tape recorders were used to collect data effectively. The investigators were more concerned about the body language, non-verbal clues such as crying, sighing which were used by the women to express their experiences during the interview process (Polit & Beck, 2013). Data was collected for a period of 1 month and every interview was conducted for duration of 40 to 50 minutes on average.

Data Analysis

The data analysis was done using the Colaizzi's method (Shosha, 2010). First, all the recordings were listened to carefully in order to get a clear sense of the whole content of participants' explanations and views. They were transcribed into texts with several reviews. Then, important statements which were relevant to the phenomenon were extracted from them and recorded on separate sheets. The meaning of each phrase was described and defined. The formulated meanings were categorized in to sub themes and then themes and these categories were referred to initial protocols for confirming their validity. The fundamental structure of the phenomenon was described. The descriptions were reviewed to obtain clear meaning and to avoid any ambiguity. Member checks were used to maintain the trustworthiness of the study.

Findings

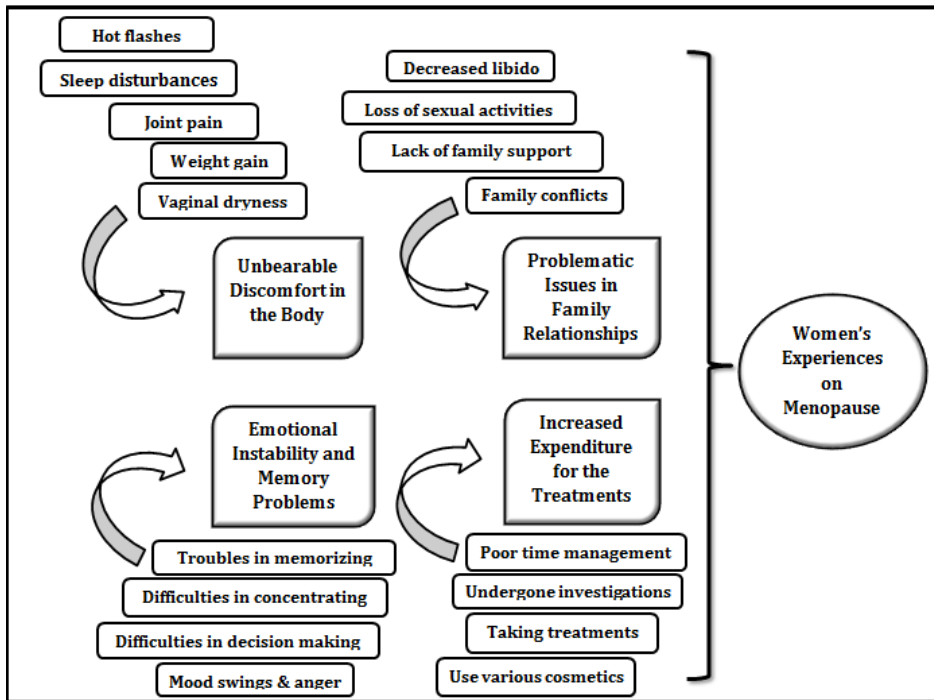


Figure 1. Women's experiences of Menopause

Four (04) themes were derived from the findings, they are: unbearable discomfort in the body, emotional instability and memory problems, problematic issues in family relationships, and increased expenditure for the treatments. These are presented as a model which illustrates the women's experiences of menopause. (Figure 1)

Unbearable discomfort of the body

Women often suffered from hot flashes during menopause. They have experienced it as a sensation like a hot wave which begins from their feet and spread throughout the body up to the head. It lasts only a few minutes and rapidly disappears 2 to 3 minutes after it had begun. During this period, they felt burning sensations upon the whole of the body. They became reddened, especially on the face and upper body. However, this sign of menopause varied

widely among them. Ms. H described her experiences on hot flashes as:

“It feels like my ears are going to blow off my head, just fire, it lasts few minutes and then become relaxed. All of a sudden it starts at my feet and my toes feel as if they are burning, and then it goes up my legs and it goes like a wave throughout the body” (Interview 08, Ms. H)

These women have experienced sleep disturbances as well. They woke up many times during the night. Insomnia is a sleeping disorder connected with menopause. Both hot flashes and night sweating have created sleep disturbances that were difficult to tolerate, and which increased irritability and stress in women's working lives. They also said that their sleep was less restful and falling asleep became increasingly difficult. One such experience was captured in a statement recorded from Ms. J.

“Most nights I feel very hot. At that time, I have a bath, but it did not help me. I drink water, but not much effective. Mmm.....then I go to sleep. One night, I felt as the whole the room was rotating around me. Then I woke up and opened the window. I felt as if it was the last moment of my life” (Interview 10, Ms. J)

Joint pain is one of the most common symptoms women experienced during menopause. It was an indescribable pain, stiffness, or swelling in or around a joint and muscles. Although usually the joint pain often occurs in joints of high impact, such as the knees, hips, and the back, many women experienced such pain in the joints of their hands which had become stiffer and more painful. It badly affected their day-to-day lives. Ms. M explained about her joint pain as follows:

“Work on time Uh..... inability to do my day-to-day work because of severe joint pain, I worry about it (sad mood). Mmm.....I cannot manage my work” (Interview 13, Ms. M).

Weight gain is also another significant problem that results from menopause. Women became more fatty and obese, and therefore often worried about the changes of their body image. Especially, the abdomen became fatty than hips and thighs. According to women, obesity was caused mainly by lack of physical activities

and irregular eating habits caused by with severe hunger. Ms. A explained about her eating patterns during menopause as follows:

“I feel very hungry; I want to eat seven to eight times a day. I eat a lot and my body becomes fatty and out of shape, I don’t know what to do... I worry about my body shape, but, when I feel hungry I do not remember anything” (Interview 01, Ms. A)

Suffering from vaginal dryness and changes in desire to have sex were the most crucial and unpleasant experiences for women. Lack of lubrication has led to sex becoming uncomfortable, and the vagina was frequently itchy; there were irritations in and around the vagina, and was more prone to infections. Vaginal dryness was one of the most emotionally distressing menopausal symptoms as it reduces the frequency of engaging in sexual activities. It is important to seek treatment for this condition if it begins to affect the quality of life. As this sudden drop in desire for sexual activity or intimacy were more troublesome and caused dents in the relationship with her life partner. Loss of libido can also be caused by other menopausal symptoms such as vaginal dryness or depression. Ms. L explained her experience of vaginal dryness:

“Mmm.....earlier.....we had sex two or three times a week. But, now I feel difficulties. I don’t have any feelings. When we are having sex, I felt very painful in my vaginal area. Hh.....Um..... Now we have sex only once or twice a month. My husband worries about it, sometimes he has got angry with me too” (Interview 12, Ms. L).

The findings revealed that menopause is a stage of life, experienced in different ways. Hot flashes, sleep disturbances and vaginal dryness were the strongest symptoms reported by women. The positive or negative ways in which each woman approaches the changes during menopause are influenced by their personal, family and socio-cultural background.

Emotional instability and memory problems

As a result of menopause, many women have noticed that they have troubles in memorizing, and they experience mental blocks,

or face difficulties in concentrating. This can cause confusion, make them worry and can have a significant impact on all aspects of daily life. Therefore, they have to face difficulties in making decisions in their daily activities and working life. Women had revealed that they had changes in their cognitive functions as well. However, inadequate sleep or sleep disruptions can also contribute to the difficulties in decision making and concentrating. Ms. Q described it as follows:

“Mmm..... I always face difficulties in managing my work properly. I cannot control even my class students, sometimes I have to face problem too. When I was teaching students, sometimes I could not continue the class” (Interview 17, Ms. Q)

Almost all participants described some level of forgetfulness associated with menopause. Women explained about the impact of forgetfulness on their jobs and day-to-day activities. Several women revealed about the need for keeping a list to remind them about their daily responsibilities. Women explained about changes in their moods identified by themselves and family members.

“Sometimes, I go to the refrigerator to get something, but, once I go there, I forget the reason why I went there (laughs) that is my memory loss related to menopause” (Interview 18, Ms. R).

“My husband says, ‘you are always moody, what is the matter with you, you are grumpy all the time and snapping at children’” (Interview 14, Ms. N).

Mood swing and anger are surprisingly common among menopausal women, but can be hard to cope with. A woman experiencing mood swings felt like as if she were on a rollercoaster of emotions: one minute she was up, the next minute down. Mood swings were sudden and intense, although the experience of them may differ from woman to woman. Other menopausal symptoms also have a negative influence on mood, such as fatigue. Ms. B explained about her mood swing and anger:

“I feel I'm emotionally unstable... so unstable. I'm more sensitive; quite suddenly I start to think about my parents and they are getting old and then I'll be the eldest soon. I

think about a lot of things. I think... well, it's hard to take in. These feelings make me sad. At the same time, I think then I will see my grandchildren... Those thoughts make me happy" (Interview 02, Ms. B)

Some women said that sometimes they felt frustrated with their lives due to forgetfulness, mood swings and decreased cognitive functions. Thus, these women were under the impression that they were neglected by their close family, friends and others. Feeling of irritability made them upset and caused them to feel fed up about their lives. Such conditions adversely affected their job performances and relationships with family, friends, and co-workers and forced them to seek medical advice. While experiencing those feelings the women also attended religious activities.

"It is something very emotional, when my mind commands me to fight with somebody. There is no reason to fight. I want to give-up everything ...I felt that everybody neglected me, I go to the temple every day and stay a long time there" (Interview 06, Ms. F)

Under the theme of emotional suffering, women have experienced forgetfulness, decision making difficulties and mood swings which directly affected their quality of life.

Problematic Issues in family relationships

Women mentioned that they faced family conflicts, especially problems associated with their partners. Emotional instability or irritability appeared as the main reasons for these conflicts. They stated that they were very sensitive and irritable without any apparent reason and this irritability was placing the relationships with their families under stress. Women revealed that vaginal dryness, sweating and abnormal body odors, decreased libido and caused the complete loss of sexual activities in their relationships—these were the main causes for the disruption of relationships. However, several women said that their partners were sensitive to these changes and were supportive of them even when there were changes in their sexual relationships. Other women highlighted that they felt stressful, lazy and they were affected by the lack of family support all of which contributed to decreased motivation in their work. Ms. J described that her

husband was very supportive and did not pressure her to have sex:

“My husband actually has been very supportive, he.... Um.....um.... he takes effort to make sure that I know; he does not pressure me to sex or anything else” (Interview 10 Ms. J)

Ms. K explained that she lost the connection with her husband.

“I have lost connections with my husband; I am irritated all the time.....my irritability affected to my relationships--including those with my children. I suddenly get angry and shout at them. Then I asked to myself why did I behave like that? Yes, I lost my sexual interest and I don't care anymore. Just my husband's disappointment makes me stressed and I force myself....” (Interview 11 Ms. K)

They usually begin in the period of menopausal transition, that is, the time leading up to the final menstrual period, and typically persist throughout post-menopausal period. They include hot flashes, sexual, psychological and mood changes, poor quality sleep and rapidly ageing skin. Due to these changes motivation is decreased among menopausal women in their daily work. Ms. D and Ms. F explained the reasons for their de-motivation due to menopausal experiences:

“I can't do many things easily that I usually do. I think that at the beginning the bones were weakening. Once my bones are not strong any more, my mobility becomes limited. I am not motivated to do any work at home or work place” (Interview 4, Ms. D)

“These hot flashes, makes me nervous and troublesome. It can be easily seen by other people. Suddenly I become all red. I don't like this at all. Sometimes, when I am just about to go out, all dressed up, suddenly I sweat profusely, and I look like a drowned rat. Then I have to change all my clothes. I like to do work in my workplace but during this period everything messes up and makes me commit mistakes and I feel like given it up” (Interview 6, Ms. F)

Under this theme, the findings revealed that menopausal changes have created family conflicts and problematic issues in family relationships.

Increased expenditure for treatment

Several women were worried because they were unable to manage their work on time. They revealed that laziness, forgetfulness, anger and joint pain as the reasons for poor time management. It was evident by this explanation:

“I was unable to do work on time at home and office, because I felt many difficulties. Joint pain, forgetfulness, lethargy are some of these. Sometimes, I take leave to go home and get sleep” (Interview 11, Ms. K)

Women explained that they had to take some treatment for their condition. They have got both western and ayurvedic treatments. They had undergone many investigations from private sector and have spent much money. They had to use various types of cosmetics because the skin became dry. Therefore, they spend much money than earlier. Ms. A described about her additional expenses during menopause period as follows:

“At the beginning of these changes I felt lot of discomforts. But then I did not know these changes resulted from menopause. After 4- 5 months I understood the situation, but I could not tolerate. I went to get treatment with my husband. I have a breast pain too. The doctor ordered me to do mammogram also. I have spent much money. ...Not only that my skin gradually becomes dry. I bought various types of cosmetics to apply all over the body” (Interview 01 Ms. A)

According to this theme the women have to spend more money to seek medical treatment.

Discussion

The findings of this study identified that the women underwent different types of experience of menopause during their menopausal transition. In the process of analysis, four major themes were derived from the findings: unbearable discomfort in

the body, emotional instability and memory problems, problematic issues in family relationships, and increased expenditure for the treatment.

Unbearable discomfort in the body

Almost all the participants of the study population had various physical experiences of menopause, such as hot flashes, sleep disturbances, joint pain, vaginal dryness and weight gain. Most of women have experienced hot flashes during menopause. Similar results were reported by Waidyasekera *et al.*, (2009). They reported that hot flashes, joint and muscle discomfort, and physical and mental exhaustion were the most prevalent menopausal symptoms.

The other most common physical experience was sleep disturbance. Almost every participant in this study population had experienced sleep disturbance in the form of night sweats. The prevalence of this condition can be compared with other studies in Sri Lanka and developing countries. Similar results have been found in a field-based study from Sri Lanka by Waidyasekara *et al.*, (2009) which showed that 66% of Sri Lanka women have experienced night sweating during menopause. Consequently, Ramakuela (2015) reported that African women have experienced sleep disturbance around the time of menopause more than other experiences.

In addition to those changes, weight gain and joint pain were also the common changes experienced by the study participants. Singh *et al.* (2012) identified that weight gain and the high prevalence of obesity are common among menopausal women. Although all participants had thoughts on weight gain during menopause and they worried about their weight gain and out of shape bodies. This finding corroborates with Singh *et al.* (2012) who found that women are not only gaining weight, but also experiencing changes in body composition and fat distribution.

The findings pointed out that vaginal dryness and sexual libido changes were physical experiences of menopause. The impact of decreased libido and intimacy with their partner was a distressing physical changing of menopause. Furthermore, these findings were also noted by Rahman *et al.* (2010) who emphasized that women frequently experienced sexual problems, and vaginal

dryness. Women in the menopausal age (50-65 years) also reported vaginal dryness when compared with younger women (18-34 years) in the UK, Australia, Canada, Italy, Spain, and Argentina which resulted in the decrease of sexual libido (Leiblum *et al.*, 2009). But, in Asian cultures, sexual dysfunction during menopause is often a neglected area. However, now women are more concerned about their sexual wellbeing in latter part of the life (Genazzani, Gambacciani & Simoncini, 2000).

Emotional instability and memory problems

According to the findings, difficulties in making decisions, forgetfulness, anger, mood swing and frustration were the specific emotional cognitive changes of menopause. In this study, women had experiences of difficulty in making decisions in their day-to-day activities and working life. However, some participants revealed that it was not a problem for their daily activities. This finding is comparable with Bauld & Brown (2009) who showed that difficulty in concentrating and loss of confidence often affect working life.

Moreover, based on the research findings, forgetfulness was another psychological experience of menopause. Women perceived that forgetfulness as a menopausal experience had affected their employment and day-to-day activities. Hoda, Sahorb & Luma (2014) have found 48.3% of women who experienced poor memory in their menopausal stage in a sample of 90 women.

Along with forgetfulness and difficulty in making decisions, participants revealed that anger, mood swings and frustration as the other most common psychological experiences they faced in their menopausal transition. According to the findings in this study, the women easily became angry with their family members. They talked freely with the researchers about the frustration they felt about their lives. Bauld & Brown (2009) found that psychological changes which resulted from menopause could lead to frustration, anxiety, irritability, mood swings and depression which often have an impact on personal relationships and the quality of life.

Increased expenditure for treatment

Evidently, the participating women in this study also revealed the socio-economic aspect of their experiences related to menopausal

transition. Further, those experiences affected their family and social bonds as well as work and economy. According to the study findings, the experiences of decreased motivation affected their family lives and social bonds. The women revealed that they experienced decrease in their sexual libido and it greatly affected husband--wife relationships. Participants mentioned that due to this experience their husbands quarreled with them frequently. According to Leiblum *et al.*, (2009), most of participants have reported sexual disinterest after menopause.

Furthermore, women in this study pointed out that decrease in motivation for work as a menopausal experience and that it had greatly affected their family lives and social bonds. Participants mentioned that it disrupted their daily activities at home as well as their future plans. This finding is comparable with that of Inceboz *et al.* (2000) who showed that 63% of women complained of decrease in motivation in their daily activities after menopause. The findings of this study reconfirmed those views.

However, menopausal experiences of women have also affected their work and economy. The participants of this study mentioned that after their menopausal transition, they could not manage time efficiently and effectively. It directly affected their jobs and economy. Along with these experiences, participants had sought medical treatment. Evidently, they had to add this as additional expenses to their economy. Although they moved on to the medical treatment, they did not receive proper treatment for those difficulties.

Coping technique used during menopause

The women in this study used certain coping techniques to overcome their menopausal experiences. According to Waidyasekera, *et al.*, (2009), the most common techniques were engaging in religious activities, seeking ayurvedic medicines, hormone therapy and exchanging of ideas with their friends/colleagues about menopause. Some women refused to try anything; feeling menopausal was a natural experience that was a part of normal aging. Along with coping techniques, the study participants also revealed that they had to increase their knowledge and attitudes about menopause to overcome the difficult experiences of menopause.

Empowering of women suffering from menopause

The findings pointed out that the knowledge and attitudes about women suffering from menopause should be increased to overcome the difficult experiences of menopause. These women also suffered from several chronic diseases, such as hypertension, arthritis, heart disease and diabetes, which are inevitable conditions associated with middle-age. Therefore, women must be empowered to take decisions concerning their health. These women revealed that health education programs would be a great solution for this.

Conclusions

Menopause had brought a series of challenging experiences to women's lives. Four themes related to menopause were derived from this study, they are: unbearable discomfort in the body, emotional instability and memory problems, problematic issues in family relationships, and increased expenditure for treatment. Located under these themes are women's experiences such as hot flashes, sleep disturbances, vaginal dryness, weight gain, and night sweating. Further, they experienced forgetfulness, memory loss, and difficulties in decision making, anger, mood swings and frustration. Furthermore, women experienced family conflicts and subsequent issues in family bonds. Moreover, they spent money to seek medications for these menopause-related changes. However, it seems that women's knowledge on the subject is inadequate and therefore they tend to suffer. Menopause badly affected the quality of lives and even self-esteem. Many studies revealed that women's coping ability with stress due to changes resulting from menopause can be improved by enhancing their knowledge and attitudes. So, it is recommended to organize awareness programmes for women in the menopausal age to increase their knowledge about menopause. Television, newspapers and social media should be used effectively for this matter. We recommend the introduction of practical coping techniques and strategies to reduce the severity level of menopausal symptoms so that quality of life could be enhanced. It is also imperative to increase the knowledge among nurses about women's experiences on menopause to enhance the nursing care for such women.

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Protection of Journalists in Armed Conflicts: An International Law Perspective

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Abstract

Each year a large number of journalists are killed or wounded in armed conflicts. In armed conflicts, journalists are among a precious few remaining actors capable of exposing illegality (Saul, 2009). Because war journalists ensure the realization of the human right to information of citizens all over the world, they play an essential role. International humanitarian law lays down the main international legal framework governing the journalists in armed conflicts. Article 79 of Additional Protocol I of Geneva Conventions states that “Journalists engaged in dangerous professional missions in areas of armed conflict shall be considered as civilians and they shall be protected as such under the Conventions and this Protocol, provided that they take no action adversely affecting their status as civilians”. It can be identified that journalists are protected under the condition that they take no active participation in hostilities. However, Geneva conventions have failed to provide a definition or direct participation of hostilities. Therefore, it is not clear of the instances journalists are protected under International Humanitarian Law because protection of journalists depends on the activities of journalists and whether it amounts to a direct participation in hostilities.

Moreover, it can be seen that Geneva Conventions have not addressed the protection of journalists in non-international armed

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conflicts. Therefore, journalists in internal armed conflicts are not protected under Geneva conventions. Another, fundamental issue with regard to the protection of journalists is the distinction between War Correspondents and Independent Journalists. It can be identified that Geneva Conventions identifies War Correspondents and Independent Journalists as two distinct categories. Article 79(2) states that journalists should be protected without prejudice to the rights of war correspondents. It is important to identify different types of journalists in order to provide effective protection because different types of journalists serve different tasks in the battlefield and they must be given protection after considering the nature of their journalist activities. In this backdrop, the research aims to identify the existing legal framework governing journalists, to analyze inadequacy of the existing laws to protect journalists and to recommend a suitable protection mechanism to protect journalists. The research follows a qualitative approach of legal research. The research adopts the “Black-letter approach” which resulted in analyzing primary and secondary sources of law. The research recommends the adopting of a separate legal instrument to govern journalists in armed conflicts. An International convention should be introduced to protect them.

Key words: Journalists, War Correspondents, Direct Participation in hostilities

Introduction

“Journalists are extremely useful as part of the machinery which ensures the implementation of the rules of war when most other means of enforcement are lacking ... It is often through the reports of journalists that inhuman practices in wars are made known to the rest of the world and their function of transmitting news to those outside a particular conflict may be conducive to the condemnation by world opinion of certain methods of warfare or a certain state of affairs (Detter, 2000)”

Media personnel play an important role in armed conflicts. They act as a bridge between the outside world and the conflict area. They provide information to the world that cannot be obtained by any other means. A “journalist” can be defined as “any correspondent, reporter, photographer, and their technical film,

radio, and television assistants that are ordinarily engaged in any of these activities as their principal occupation (draft United Nations International Convention on the Protection of Journalists Engaged in Dangerous Missions in Areas of Armed Conflict, 1975). War journalists can be considered as “international watch dogs” as they report the real situation of armed conflicts. War journalists are spectators objectively trying to report on a conflict. By definition, war journalists often find themselves in life threatening situations (Fornier, 2014). However, it can be seen that they are incidents of deliberate targeting, which have the aim of discouraging war journalists to exercise their profession. War journalists are not always a wanted spectator and often have to deal with threats against themselves or their relatives or with actual attacks (Rubin, 2013). These targeted attacks come in different shapes, such as targeted killings, arbitrary detention or kidnapping, governmental prosecutions based on rigorous laws on the media or anti-terrorism laws, etc. Also, journalists’ possessions, such as filmed material and cameras, may also be confiscated or destroyed as a measure of control or frightfulness (Fournier, 2014). Since 1992, 519 journalists have been killed during war coverage and as of 2016, 259 journalists are imprisoned. Detained journalists illustrate the larger picture of a problematic freedom of expression. Furthermore, it can be seen that with the development of the technology, new harmful weapons are being used and as a result of this it is more difficult for journalists to stay safe in conflicts. Therefore, it is highly important to protect journalists under the international law for them to do their job effectively.

Existing International Legal Framework

Geneva Conventions and Additional Protocols

The main law governing the journalists in armed conflicts is the International Humanitarian Law (IHL). General protective principles and the protection of journalists are part of the *jus in bello* or IHL, which comprises a set of rules ‘designed to regulate the treatment of the individual, civilian or military, wounded or active’ in armed conflicts. IHL applies the principle of distinction and hence protects combatants and civilians differently (Düsterhöft, 2013).

Article 79 of the Additional Protocol I of Geneva Conventions states that “Journalists engaged in dangerous professional missions in

areas of armed conflict shall be considered as civilians within the meaning of Article 50 and they shall be protected as such under the Conventions and this Protocol, provided that they take no action adversely affecting their status as civilians, and without prejudice to the right of war correspondents accredited to the armed forces. Moreover, Article 79 facilitates for obtaining an identity card by the government of the State of which the Journalist is a national or in whose territory he resides or in which the news medium employing him is located.

It is clear from Article 79 that journalists are entitled to the same protection as civilians. Therefore, journalists are also protected under Article 51¹ and Article 57² of Additional Protocol I and Geneva Convention IV which specifically focus on civilians.

It is clear that journalists have to remain as neutral persons and they lose protection under IHL if they directly take part in hostilities. However, it can be identified that nor Geneva Conventions (GCs) neither Additional Protocols (APs) provide a definition for “journalist” and “direct participation in hostilities”.

¹ 1. *The civilian population and individual civilians shall enjoy general protection against dangers arising from military operations. To give effect to this protection, the following rules, which are additional to other applicable rules of international law, shall be observed in all circumstances.*

2. *The civilian population as such, as well as individual civilians, shall not be the object of attack. Acts or threats of violence the primary purpose of which is to spread terror among the civilian population are prohibited.*

3. *Civilians shall enjoy the protection afforded by this section, unless and for such time as they take a direct part in hostilities.*

4. *Indiscriminate attacks are prohibited.*

² 1. *In the conduct of military operations, constant care shall be taken to spare the civilian population, civilians and civilian objects.*

3. *When a choice is possible between several military objectives for obtaining a similar military advantage, the objective to be selected shall be that the attack on which may be expected to cause the least danger to civilian lives and to civilian objects.*

4. *In the conduct of military operations at sea or in the air, each Party to the conflict shall, in conformity with its rights and duties under the rules of international law applicable in armed conflict, take all reasonable precautions to avoid losses of civilian lives and damage to civilian objects.*

5. *No provision of this article may be construed as authorizing any attacks against the civilian population, civilians or civilian objects.*

Moreover, it can be seen that in today's world civilians are also actively engaged in media. Lack of a definition for journalist results in difficulties in distinguishing between media-active civilians and journalists (Düsterhöft, 2013). It is important to differentiate between these two categories because journalists have undertaken a duty to report and on the other hand media active civilians are not under such a duty and their activities may differ from the activities of journalists.

It can be identified that AP II and Common Article 3 is silent as to the protection of journalists in non-international armed conflicts (NIACs). It can be argued that as GCs and its APs are considered as 'hard law' which is legally binding, failure to include provisions for the protection of journalists in non-international armed conflicts is another drawback of GCs. As Article 79 of Additional Protocol I covers only the International Armed Conflicts, journalists are not protected adequately in non-international armed conflicts.

It is important to distinguish between war correspondents and independent journalists. War correspondents are defined as 'specialized journalists who are present, with the authorization and under the protection of the armed forces of a belligerent, on the theatre of operations and whose mission is to provide information on events relating to ongoing hostilities' by the *Dictionnaire de droit international public*. This definition is similar to that adopted in the United Nations Security Council's ('UNSC') Resolution 1738 and also mentioned in the Green Book of the British Armed Forces, specifically emphasizing the need for accreditation (Düsterhöft, 2013). It is clear from the definition that war correspondents are protected by armed forces whereas independent journalists are not under such a special protection.

Overall, it appears that neither independent nor accredited journalists are afforded special status considering the dangerous nature of their work. Instead, journalists are civilians in the event of attacks in both IACs and NIACs. Although IHL does not define journalists or categories thereof, it distinguishes between war correspondents and independent journalists in case of arrest. While independent journalists remain civilians, and are 'solely' afforded the protection of Article 75 AP I, Common Article 3 GCs and generally GC IV, war correspondents (including embedded journalists) are specifically mentioned in GC III and are protected by Prisoners of War (POW) status as persons accompanying the

military. Therefore, it can be argued that war correspondents are better protected than independent journalists which creates an unfavorable situation for independent journalists because war correspondents by accompanying the military, are likely to have access to significantly more (sensitive) information about the armed forces they accompany than ordinary civilians not connected to the military. Prisoners of war cannot be compelled to answer during questioning and cannot be accused of being spies, their capture must further be notified to the relevant authorities and their families, which means they cannot be held without contact to the outside world (Stolte, 2015).

Another major issue is the term Direct Participation in Hostilities. According to the Additional Protocol I, journalists are protected as civilians unless they take directly participate in hostilities. The legal protection available to them may however be compromised where journalists are deemed to be 'directly participating' in the hostilities. In this situation journalists will be deemed to be making a direct contribution to the fighting and will therefore become legitimate targets under international law. Obviously, the consequences of such an assessment are far reaching, yet there is no clear definition of 'direct participation' in hostilities. Journalists' 'ordinary' professional activities are covered by the international framework and cannot be considered to constitute hostile acts which compromise their civilian status resulting in the loss of protection under IHL. Yet there is also consensus that under certain circumstances the media can be considered to be directly participating in the hostilities (Stolte, 2015). Therefore, it is a major loophole in Geneva Conventions that a definition for the term "direct participation" is not provided. It is clear from all the above arguments that the existing international legal framework is not adequate to protect journalists and this has resulted in major human rights violations of journalists.

Customary International Law

The customary International Law, Rule 6 states that "Civilians are protected against attack unless and for such time as they take a direct part in hostilities". Moreover, Rule 34 states that "Civilian journalists engaged in professional missions in areas of armed conflict must be respected and protected as long as they are not taking direct part in hostilities. These norms of customary international law apply to both international and non-

international armed conflicts. Therefore, it can be identified that journalists in NIACs are also protected as civilians. However, it can be argued that the protection awarded to journalists under customary International Law is also based on the civilian protection and they have not been identified as a separate group having special status. It can be argued that equating journalists to 'ordinary' civilians, in terms of required protection under international law both ignores their function and their behavior in conflict zones. As acknowledged by the commentary on Protocol I "The circumstances of armed conflict expose journalists exercising their profession in such a situation to dangers which often exceed the level of danger normally encountered by civilians (Gasser, 1987)." Journalists are more likely to run towards the fighting than away from it, they have generally no interest in being removed from the conflict and seek to access areas ordinary civilians will often have no interest in accessing. Furthermore, they are likely to collect large amounts of information, potentially from both sides of the conflict, which can be seen as suspicious behavior by local authorities and combatants (Stolte, 2015).

United Nations Resolutions

United Nations Security Council in its 7450th meeting adopted Resolution 2222 on the protection of media professionals in conflict zones on 27 May 2015. The Resolution stresses to promote and protect human rights, and the **protection of civilians, including journalists**, media professionals, and associated personnel including through monitoring and reporting on violations and abuses as well as providing support for national governments' efforts to promote and protect human rights, and in order to strengthen the fight against impunity for crimes committed **against civilians, including journalists**, media professionals, and associated personnel. However, it can be argued that as resolutions are considered as "soft law", their binding force upon states are low and not very effective in protecting journalists and the resolution on protection of media professionals in conflict zones is not binding upon states. Moreover, it can be argued that the Resolution is also of the view that categorizing journalists as civilians is sufficient.

Judicial Decisions

It can be identified that certain judicial decisions have attempted to fill the gaps in existing laws. It is observed in the research that 'Direct participation' is not laid out clearly in the GCs and APs, but Yves Sandoz et al.'s Commentary on the APs defines it as 'acts of war which by their nature or purpose are likely to cause actual harm to the personnel and equipment of the enemy armed forces', which is reiterated by the ICRC's Interpretative Guidance on the Notion of Direct Participation in Hostilities and includes the taking up of arms, the attempts to capture, to injure or kill enemy forces or to purposefully destroy or damage enemy property and this was expanded in the Targeted Killings case. In the landmark Targeted Killings case, the Supreme Court of Israel concluded that also conduct amounting to, for instance, transporting combatants or weapons, servicing weapons and volunteering as human shields can amount to direct participation. It could be argued that such an expansion is progressive in a context where international law fails to give a proper definition as to what amounts direct participation of hostilities. Therefore, it can be argued that when journalists engage in one or more of the above acts then they can be considered as taking direct participation in hostilities. However, as journalists do not engage in these activities in their ordinary course of business and as they are engaged in war reporting work it can be argued that such a definition of direct participation is not effective.

Recommendations

In the world, more than 90 percent of crimes against journalists are never prosecuted, are never punished.

Christophe Deloire, Head of Reporters without Borders

It is observed in the paper that protection given to journalists under International Humanitarian Law is inadequate. Also, when identifying the problems in existing legal framework it can be seen that although Article 79 of Additional Protocol states about protection of journalists, it has not provided a definition for them. Lack of a definition for "journalists" has also contributed to result in problems in identifying journalists from other groups of media active personnel. Although, IHL has made a distinction between

war correspondents and independent journalists, no proper definition is provided. Rule 34 of customary international law states that “Civilian journalists are not to be confused with “war correspondents”. The latter are journalists who accompany the armed forces of a State without being members thereof”. It can be argued that such a simple distinction is not sufficient and a proper definition of journalists and types of journalists should be provided in a separate convention. The term Direct Participation in Hostilities (DPH) should be given a proper definition to decide what acts of journalist’s amount to DPH. Moreover, it is recommended to protect journalists in IAC and NIAC equally.

It is recommended to introduce a separate legal status for journalists without characterizing them as civilians. Similar to the recognition given to Religious and Medical personnel in the GCs and APs, Journalists should also be given a separate status. IHL distinguishes between combatants and non-combatants. Non-combatants could be again divided to Civilians, Religious and Medical personnel. If journalists are recognized in a separate category, then journalists would also come under the non-combatants in a distinctive group. However, practically in a war zone it is difficult to identify a journalist and therefore, it is recommended to provide them a distinctive emblem to identify them.

Another recommendation is to impose punishments for violating rights of journalists. Geoffrey Robertson, who represented the Washington Post journalist Jonathan Randall at the International Criminal Tribunal for former Yugoslavia (ICTY) in 2003 argues that “deliberate murder of a journalist for reporting in a conflict zone should be a specific war crime. Of course, it is a crime to kill civilians, and journalists count as civilians. But they are not killed because they are civilians but because they are journalists” (The Prosecutor v. Radoslav Brdjanin & Momir Talic, 2002). Therefore, it could be argued that if killing is made a war crime under the Rome statute, it would reduce the attacks on journalists. However, as the number of state parties who have ratified the Rome statute is low, it is questionable whether the state parties would agree on such an inclusion. However, it could be argued that such an inclusion in the Rome statute would make everyone aware of the importance of journalists and the gravity of the violations of their rights.

Conclusions

War reporting is inherently dangerous. Indeed, it could arguably be one of the most dangerous occupations in the world. Still, out of sense of professional duty, many journalists and media professionals make the courageous choice to go to conflict zones, so as to tell the world about the stories of armed conflicts and the human cost they entail (KANG, 2010)

Journalists remain highly vulnerable to serious violence in the course of their professional mission in reporting on armed conflict or other situations of disorder. Although they enjoy a range of protections as civilians in armed conflict, and under international human rights law, attacks on journalists continue, and impunity for those who attack them often remains unaddressed. It is argued in the research that recognizing journalists as civilians and protecting them under civilians is not adequate given the inherently dangerous nature and importance of their job. The research recommends a separate status given to journalists. Also, making killing journalists a war crime would be a positive step in ensuring their rights.

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Habitat Preference and Population Structure of Two Data Deficient Seahorse (Syngnathidae) Species

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Abstract

Ecological studies of seahorses are sparse in the Indian Ocean. The vulnerability of seahorses to overfishing and increased anthropogenic impacts on coastal habitats necessitates better management of wild seahorse populations that in turn requires understanding habitat preferences and population structure. The distribution patterns and population structure of two species of seahorse (*Hippocampus fuscus* and *H. spinosissimus*) were assessed for the first time in a tropical estuary in north-western Sri Lanka. Both species have previously not been studied in the wild and have not been known to occur in estuaries.

H. fuscus was the more abundant and widely distributed species, and was significantly larger than *H. spinosissimus*. Both species had significant differences in size between sexes, and the mean height was towards the lower end of the range known for both species. Some sexually mature males were smaller than the size reported in the literature.

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Seahorses occurred in low densities with patchy distribution, with abundance being higher in areas with the seagrass species *Enhalus acoroides* and *Cymodocea serrulata* that appear to be the favored habitat of seahorses within the study area.

Key words: distribution, habitat, lagoon, seagrass, seahorse, Sri Lanka

Introduction

Seahorses are marine fish belonging to the genus *Hippocampus* (family Syngnathidae), found in both temperate and tropical waters in the Atlantic and Indo-Pacific marine eco regions (Lourie *et al.*, 2004). They inhabit a variety of habitats such as coral reefs, seagrass meadows, mangroves, estuaries and open bottom habitats, although their distribution can be patchy and sparse (Perante, 2002; Foster & Vincen, 2004; Rosa *et al.*, 2007). Seahorses are weak swimmers and tend to anchor themselves to vegetation or the substrate using a strong prehensile tail (Kendrick & Hyndes, 2005), and rely on prey coming within close range instead of actively pursuing them (Foster and Vincent, 2004; Lourie *et al.*, 2004; Felicio *et al.*, 2006). As a result, they are highly localized with small home ranges, and life history characteristics such as low fecundity, lengthy parental care, and mate fidelity make them particularly vulnerable to overexploitation (Foster & Vincent, 2004).

Seahorses are harvested extensively for use in Traditional Chinese Medicine (TCM), as curios and for the marine aquarium trade (Vincent, 1995a; Vincent, 1995b; Vincent *et al.*, 2011). In addition, large numbers of seahorses are caught as by-catch in commercial fisheries (Baum *et al.*, 2003; Salin & Yohannan, 2005; Giles *et al.*, 2006) and many important seahorse habitats such as coral reefs and seagrass meadows are degraded or threatened by human activities (Wilkinson, 2000). As a result global seahorse populations are believed to have declined rapidly (Baum & Vincent, 2005; Curtis and Vincent, 2008; Vincent *et al.*, 2011). Thirty eight (38) species of seahorses have been listed on the IUCN Red List of Threatened Species (IUCN, 2010) and the entire genus *Hippocampus* has been added to Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in order to monitor and regulate international trade (Martin-Smith & Vincent, 2006).

Listing seahorses on CITES Appendix II obliges signatory countries to determine sustainable levels of trade. Managing wild populations requires information on population status and extraction levels as well as the space use and ecology (Rosa *et al.*, 2007). The Indo-Pacific region contains the highest diversity of marine fish including seahorses but also has the greatest threats to habitats and species (Allen, 2008) with well-documented seahorse fisheries supplying both the TCM and aquarium trades (Giles *et al.*, 2006; Meeuwig *et al.*, 2006; O'Donnell *et al.*, 2010; Perry *et al.*, 2010). However, there are extensive gaps in the knowledge of seahorse distribution, ecology, and population status resulting in many seahorse species being listed as Data Deficient in the IUCN Red List of Threatened Species. In the Indian Ocean, information on seahorse fisheries and ecology is limited to a few studies in Africa and India (Bell *et al.*, 2003; McPherson & Vincent, 2004; Salin & Yohannan, 2005; Vincent *et al.*, 2011). More species-specific studies are encouraged due to the paucity of data on many seahorse species (Foster & Vincent, 2004).

Sri Lanka is a major exporter of live seahorses for the marine aquarium trade (Wabnitz *et al.*, 2003). However, information related to seahorse species, distribution, ecology and fisheries is sparse. Reviews of the marine aquarium trade in Sri Lanka (Ekaratne, 2000; Wijesekara & Yakupitiyage, 2001) do not provide much detail despite seahorses being listed among the ten major marine fish groups exported from the country (Ekaratne, 2000). Similarly, fisheries studies in northwestern Sri Lanka report the occurrence and collection of seahorses for the marine aquarium trade (Dayaratne *et al.*, 1995a; Dayaratne *et al.*, 1995b) but do not provide details on catches, population status or distribution. The only studies of seahorses in Sri Lanka are limited to laboratory studies of growth parameters, survival rates and pathology under culture conditions (Ranasinghe *et al.*, 2010; Ranasinghe & Epa, 2010). Two species, *H. fuscus* and *H. spinosissimus* have been reported as occurring in Sri Lanka by Lourie *et al.* (2004) but the range and habitats are not well known. Neither of these species have been studied in the wild, and current knowledge is limited to aquarium studies and observation of specimens from fisheries (Vincent, 1994a; Vincent, 1994b; Vincent, 1995b; Morgan & Panes, 2007). This paper presents the results of the first field studies on seahorses in Sri

Lanka as well as the first field study on the distribution, density and population structure of *H. fuscus* and *H. spinosissimus*.

Material and methods

Study Site

The study was conducted in Puttalam Lagoon (7°45'– 8°25' N; 79°42'–79°50'E), a large tropical estuary system located in northwestern Sri Lanka (Figure 1). This area experiences four seasons based on wind and rainfall patterns. The northeast monsoon from October to December; first inter-monsoon from January to March; southwest monsoon from April to June; and second inter-monsoon from July–September (Wallberg & Johnstone, 1995). The lagoon is approximately 30 km in length from north to south, with a width ranging from 3–12 km, and has a surface area of 226 km² (Arulanathan *et al.*, 1995; Wijeratne *et al.*, 1995). It is connected to the Indian Ocean through a narrow strait at its northern boundary. The mean depth inside the lagoon is around 1.5 m, with maximum depths of 6–7 m in two narrow channels at Kalpitiya (Perera & Siriwardena, 1982). There are seasonal variations and spatial gradients in salinity with higher salinity during the drier months and in the southern end where hyper saline conditions may prevail during some parts of the year (Arulanathan *et al.*, 1995). Average salinity is around 37 psu (Arulanathan *et al.*, 1995), but varies between 35–60 psu in the south and 25–40 psu in the north (Rydberg, 1991 in Wallberg & Johnstone, 1995). Water temperature ranges from 27°–29°C throughout the year (Wijeratne *et al.*, 1995). Underwater visibility is typically less than 1 m, but may reach 3 m in some areas during extended periods of calm weather. The lagoon has several important tropical wetland habitats such as mangroves, seagrass meadows and salt marshes (Dayaratne *et al.*, 1995b). Seagrass communities are particularly well developed with *Enhalus acoroides*, *Cymodocea serrulata* and *C. rotundata* being the dominant species (Dahanayaka, 2009; Dahanayaka *et al.*, 2010; Udagedara & Kumara, 2014).

Seahorse Distribution

Field surveys were carried out between January and December 2009 at seven sampling sites within the Puttalam Lagoon using the push net transect method (English *et al.*, 1997) (Figure 1). Fisher interviews and catch inspections were used to obtain basic information about seahorse occurrence and assist with site selection. Sites were defined as the near shore area adjacent to the shore. Transects were located parallel to the shore, between 10 and 50 m from the shoreline, at depths ranging from approximately 0.5 - 1.5 m. This depth was selected as the optimal for use of push net sampling. The location for the first transect was randomly selected. Thereafter transects were located at 20 m intervals from the first. Each site was sampled 4 times during the year in March, May, July and October, covering all major seasonal variations described by Wallberg & Johnstone (1995). Five transects were completed per site for each sampling session. At each site, a push net with a width of approximately 1 m was deployed by a local fisher along a 50 m transect (covering an area of 50 m²). The net was checked for seahorses at 10 m intervals and any seahorses found were retained in a plastic container. At the end of each transect morphological information for each seahorse was recorded and all seahorses released back into the water.

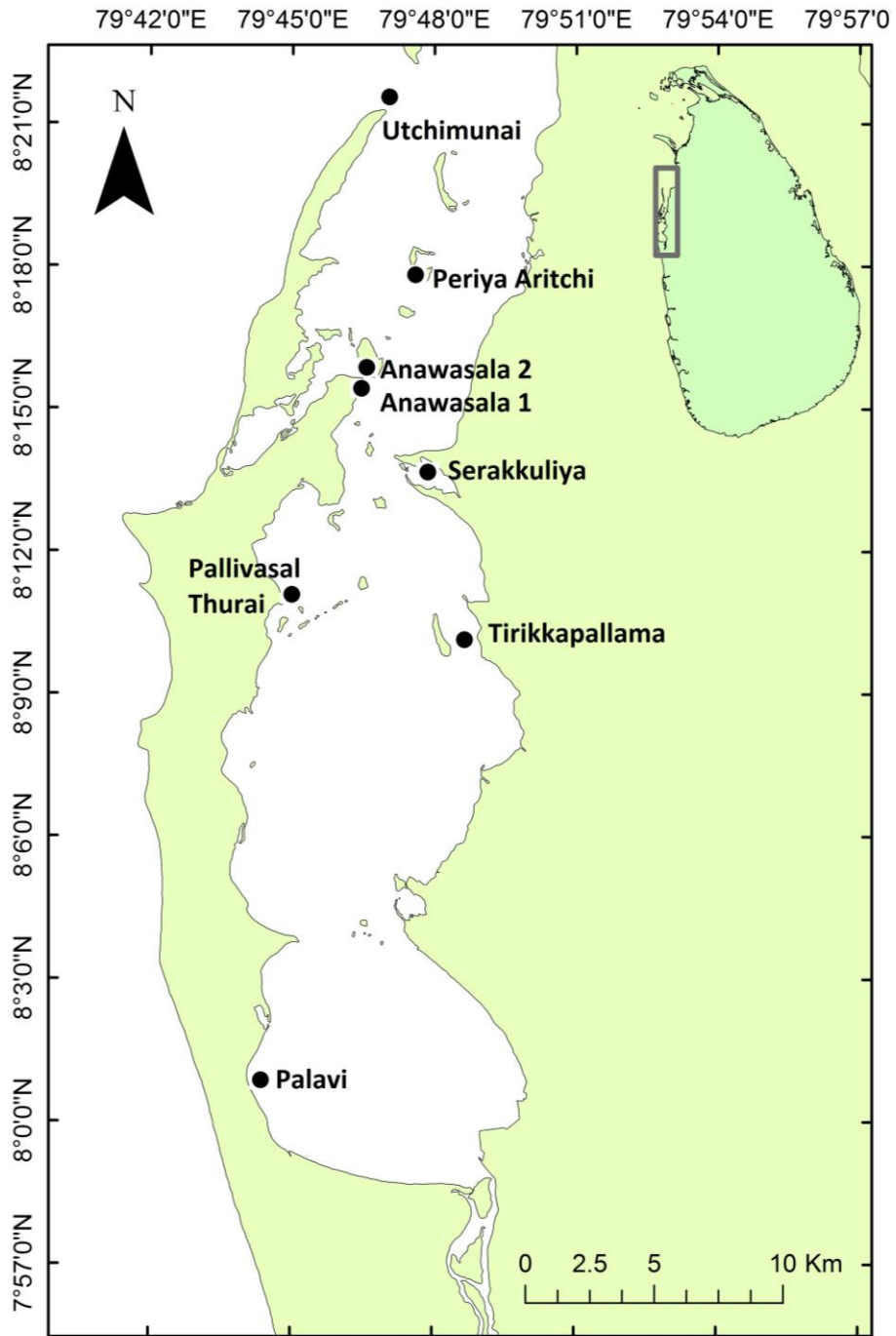


Figure 1. Map of Puttalam lagoon showing sampling locations

Substrate Surveys and Seagrass Distribution

Fringing seagrass beds are found over extensive areas of the lagoon shore and the shoreline of islands. The species, abundance and percentage cover of seagrass was studied using 1 m x 1 m quadrat samples along a 30 m transect at each sampling site. Triplicate samples were taken at 10 m intervals along the transect. Each site was sampled once a month for 12 months to document any seasonal variations. Species of seagrasses were identified using available keys (Abeywickrema & Arulgnanam, 1991).

Seahorse Population Information

Seahorse species was identified according to Lourie *et al.* (2004). Seahorse body length was measured as height from the tip of the tail to the top of the coronet as described by Lourie *et al.* (2004) using a ruler with an accuracy of 1 mm. Seahorses with a visible pouch were determined to be males and others were determined to be females similar to the methods used by Doh *et al.* (2006) and Foster & Vincent (2004). Determining sexual maturity of seahorses in the field is complicated as accurate estimates require laboratory dissections which has practical and conservation implications (Foster & Vincent, 2004). While the presence of a fully developed brood pouch in males may not always be an indicator of sexual maturity it is considered as a key index (Foster & Vincent, 2004) and was used as an indicator of sexual maturity among male seahorses during the study.

Seahorses collected from around the sampling site of Anawasala by several local fishers were provided to an aquarium fish collection center in Kalpitiya. These seahorses are therefore representative of the local population of Puttalam Lagoon and population data was gathered during two visits to the collection center. Visits were carried out on an ad hoc basis based on presence of the owner. The species, sex and body length of 200 randomly sampled seahorses accounting for around three fourths of seahorses available during the visits were recorded. This was combined with data from transects to provide a larger sample size of seahorses from the lagoon.

Data Analysis

The size of seahorses between species was compared using a Mann-Whitney test. A Kruskal Wallis test was used for multiple comparisons of size between sex within and between species and for comparing seahorse occurrence between sites. A Dunn's pairwise comparison was carried out to identify differing species and sex when the Kruskal Wallis test indicated a significant difference. The BIO-ENV function was used to relate seahorse presence to seagrass coverage and to determine seagrass species associated with any inter-site variability with seahorse occurrence (Clarke & Warwick, 2001). Statistically significant values for Spearman rank Correlation Coefficient ($p < 0.05$) between the number of seahorse species per and seagrass species were calculated for each sampling site.

Results

Habitat Structure

Out of the seven genera of seagrasses recorded from Sri Lanka (Udagedara *et al.*, 2017) six were found at all study sites except Palavi. The tropical eelgrass (*Enhalus acoroides*), serrated-tipped seagrass (*Cymodocea serrulata*), and round-tipped seagrass (*Cymodocea rotundata*) were the dominant species making up around 80% of the substrate within seagrass beds. The densities of the other three species were low and together comprise less than 20% of seagrass cover. *C. serrulata* was the most widespread species and was present in all transects except Palavi, mostly mixed with *E. acoroides*. It was also observed at depths of more than 2 m. Results indicate that there is a patchy distribution of seagrasses throughout the study area (Table 1).

Table 1. Seagrass coverage at sampling sites

Site	Seagrass Species & Coverage	Salinity (ppm)
Utchimunai	<i>Thalassia hemprichii</i> 30% <i>Cymodocea serrulata</i> 10% <i>Cymodocea rotundata</i> 10% <i>Halophila ovalis</i> 10% <i>Halodule uninervis</i> 10% <i>Enhalus acoroides</i> 5%	30-50
Periya Aritchi	<i>Enhalus acoroides</i> 40% <i>Cymodocea serrulata</i> 10% <i>Cymodocea rotundata</i> 10% <i>Thalassia hemprichii</i> 10% <i>Halophila ovalis</i> 10% <i>Halodule uninervis</i> 10%	30-45
Anawasala 1	<i>Cymodocea serrulata</i> 40% <i>Enhalus acoroides</i> 30% <i>Cymodocea rotundata</i> 20%	30 - 40
Anawasala 2	<i>Cymodocea serrulata</i> 10% <i>Enhalus acoroides</i> 15% <i>Cymodocea rotundata</i> 5%	30 - 40
Serakkuliya	<i>Cymodocea serrulata</i> 40% <i>Enhalus acoroides</i> 40% <i>Cymodocea rotundata</i> 10%	30-40
Tirikkapallama	<i>Halodule uninervis</i> 80%	30 - 55
Palavi	<i>Halophila decipiens</i> 65%	30-60

Seahorse distribution among sampling sites

Two species of seahorses, *H. fuscus* and *H. spinosissimus* were recorded on transects with *H. fuscus* being significantly more abundant ($p < 0.05$). Seahorses were recorded at five of the seven sites with no seahorses recorded at Palavi and Anawasala 2. *H. fuscus* was recorded at all five sites where seahorses were recorded while *H. spinosissimus* was not recorded at Anawasala and Utchimunai. The mean density of *H. fuscus* was 0.006 m^{-2} (SE 0.001) and the mean density of *H. spinosissimus* was 0.002 m^{-2} (SE 0.001). The combined mean density of all seahorses within the five sites where seahorses were present was 0.008 m^{-2} (SE 0.001). There was a greater occurrence of seahorses on

transects during sampling in July (Kruskal-Wallis $p=0.04$) compared to the other three samples (Figure 2).

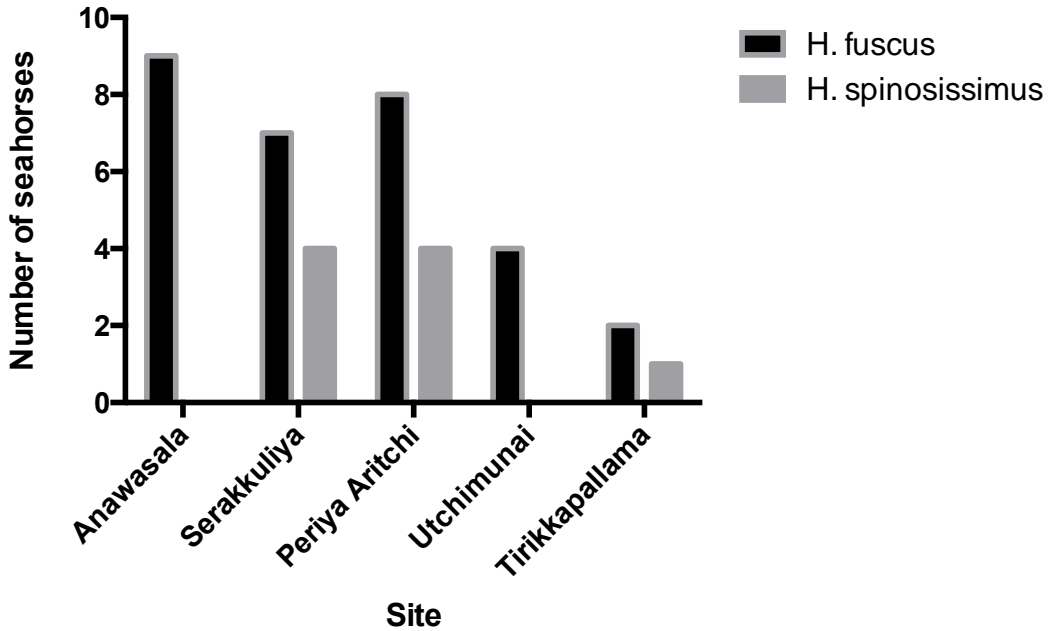


Figure 2. Total number of seahorses by species recorded at each site

Seahorses were significantly more abundant in areas with seagrass than in areas devoid of seagrass ($p<0.05$). Two species of seagrass, namely *Enhalus acoroides* and *Cymodocea serrulata* appear to affect distribution of *H. fuscus* and *H. spinosissimus* with Spearman Rank Correlation Coefficients of 0.427 and 0.425 respectively.

Size

Hippocampus fuscus (mean 8.21 cm; SE 0.08) was significantly larger (Mann-Whitney $p<0.001$) than *H. spinosissimus* (mean 6.64 cm; SE 0.17). Both male (mean 7.81 cm; SE 0.09) and female (mean 8.53 cm; SE 0.12) *H. fuscus* were significantly larger (Kruskal-Wallis $p<0.001$; Dunn's Multiple Comparison

$p < 0.05$) than male (mean 6.77 cm; SE 0.17) and female (mean 6.56 cm; SE 0.25) *H. spinosissimus* (Table 2). Within species, there was a significant difference in size between *H. fuscus* males and females (Mann-Whitney $p < 0.001$), but there was no such difference between sexes of *H. spinosissimus* (Mann-Whitney $p = 0.81$). Most *H. fuscus* were between 7 cm and 9 cm (min 5.5 cm; max 12 cm) (Figure 3) while most *H. spinosissimus* were between 6.5 cm and 7 cm (min 3 cm; max 9 cm) (Fig. 4). The height of the smallest sexually mature male, or male with a fully developed brood pouch was 5.5 cm for *H. fuscus* and 6 cm for *H. spinosissimus*.

Table 2. Comparison of seahorse height (values in centimeters) * and ** Significantly different (Kruskal-Wallis $p < 0.05$)

Species	Mean Height Male	Mean Height Female	Mean Height (SE)	Size Range in Literature
<i>H. fuscus</i>	7.81	8.53*	8.21**	8-12
<i>H. spinosissimus</i>	(0.09)* 6.77 (0.17)	(0.12) 6.56 (0.25)	(0.08) 6.64** (0.17)	5.3-16

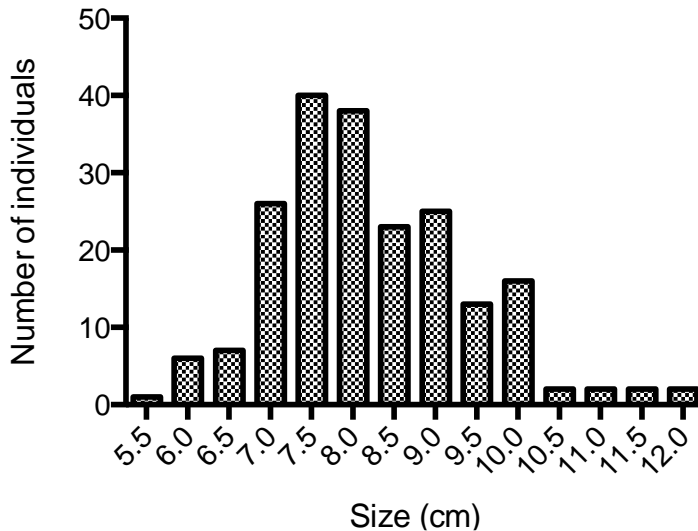


Figure 3. Distribution of *H. fuscus* among size classes

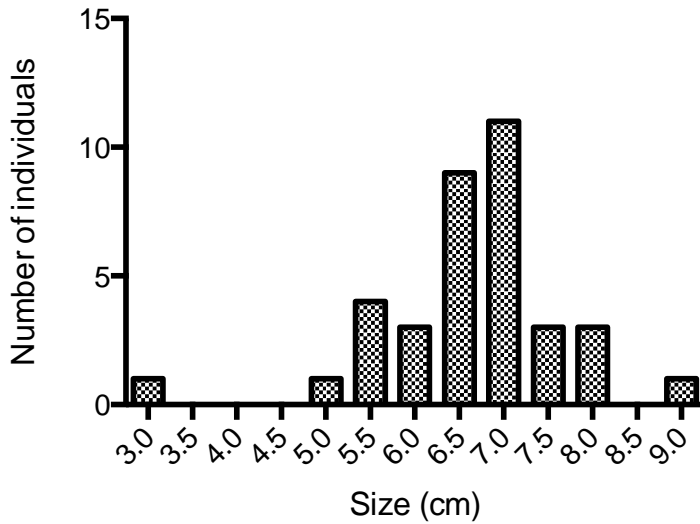


Figure 4. Distribution of *H. spinosissimus* among size classes

Sex ratios

A higher percentage of seahorses sampled through both push net surveys and at the collection center were females. *H. fuscus* showed a more even ratio of females vs. males with 55% of the animals sampled being females. However, for *H. spinosissimus* almost 64% of the animals sampled were females. Only 10 of the total 239 seahorses sampled appeared to be pregnant males with swollen brood pouches, and there was no noticeable seasonal pattern in the presence of pregnant animals. The mean size of pregnant males for *H. fuscus* was 8 cm (n=9) and for *H. spinosissimus* 7 cm (n=1).

Discussion

Distribution patterns

This study found two species of seahorse, *H. fuscus* and *H. spinosissimus* in the Puttalam Lagoon, Sri Lanka, a shallow, seagrass dominated habitat. Both species are known to occur in Sri Lanka (Lourie *et al.*, 2004). *H. fuscus* was more common and occurred in more areas of the lagoon than *H. spinosissimus*. Seahorse distribution was correlated with the presence of seagrass, especially *E. acoroides* and *C. serrulata*. Seagrasses

may increase prey density, capture efficiency and predator avoidance (Bell and Westoby, 1986; Flynn and Ritz, 1999) and are known as an important habitat for seahorses (Foster and Vincent, 2004; Vincent *et al.*, 2011). *H. fuscus* has been reported from shallow protected bays with calm water, algal reefs and seagrass beds up to a maximum depth of 10m (Lourie *et al.*, 2004). In Sri Lanka, it is known to occur around the Jaffna Peninsula (Vincent, 1994a & 1994b), an area with shallow lagoons and extensive seagrass habitats (Sivalingam, 2005). In contrast, *H. spinosissimus* has only been reported from marine waters with a benthic composition of sand, octocorals and sponges and in depths greater than 8 m (Morgan and Panes, 2007). Both *H. fuscus* and *H. spinosissimus* have previously not been associated with estuaries, and only seven species of seahorse (*H. abdominalis*, *H. capensis*, *H. hippocampus*, *H. kuda*, *H. mohnikei*, *H. reidi* and *H. whitei*) are known to occur in estuaries (Lourie *et al.*, 2004; Harasti *et al.*, 2012).

Of the two sites where seahorses were not recorded Anawasala 2 had sparse seagrass cover and was composed mainly of open mud substrate. The other site Palavi did not have the seagrass species *C. serrulata* that was closely correlated with seahorse presence. It is also the southernmost sampling site and located in an area with high salinity variation (Arulananthan *et al.*, 1995) that may result in unfavorable conditions for seahorses. Ex-situ studies have shown that juvenile seahorses were susceptible to high mortality when salinity increased or decreased more than 10 psu and when salinity exceeded 50 psu (Hilomen-Garcia *et al.*, 2003). It is likely that some seahorses may occur in the southern end of the lagoon and were not recorded in surveys considering the low densities encountered at all sites. However, interviews with fishers in the south of the lagoon indicated that seahorses are rare compared to fishers further north in the lagoon.

Estimates of seahorse density are influenced by site selection and survey methods, with randomly placed transects tending to report lower densities than focal grids (Foster and Vincent, 2004). Studies using randomly placed transects have reported densities of 0.007 m⁻² (K. Martin-Smith unpublished data) and 0.008 m⁻² (Bell *et al.*, 2003) that are closer to results from Puttalam Lagoon. However, these surveys used the underwater

visual census method. In a similar study using push net transects Masonjones *et al.* (2010) found densities of 0.08 m⁻² for *H. zosterae* in Tampa Bay, Florida. Seahorse distribution can be patchy and is characterized by sparse densities in some areas compared to high densities in others (Masonjones *et al.*, 2010; Harasti *et al.*, 2012). Nonrandom, targeted sampling in areas known for higher abundance of a study species can lead to higher density estimates by intensively sampling such areas. During this study, sampling sites were selected to represent shallow sub-tidal habitats of Puttalam Lagoon and were not biased towards specific sites with high abundance of seahorses.

Although higher numbers of seahorses were recorded in July the small sample size preclude definitive conclusions. However, surveys of seahorse by-catch in three different fishing gear types including push nets in Puttalam Lagoon also show higher by-catch of seahorses around July. From end May to August the Puttalam Lagoon is subject to very strong winds and rough water conditions that causes physical disturbance to Seagrasses as is evident by uprooted seagrasses and torn blades along the shoreline. This may decrease the availability of suitable holdfasts (West & Larkum, 1983) and possibly increase vulnerability of seahorses to fishing and push net sampling.

Size

The mean height of both species falls within the range for adults reported by Lourie *et al.*, (2004), although the mean height of male *H. fuscus* in Puttalam Lagoon is less than the range of 8-12cm reported by Lourie *et al.* (2004). However, the smallest males with well-developed brood pouches and therefore assumed to be sexually mature were smaller than that reported in the literature. *H. fuscus* is known to reach sexual maturity at 8cm (Lourie *et al.*, 2004), and *H. spinosissimus* at 9.8cm (Morgan & Panes, 2007). Given the limited information available for these two species it is possible that they reach sexual maturity at a smaller size than is currently reported. However, it is also extremely possible that the size of sexually mature males was underestimated. Foster & Vincent (2004b) state that although it is commonly used in field studies, the presence of a fully developed brood pouch may not always be an accurate indicator of sexual maturity in male seahorses. Laboratory dissections are

likely required to verify the size at sexual maturity for both males and females of *H. fuscus* and *H. spinosissimus*.

Other than for one *H. spinosissimus* measuring 3 cm, seahorses smaller than 5 cm were not recorded. Like many seahorses *H. spinosissimus* has a planktonic stage soon after birth, and in-situ surveys have revealed planktonic stage juveniles ranging from 6.52 - 23.8 mm (S. Morgan unpublished data). The juvenile stage of *H. fuscus* is not well understood, and although ex situ studies have inferred that it does not have a planktonic stage (Golani & Fine, 2002) it is not clear if such observation apply in the wild. While juveniles may have been missed due to a planktonic stage it is unclear as to why seahorses between 3-5 cm were not recorded. Other fisheries studies also show that intervening size classes between small juveniles and adults of several marine fish including two species of seahorses (*H. guttulatus* and *H. hippocampus*) are rarely seen in benthic surveys and plankton tows (Pérez-Ruzafa *et al.*, 2004; Curtis & Vincent, 2005). While smaller seahorses may have been missed due to the sampling methodology they may be utilizing a different habitats has been observed in *H. comes* in the Philippines (Perante, 2002; Morgan & Vincent, 2007).

Sex Ratios and Reproduction

Given the small sample size of *H. spinosissimus* it is possible that the higher numbers of females are due to some immature males without a developed brood pouch being recorded as females. However, it should also be noted that several of the smaller seahorses were in fact mature males and in *H. fuscus* females were larger than males.

A major challenge to studying seahorses in Sri Lanka is low visibility. Coastal lagoons such as Puttalam appear to be the preferred habitat of seahorses in Sri Lanka. However, the extremely low visibility precludes carrying out underwater visual surveys. While push net surveys are a good substitute they have limitations in understanding ecology and space use. For example, information on holdfasts, behavior clustering cannot be determined with push net surveys. In addition, push net surveys

may possibly record lower numbers as they depend on seahorses being collected in the net by chance.

Conclusions

The correlation of seahorse distribution with seagrass cover has major conservation implication in the Puttalam Lagoon, where overall seagrass cover is reported to be decreasing along with changes in community structure. Seahorses are also vulnerable to changes in physical conditions such as changes in salinity and there is also evidence that salinities may have increased over the last several decades (Arulananthan *et al.*, 1995). These changes may decrease the area of suitable habitat and have potential impacts on population status.

Puttalam Lagoon is also subject to intense fishing pressure, and many fishing methods used in the lagoon have been attributed to the degradation of seagrass habitats (Dayaratne *et al.*, 1995a). It was also observed that many of these methods result in by-catch that includes seahorses. As such, despite attempts to control the export trade of seahorses from Sri Lanka, wild populations may be exposed to significant threats due to indirect fishing and habitat degradation. The results of this study indicate that basic life history parameters for *H. fuscus* and *H. spinosissimus* may be more varied than reported in the literature. Both these species have not been studied in detail in the field and current knowledge is limited. This study while providing useful insights is limited in scope and geographical coverage. Further studies of distribution, habitat use and population structure for both *H. fuscus* and *H. spinosissimus* are needed to fully understand the ecology and population dynamics of these species as well as general seahorse distribution and ecology in Sri Lanka.

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Does the SMS Language Have an Effect on Teenage Spelling? – A Study Conducted on a Selected Group of Students Studying in Colombo

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Abstract

The focus of this research is to find out whether the use of SMS language has a link to the spelling of school going teenagers (within the age limit of thirteen and nineteen years) when writing in English according to the accepted form in schools. Mobile phones are undoubtedly the most commonly used method of communication in the world today. The free availability of SMART phones could be considered as one of its causes. Such phones are equally popular among adults as well as teenagers. Seemingly, the preference of the teenagers is inclined more towards text messaging than voice. Among them, there are many who use abbreviated terms commonly known as SMS language for texting. As Seda (2013) affirms, this particular discourse is also called by other names such as ‘textese’ and ‘textspeak’. The obvious familiarity of these children with the particular usage makes one wonder whether it would affect their spelling when involved in their studies. As a result, this research explores whether the extensive use of SMS language affects the knowledge of formal English spelling of such teenagers.

This study has derived its data from a group of teenagers attending two local private schools and an international school

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within the city limits of Colombo and also a few teachers belonging to both these schools. The research tools that were utilized were observation and a questionnaire that collected quantitative as well as qualitative data. This paper, which includes a background history of the mobile phone and text messaging, a list of popular SMS abbreviations in the “SMS discourse” (Mendis, 2006), the methodology and the recommendations based on the findings would hopefully be helpful to English teachers when considering the causes of good or bad spelling of schooling children especially the ones who are within the age limit of thirteen and nineteen years (commonly referred to the teenagers in this study).

Key words: Text messaging, SMS discourse, spelling errors, abbreviated terms, unabbreviated English words, formal English words

Introduction

Over the years, the needs of a human being have expanded and the mobile phone seems the new entrant to the list. According to the Cooney Centre report *Pocket of Potential* (2009), the then existing world population of mobile phone users had been approximately four billion. It further states that the mobile phone penetration has reached almost 100 percent. The lack of infrastructure and inefficiency has thwarted the installation of landlines in developing countries and has increased this situation (Blanchard & Moore, 2010). Since 3rd April, 1973 when the Motorola employer Martin Cooper made the first mobile phone call from Manhattan to the headquarters of Bell Labs in New Jersey, USA, this technological marvel has reached unimaginable heights.

According to Bates (2015), studies had exposed that by 2015, almost one in four teenagers was indulged in using mobile phones. Unarguably, they have become a necessity due to many reasons such as updating their guardians on their whereabouts, balancing studies and co-curricular activities as well as communicating in general. Incidentally, their communication is mainly performed through text messaging and many of them adhere to the usage of abbreviated words, more popularly known as SMS language.

The very first text message was a Christmas greeting by the British engineer Neil Papworth to Richard Jarvis on 3rd December, 1992 (Seda, 2013). Ever since then, text messaging has evolved from being a mere SMS (Short Message Service) to vast communication practices such as Facebook, Messenger, Twitter, Whatsapp Viber and Instagram. Text messaging could be either performed in normal written language or with abbreviations termed as SMS Discourse (Mendis, 2006). 'Textese' and 'textism' (Seda, *ibid*) are some of the other terms which are popularly used for the same. Evidently, such discourse is different to the formal English the students are expected to utilize in their studies. By formal, what is meant here is the British English which is the accepted form of English in the Sri Lankan school curriculum. Based on the popular public assumption, SMS language could influence the spelling of school going students since there is a notable but subtle difference between the two languages mentioned. However, scholars such as Seda (2013) and Drouin & Davies (2009) refute such beliefs stating that SMS language somewhat resembles the spelling of children who are at the initial stage of learning to spell. As a result, this paper intends to find out which of these stands holds true by focusing on a selected group of students representing a certain socio-economic class in Colombo.

Literature Review

Text messaging and its relativity to teenage literacy is not a novice area to the field of research. In Sri Lanka, Mendis (2006) has done a study on the features of 'SMS discourse' in which she speaks of its influence on literacy. According to Mendis, SMS discourse contains colloquial Sri Lankan English in the form of code-switching, tag questions, reduplications, interjections and idiomatic or formulaic expressions. Furthermore, there are abbreviations ('u' for 'you' and 'b' for 'be'), intentional misspelling ('wats' for 'what's' and 'dis' for 'this'), direct phonetical spelling ('shud' for 'should', 'ur' for 'you are' and '2moro' for 'tomorrow'), vowel deletion ('wld' for 'would' and 'thks' for 'thanks') and alphanumeric combinations ('b4' for 'before') in abundance (a list of abbreviations popularly used in SMS discourse is included under 'Findings'). Mendis further asserts that sociolinguistic variables such as age, educational level, language proficiency and profession are visibly non-influential on this discourse. However,

her paper does not discuss the possible effects this particular discourse has on spelling.

Blanchard & Moore (2005) quoting Cooper (2005) state that a person's environment he/she is mostly exposed to has a direct influence on his/her learning. This includes the omnipresent mobile phones and mass media as well. Basically, they believe that this kind of exposure could be used positively to enhance their literacy skills. However, though this study is a broad outlook on the relationship between the digital world and learning, it does not focus on spelling per se which is a sub-literacy skill. Further, one could wonder whether the frequent indulgence in using abbreviated terms might be harmful for English spelling that is expected to be used in schools.

Seda (2013) quoting Drouin & Davis (2009) says that the language mechanics used in SMS language could be compared to the spelling of youngsters who are still learning to spell. He further states that a majority of the public believes in SMS language leading to the deterioration of spelling largely due to the influence of what the media portrays to the world. Yet, negating this belief, Seda affirms that the present-day teenagers are inclined towards reading and writing to avoid being negatively affected by text messaging. He in fact states that messaging is currently considered as a favoured form of social communication among adults and teenagers alike. Based on Seda's affirmation, it is possible to assume that even if a person is extensively using SMS language, his spelling will not be affected provided he is an avid reader or/and a frequent writer.

McElroy (n.d), in order to justify the use of SMS discourse, points out that a 'texter' is compelled to use abbreviations as certain mobile phones allow only a limited amount of characters. However, this argument could be out ruled in today's context since most of the present day mobile phones are quite sophisticated and contain more capacity for a single text. In the meantime, Drouin & Davis (2009) argue that language learnt over time is not easily forgotten or affected by such abbreviations. They also affirm that words with more complex structures are usually not converted into abbreviations.

Hogan, Gilbert, Leckington & Morris (2012) state that most mobile phone users are in the habit of text messaging which is evident by

the sights of people being glued to their phones. Contrary to Drouin and Davis' stance, they found out that many instructors of a particular college in the USA believe that text messaging has negative effects on students' writing skills. Yet, interestingly, they also discovered that most of the students switch from text language to the formal language they are expected follow in college. This proves that different scholars have varying opinions on text messaging and its effects on literacy.

Accordingly, SMS discourse has no strict rules. The words can be abbreviated according to the texter's wish. However, in which ever way the words are shortened, they are undisputedly different to the formal English spelling. Yet, there is no unanimous belief on whether SMS language affects spelling or not. Furthermore, in Sri Lanka, there are no published papers available on the effects of SMS language on teenage spelling. Further, the above mentioned empirical researches have been done exclusively in countries in which English is the mother tongue. Therefore, English being the second language of Sri Lanka, this paper may contribute in locating possible solutions for the perceived issues in spellings among schooling going children.

Methodology

This research focuses on whether the SMS language has an effect on how teenagers spell English words in school. Its main purpose is to find out whether the SMS discourse has an effect on the development of a teenager's knowledge on English spelling. This section will explicitly present how the said research was conducted including the research setting, samples and the sources, collection and analysis methods of data as well as the limitations pertaining to it.

This study includes a sample of twenty-six (26) teenage girls and boys who own mobile phones and who use SMS language plus four (04) English Literature teachers.

The teenagers are between the ages of 14 to 16 years. This purposive sample was selected in order to avoid 'late teens' that are on the verge of becoming adults. It included eighteen students (nine females and nine males) from local private schools and eight

students (four females and four males) from an international school which are situated within the city limits of Colombo. They all offer English Literature as a subject for their Ordinary Level Examination (the local private school students for the local examination and the international school students for the London examination). The number of participants from the international school was less compared to the number from the local private schools as during the time of data collection they had completed their term end examinations and were not attending school on a regular basis.

The teachers were chosen on friendly basis thus making them a sample of convenience. An equal number of teachers were involved from both sectors of schools. The teachers who teach the said students were provided with the following passage which was read twice over. At the first instance, the students were asked to produce the text in SMS discourse while during the second reading they had to reproduce it in the formal English terms they use in their studies.

The paragraph that was read out to the students:

'Adolescents have a strong tendency to resist authority and therefore often want to do the opposite of what they are asked. This tied up with their desire to be recognized as individuals and they are breaking loose from shackles. They want to choose their own friends, clothes and books. The parents' reluctance to grant this independence and their effort to pry into the affairs of their children, their refusal to allow them a key so that they know when they come in, their failure to trust, all lead to friction. Another important reason for friction is that the adolescent is beginning to think for himself whereas previously he had he had accepted what his parents said. He now wants to have good reasons for them. When a child is being reprimanded and begins to try to explain his actions his father snaps, "Don't answer back".'

(Source: <http://www.jirikihongan-kaiun.com/?page=1510608617>)

There were several reasons as to why this particular paragraph was chosen. It contains frequently used words that are generally transcribed into SMS discourse such as 'have', 'to', 'are', 'and', 'be', 'from', 'for', 'now' and 'this'. It also has words which are occasionally used according to the relevant context like 'adolescents', 'tendency', 'individuals', 'loose', 'shackles',

‘independence’, ‘refusal’ and ‘reprimanded’. Yet, these terms too have been written as abbreviations by the selected texters.

The length of the paragraph was sufficient to hold the attention of the participants. Furthermore, the content of the passage is relevant to adolescents. Once the texts were written, both texts produced by each student were observed and compared extensively and a content study was done in order to locate any resemblance of the errors made in the formal English transcription with the production of the SMS discourse.

The passage was entered into the first row of a spreadsheet with a single word in each cell. The first column was confined to the students with double rows per each. The females were mentioned in pink colour and the males in blue. Every single misspelled word was entered in the relevant column in red colour in the first row of each student while its abbreviated counterpart was entered underneath (in the second row) in black.

The teachers were asked to answer a questionnaire based on their teaching experiences and their anonymity was strictly maintained.

Findings

During the transcription done in SMS language, most of the students had used the common versions for particular words while some had used slightly different versions for a single word. Nevertheless, they were all abbreviated versions of the original words.

The following table contains the abbreviated words used by the students along with the original words in formal English in the order of appearance.

Table1. Abbreviations and their original terms

Word in unabbreviated English	Word as an abbreviation
Adolescents	adlsnc / adolsnce
have	hv
strong	strng
therefore	there4 / thrfr
want	wnt
to	2
the	d / da
opposite	oppste / opsite / oppst
what	wat
they	dey
are	r
this	dis / diz
with	wid
desire	dsire
be	b
recognized	recgnzd
individuals	indvdl
from	frm
their	deir
friends	frndz / frends
books	buks

and	n / &
grant	grnt
this	diz / dis
reluctance	reluctance
independence	indepdnce
effort	efrt
allow	allw
them	dem
that	dat
know	knw
when	wen
come	cum
important	imprnt
for	fr
beginning	beginin
said	sed
good	gud
his	hiz
father	fthr

Altogether, there were 106 spelling mistakes made by the total number of students. In other words, 106 pairs (the spelling error and the SMS counterpart) were entered on the spreadsheet. Out of those pairs, 50 were identical. As a result, there were 56 pairs which were dissimilar. Table 2 is an indication of these facts. Further, this observation was made in order to check the tendency

of the students to make spelling errors that are identical to the SMS discourse.

Table 2. Instances of identical errors

Total number of pairs of spelling errors and their SMS counterparts	106
Pairs of identical spelling	50
Pairs of non-identical spelling	56

Figure 1 is used to provide a clearer picture of the facts shown in Table 2. The colour blue represents the number of identical pairs while red denotes the non- identical equivalents.

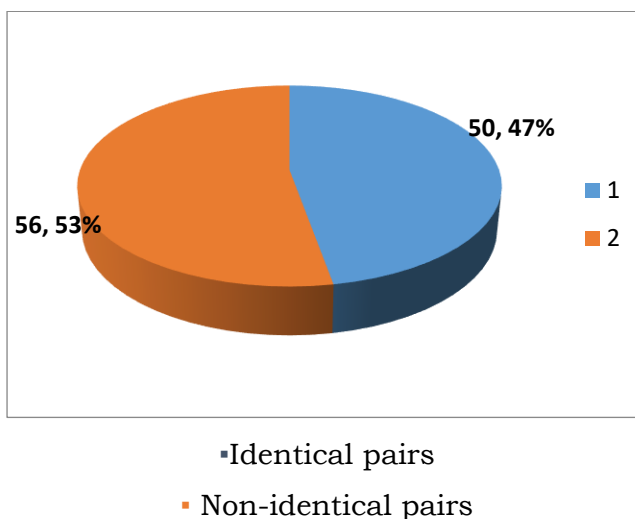


Figure 1. Instances of identical errors

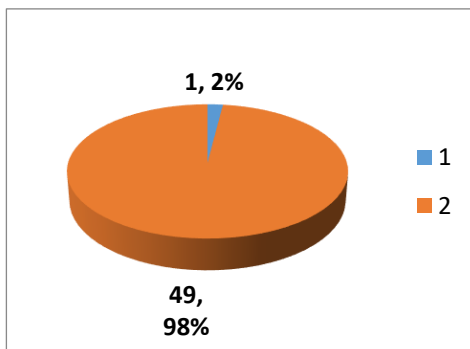
Among the 50 errors which matched the SMS equivalent, only 1 word resembled the typical SMS language namely ‘adolsnce’. This abbreviated version is mentioned in Table 1. In other words, out of the 50 pairs, 49 did not resemble the typical SMS discourse but general spelling mistakes. This finding proved that there are no

basic rules for SMS language and also that the spelling mistakes made by a majority of the students exhibit no relationship with the relevant abbreviated terms they use while texting.

Table 3. Instances of spelling errors written in typical SMS discourse

Total number of pairs of identical spelling errors	50
Number of errors written in SMS discourse	1
Number of general errors which do not resemble typical SMS discourse	49

Figure 2 indicates the information provided in Table 2. The colour blue indicates the number of mistakes which were distinctive of SMS discourse and colour red represents the number of pairs which were identical yet did not resemble typical SMS terms.



- Mistakes distinctive of SMS discourse
- Mistakes non-distinctive of SMS discourse

Figure 2. Instances of spelling errors written in typical SMS discourse

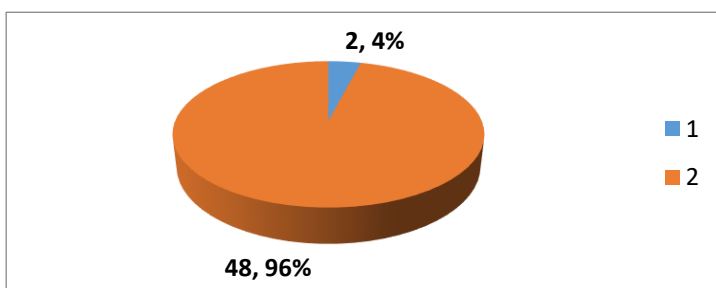
There were 2 other pairs namely ‘lose’ and ‘there’, which were used respectively for ‘loose’ and ‘their’ among the above mentioned 50 identical pairs of mistakes. Though they were correctly spelt

words, they were considered as mistakes since they were used in the wrong context. This information is indicated in Table 4. This proved that there were few students who made spelling errors due to the lack of contextual knowledge.

Table 4. Instances of correct spelling but belonging to a different Context

Total number of pairs of identical spelling errors	50
Number of pairs of mistakes which were correctly spelt but in a different context	2
Number of pairs of mistakes which had totally wrong Spellings	48

This datum is illustrated through Figure 3 in which colour blue denotes the number of correctly spelt words but belonging to a different context while red represents the number of pairs which are anyway spelt wrong.



- Correctly spelt words but in a different context
- Pairs with totally wrong spelling

Figure 3. Instances of correct spelling but belonging to a different context

As mentioned earlier, there were 18 participants from the local private schools and 8 from the international school. The total number of spelling errors made by the former was 94 while the latter made 12. The selected passage had a total of 145 words. The following tables indicate the figures of the total numbers of words and spelling errors made by the students of both sectors. The purpose of this table was to find out whether the type of school they attend has a connection to the number of spelling errors they make.

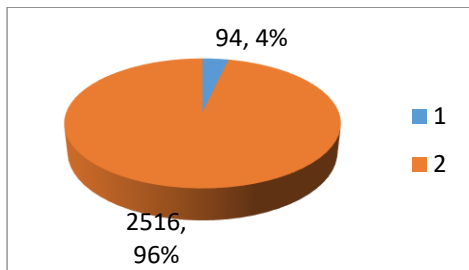
Table 5. Instances of spelling errors made by the students of local private schools

Total number of words produced by the students	$145 \times 18 = 2,610$
Total number of errors	94
Total number of correct words	$2,610 - 94 = 2,516$

Table 6. Instances of spelling errors made by the students of the international school

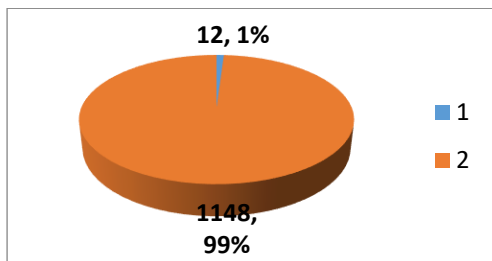
Total number of words produced by the students	$145 \times 8 = 1,160$
Total number of errors	12
Total number of correct words	$1,160 - 12 = 1,148$

The following Figures 4 and 5 respectively represent the data provided in Tables 5 and 6 with the relevant percentages. Blue indicates the amount of spelling errors and red, the correctly spelt words.



- Spelling errors
- Correctly spelt words

Figure 4. Instances of spelling errors made by the students of local private schools



- Spelling errors
- Correctly spelt words

Figure 5. Instances of spelling errors made by the students of the international school

There were certain noteworthy limitations which emerged while analyzing the relevant data. Apart from the spelling errors, there were several missing punctuation marks such as apostrophes as in the case of ‘parents’ instead of ‘parents” and ‘dont’ instead of ‘don’t’. Capitalization too was misused by a few. Yet, such errors had to be ignored as they did not fall directly under the misspelling category.

Further, some of the students had felt that writing in SMS discourse was unlike the actual typing as the latter gave a different feel when touching the keyboard of a mobile phone. They

further stated that the way their fingers tackled the typing differed from how they controlled their hand while writing. Their argument was that they had to be conscious while producing the SMS discourse in written form as they normally do not use a pen when text messaging.

As mentioned previously, four English Literature teachers answered a questionnaire comprising of 5 open ended questions based on their teaching experiences. They were requested to mention their opinions specifically on students who are in the habit of using abbreviated English terms when text messaging.

Three of the teachers felt that the standard of spelling of their students varied from “weak” to “very good.” One agreed that carelessness is a weakness common among several students adding that the avid readers are more careful in writing. Another maintained that the focused and motivated students “do well” while few are distracted due to various reasons which she did not mention. An Advanced Level Literature teacher stated that the standard of spelling of her students is generally satisfactory since only a selected few choose English Language and Literature for the Advanced Level Examination.

Regarding common spelling mistakes, three teachers commented on the mixing up of writing the plural form and possessive nouns as in ‘cats’ – ‘cat’s’ and ‘parents’ – ‘parents’’. The following tables show how many attributed the spelling mistakes to other reasons and not to SMS language.

Table 7. Teachers who mentioned the mixing up of writing the plural form and possessive nouns

Number of teachers answered the questionnaire	4
Numbers of teachers mentioned writing the plural form and possessive nouns	3
Number of teachers did not mention writing the plural Form and possessive nouns	1

Table 8. Teachers who mentioned the confusion of ‘there’, ‘their’ and ‘they’re’

Number of teacher answered the questionnaire	4
Number of teachers mentioned ‘there’, ‘their’, ‘they’re’	3
Number of teachers did not mention ‘there’, ‘their’, ‘they’re’	1

Two teachers also spoke of doubling certain letters such as ‘l’ and ‘t’ as in ‘careful’ instead of ‘careful’ and ‘writing’ instead of ‘writing’ as common spelling errors.

Table 9. Teachers who mentioned the unnecessary doubling of letters

Number of teachers answered the questionnaire	4
Number of teachers mentioned doubling letters	2
Number of teachers did not mention doubling letters	2

Other significant mistakes that were mentioned were the common use of ‘dose’ – ‘does’, ‘woman’ – ‘women’, ‘are’ – ‘our’, ‘beutiful’ – ‘beautiful’ and ‘charachter’ – ‘character’.

Two teachers spoke of two other noteworthy spelling mistakes and they were ‘cos’ – ‘because’, ‘wanna’ – ‘want to’ and ‘gonna’ – ‘going to’. One of them even referred to them as slang language.

As for their criteria in marking answers which contain spelling errors, two of them said that they are quite particular about them and reduce marks for such mistakes while the other two stated that they are concerned about the spelling but give more preference to the content.

There were certain limitations as well since a few external conditions had to be imposed in order to limit the scope of the study due to time constrains. For instance, the particular schools and the respective teachers were selected solely on accessibility. This led to the exclusion of students representing government

schools. Further, the selected student population was small (twenty-six in number) since they were exclusively learning under the teachers who were approached as respondents.

Results and Discussion

The list of shortened words given in Table 1 exhibits how the commonly used English words have at least one SMS counterpart. Though the passage contains only 145 words, 49 abbreviated terms had been used by the students while transcribing them to SMS discourse. Further, if all use the same shortened forms for the particular English words, one could assume that they are quite conversant in the generally used abbreviated terms of SMS discourse. As a result, the SMS terms should appear more frequently among the spelling mistakes they have made.

According to Table 2, the total number of spelling errors made by all the students is 106. Yet out of those, only 50 mistakes were identical to their SMS counterparts. This proves that most of the time when a student made a mistake in spelling, it did not resemble its SMS counterpart.

Table 3 indicates that out of the fifty spelling mistakes that were similar to their SMS equivalents only one word resembled the typical SMS language namely 'adolsnce' and that too was made by only one student. This evidently proves that though the selected teenagers are in the habit of using the SMS discourse while text messaging, their usual spelling mistakes do not resemble it. As mentioned by Seda (2013), this is a contrast to the public belief of SMS language leading to the deterioration of spelling. Proving the affirmation of Drouin & Davis (2009) that language learnt over time is not easily forgotten, the chosen teenagers did not get the SMS discourse mixed up with the English terms they used in the classroom when producing the two texts. This further proved the findings by Hogan, Gilbert, Leckington & Morris (2012) which is that students are capable of switching from SMS language to the formal English they use in their studies when necessary. Certain students made spelling mistakes due to confusion of context and even because of carelessness. Such mistakes cannot be attributed to the influence of the abbreviated words used in texting as there is no visible resemblance between the two.

The general belief among the teachers was that the motivated and the focused students always made less spelling mistakes. They also agreed that reading played a key role in influencing good spelling. Further, selecting English by choice seems another reason behind making fewer mistakes as confirmed by the Advanced Level teacher. The information provided by these teachers regarding the common spelling errors their students make prove that most of them are related to the confusion of various grammatical and other language rules. As shown on Table 7, 75% percent of them believed that their students mix up the writing of plural form and possessive nouns. The examples they provided for this error are not even remotely connected to SMS language. The situation is similar in getting confused with 'there', 'their' and 'they're'. The mixing up of 'does' – 'dose' and 'woman' – 'women' are instances where the order of letters is mistaken whereas the mistake of 'are – 'our' is related to a confusion in phonetics.

However, 'cos', 'wanna' and 'gonna' which were mentioned by two of the teachers are terms which resemble the features of SMS discourse. Yet, only 'want to' appeared in the chosen passage. Though 'wanna' was used by many students in their transcription in SMS discourse, none of them used it or made an identical spelling mistake while re-writing it in unabbreviated English. As such, this paper refrains from commenting about the frequency of the particular error.

According to the teachers, the marking schemes of English Language contain a category for spelling. Therefore, making a least number of mistakes is definitely beneficial for the student.

The students who represented the international school made a lesser number of spelling mistakes than the students from the local private schools. This could be because the former followed all their subjects in English Language while the latter learned certain or more of the subjects in their mother tongue depending on the stream they follow. However, this is a topic that needs further investigation.

In general, a majority of the spelling mistakes have been made due to either carelessness, confusions over grammatical rules or mixing up of letters. The minute amount of the usage of SMS

discourse in the unabbreviated English transcription proves that the habit of text messaging does not affect teenage spelling in a crucial manner. However, it must be mentioned that some of the students commented that they were slightly conscious of transcribing in SMS discourse with the use of a pen as it felt different to the usual usage of keyboard of a cellular phone which in fact is a limitation of this study.

Conclusions

The results proved that the majority of the spelling mistakes are made due to carelessness, confusions over grammatical rules and mixing up of letters which are hardly connected to the SMS discourse. The teachers affirmed that most students are capable of adjusting their writing styles according to the context they are written in. The students too confirmed this view.

This study was conducted within a limited group in a specific socio-economic space. Therefore, further studies are recommended to be conducted with broader groups on the same topic and also on the effects of the SMS discourse on teenage vocabulary, grammar and punctuation marks which are critical components of literacy.

The findings that were brought forward through this paper would hopefully throw a positive light on the use of text messaging which has become a necessity in the world today.

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