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Highlights

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- Health & Poverty Alleviation
- Professional Training in the Amazon

Discovering Thoughts, Inventing Future

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Professional Training in the Amazon and for the Amazon

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Abstract- This article conducts a debate on professional training in Social Work and the treatment of regional particularities, with emphasis on the Amazon. In the light of historical and dialectical materialism, supported by bibliographical research, it proposes a formative process that articulates universality and particularity, international and local contexts, national and regional demands, in the spirit proposed by the Curricular Guidelines constructed by the professional category of social workers in 1996. It is postulated that the generalist formation, at the same time that it should form professionals with capacity to act in the plurality of socio-occupational spaces anywhere in the country, should also favor responses to regional particularities.

Keywords: amazonia; professional training; social work; regional particularities.

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PROFESSIONALTRAININGINTHEAMAZONANDFORTHEAMAZON

Strictly as per the compliance and regulations of:

Professional Training in the Amazon and for the Amazon[1]

Formação Profissional na Amazônia e para a Amazônia

Roberta Ferreira Coelho de Andrade α, Dayana Cury Rolim σ & Alice Alves Menezes Ponce de Leão ρ

Resumo- Este artigo conduz um debate sobre formação profissional em Serviço Social e o trato das particularidades regionais, com destaque à Amazônia. À luz do materialismo histórico e dialético, sustentado na pesquisa bibliográfica, propõe um processo formativo que articule universalidade e particularidade, contexto internacional e local, demandas nacionais e regionais, no espírito proposto pelas Diretrizes Curriculares construídas pela categoria profissional de assistentes em 1996. Postula-se que a formação generalista, ao mesmo tempo em que deve formar profissionais com capacidade para atuar na pluralidade de espaços sócio-ocupacionais de qualquer lugar do país, deve, igualmente, favorecer respostas às particularidades regionais.

Palavras-chave: amazônia; formação profissional; serviço social; particularidades regionais.

Abstract- This article conducts a debate on professional training in Social Work and the treatment of regional particularities, with emphasis on the Amazon. In the light of historical and dialectical materialism, supported by bibliographical research, it proposes a formative process that articulates universality and particularity, international and local contexts, national and regional demands, in the spirit proposed by the Curricular Guidelines constructed by the professional category of social workers in 1996. It is postulated that the generalist formation, at the same time that it should form professionals with capacity to act in the plurality of socio-occupational spaces anywhere in the country, should also favor responses to regional particularities.

Keywords: amazonia; professional training; social work; regional particularities.

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I. Introdução

A formação profissional em Serviço Social, assim como em qualquer área do conhecimento, deve ser submetida a ato contínuo de revisão com vistas ao aprimoramento de suas bases para que possa oferecer subsídios atualizados para a construção de respostas qualificadas aos desafios da realidade social, projetando-as no horizonte do projeto ético-político.

Na ótica de Iamamoto (2007), é indispensável que a formação profissional suscite nos profissionais a capacidade de captar o processo histórico, de modo a intervir sobre as diferentes expressões da questão social que emergem. Para tanto, o profissional precisa dispor de um arcabouço teórico-metodológico que o permita interpretar criticamente o espaço sócio-ocupacional em que irá atuar, atentando-se para a conjuntura atual, de modo a construir estratégias que respondam efetivamente às demandas dos usuários e das entidades empregadoras.

Obediente ao projeto de formação do Serviço Social brasileiro, o processo formativo precisa contemplar a universalidade, a particularidade e a singularidade, o geral e o particular, o internacional e o local, o nacional e o regional. Nesse sentido, considerar as particularidades regionais no processo formativo é fundamental, para que os profissionais formados tenham capacidade para atuar na pluralidade de espaços sócio-ocupacionais de qualquer lugar do país, mas, igualmente, consigam responder às particularidades regionais.

Ao pensarmos na Amazônia e na sua sociobiodiversidade, a formação profissional construída nesta e para esta região precisa considerar sua formação sócio-histórica, o processo de exploração capitalista, a multifacetada questão social, a heterogeneidade cultural, a biodiversidade e a pluralidade social, sendo uma região que abriga uma gama de povos tradicionais indígenas (povos originários) e não indígenas (ribeirinhos, quilombolas, seringueiros, castanheiros etc.), que carregam conhecimentos tradicionais que não podem ser desconsiderados no planejamento, execução e avaliação das políticas públicas, as quais são os espaços privilegiados de desenvolvimento do trabalho profissional.

Nesse espírito, este artigo se propõe a discutir a formação profissional em Serviço Social conduzida no espaço amazônico e considerando as particularidades da Amazônia para um trabalho profissional qualificado voltado para os povos amazônidas. Não se trata de regionalismo ou particularismo, mas da necessária articulação entre a universalidade, a particularidade e a singularidade, à luz da perspectiva do materialismo histórico-dialético, para a qual os movimentos de dedução e indução são imprescindíveis para a interpretação do real. Com isso, torna-se possível reconhecer o universal no particular e vice-versa.

Para sua redação, recorreu-se à pesquisa bibliográfica com articulação a reflexões favorecidas pela docência na graduação e na pós-graduação em Serviço Social no estado do Amazonas, maior unidade federativa do Brasil em extensão territorial.

O artigo está estruturado em 3 partes, além de introdução e considerações finais. Inicialmente, explicita-se que o debate das particularidades regionais na formação profissional está em sintonia com a proposição das Diretrizes Curriculares. Em seguida, apresentam-se sinteticamente as particularidades da questão social na Amazônia e, por fim, retomam-se as argumentações sobre a relação entre universalidade, particularidade e singularidade para alicerçar a propositura de condução da formação na Amazônia que considere as particularidades da realidade amazônica.

Acredita-se que este debate tem relevância acadêmica e social, na medida em que está amparado no projeto ético-político do Serviço Social brasileiro e, no espírito dos núcleos de fundamentação da formação profissional, enfatiza o adensamento do debate da particularidade da formação sócio-histórica da sociedade brasileira e do trato das particularidades regionais como uma unidade no processo formativo.

II. Formação Profissional em Serviço Social e o Trato Das Particularidades Regionais

O atual projeto de formação profissional em Serviço Social, construído nos anos 1990, é resultante de um processo de amadurecimento teórico-político da categoria em conjunto com as suas entidades representativas, por ocasião do movimento de reconceituação, iniciado no bojo da ditadura civil-militar. Como avanços, podemos destacar a elaboração do currículo mínimo para o curso de Serviço Social proposto pela até então Associação Brasileira de Ensino em Serviço Social (ABESS) em 1982.

Para Castro e Toledo (2012), o currículo de 1982 deu um salto em comparação aos currículos anteriores (1953 e 1970), como fruto da perspectiva de intenção de ruptura oriunda do processo de renovação do Serviço Social, nos termos de Netto (2015). Essa contribuição é admitida por Castro e Toledo (2012) e Netto (2015). Seguindo os passos de avanço do currículo de 1982, deu-se a elaboração do Código de Ética Profissional de 1986, também à luz da tradição marxista, no intuito de demarcar a ruptura com a perspectiva conservadora.

Percebendo os limites do currículo mínimo de 1982 – como, por exemplo, a segregação de história, teoria e método – a categoria profissional conduziu um importante e democrático processo coletivo de debate, revisão e construção de um novo projeto de formação, com mais de 200 oficinas locais, 25 regionais e 2 nacionais (BRAVO et. al., 2019).

Desse amplo debate coletivo capitaneado pela então Associação Brasileira de Ensino de Serviço Social – ABESS (atual Associação Brasileira de Ensino e Pesquisa em Serviço Social – ABEPSS) resultou o documento denominado “Proposta nacional de currículo mínimo para o Curso de Serviço Social”, aprovado em 1996, que deu base às Diretrizes gerais para o curso de Serviço Social. Em conjunto com a Lei de Regulamentação da Profissão e o Código de Ética Profissional em 1993, as Diretrizes de 1996[2] dão substrato ao Projeto Ético-Político do Serviço Social brasileiro.

Nas Diretrizes de 1996, a formação é organizada a partir de um currículo que entrelaça os pressupostos sócio-históricos e teórico-metodológicos da profissão com as particularidades da sociedade brasileira. Para direcionar a formação são eleitos núcleos de fundamentação, que reúnem uma série de conhecimentos necessários à compreensão da realidade. Os núcleos são: núcleo de fundamentos teórico-metodológicos da vida social, núcleo de fundamentos da formação sócio-histórica da sociedade

[2] Como nos ensina Iamamoto (2014), embora gozem de reconhecimento e aprovação no interior da categoria e perante suas entidades representativas, as Diretrizes Gerais de 1996 não têm força de lei ou normativa legal. Num processo de contrarreforma do ensino superior, preconizado pelos organismos multilaterais, como o Banco Mundial e o Fundo Monetário Internacional (FMI) no ocaso do século XX e limiar do século XXI, as diretrizes foram descaracterizadas, publicadas sob a forma da Resolução Resolução CNE/CES nº 15, de 13 de março de 2002. Embora façam referência aos núcleos de fundamentação, não os detalham com a mesma riqueza que está no documento da ABEPSS de 1996.

brasileira e núcleo de fundamentos do trabalho social. (CARDOSO et. al., 1997).

Segundo as Diretrizes Curriculares da ABESS (1996), o Núcleo de Fundamentos Teórico-Metodológicos da Vida Social objetiva uma compreensão da ontologia do ser social,

> historicamente situado no processo de constituição e desenvolvimento da sociedade burguesa, apreendida em seus elementos de continuidade e ruptura, frente a momentos anteriores do desenvolvimento histórico. (p. 10).

Quanto ao Núcleo de Fundamentos da Formação Sócio-Histórica da Sociedade Brasileira, destaca-se a análise da

> constituição econômica, social, política e cultural da sociedade brasileira, na bsua configuração dependente, urbano-industrial, nas diversidades regionais e locais (ABESS, 1996, p. 11), articulada à questão agrária e agrícola, precípua à particularidade histórica nacional.

O Núcleo de Fundamentos do Trabalho Profissional da ABESS (1996) visibiliza

> a profissionalização do Serviço Social como uma especialização do trabalho e sua prática como concretização de um processo de trabalho que tem como objeto as múltiplas expressões da questão social (p. 12).

Dentre estes núcleos, para afunilar a proposta deste artigo, julgamos pertinente dar destaque ao Núcleo de Fundamentos da Formação Sócio-Histórica da Sociedade Brasileira, sobre o qual ainda há a necessidade de maior produção no interior da profissão. É um núcleo que visibiliza a importância do diálogo acerca das particularidades históricas nacionais e regionais brasileiras adensadas na compreensão do desenvolvimento do capitalismo no Brasil.

Para dar conta de entender a sociedade brasileira, é necessário fazer a interlocução com o contexto internacional, reconhecendo o Brasil como um país de capitalismo dependente, nos termos de Fernandes (1975). Dessa inserção desigual e subordinada resultam processos sociais de expropriação e exploração que geram múltiplas refrações da questão social, entendida como

> o conjunto das desigualdades e lutas sociais [...]. Ela expressa, portanto, uma arena de lutas políticas e culturais na disputa entre projetos societários [...], que trazem o selo das particularidades históricas nacionais (IAMAMOTO, 2008, p. 156).

O "Serviço Social brasileiro" foi uma experiência pioneira gestada no bojo do movimento de renovação (conf. NETTO, 2015) para se pensar um formato próprio da profissão a partir da realidade dos países latino-americanos e da formação sócio-histórica brasileira e regional, sem perder de vista a concatenação dos nossos processos sociais com o capitalismo internacional. Mas, esse esforço não se trata de uma tarefa concluída, e sim, de um processo em transitividade. Por isso, a formação profissional em Serviço Social deve ser constantemente submetida à revisão amplamente dialogada, com vistas ao fortalecimento da profissão diante dos ataques que assolam as profissões assalariadas.

A formação sócio-histórica brasileira aponta que parte das distinções no cenário nacional também pode ser explicada pelo modo como as regiões ou localidades foram colonizadas e por quem as colonizou. Apesar das características regionais diferentes, há uma unificação com a multidiversidade de povos e culturas que se encontram no território brasileiro, sendo importante incorporar esse debate nas discussões acadêmicas para sintonizar a profissão de Serviço Social à diversidade regional, bem como, com o fenômeno das desigualdades.

Iamamoto (2014) sinaliza que os dilemas regionais e nacionais devem ser incorporados como matéria da vida acadêmica, considerando as particularidades históricas nacionais no debate profissional.

Compreende-se que a formação acadêmico-profissional deve preparar o assistente social para realizar uma análise crítica da conjuntura da sociedade brasileira, pautada no referencial teórico-metodológico, ético-político e técnico-operativo, dialogando com inquietações e questões que permeiam a realidade social.

Atribuir visibilidade às diversidades regionais na formação profissional torna-se ainda mais necessário diante das disparidades existentes desde a colonização do Brasil. Há múltiplos indicadores sociais, econômicos e culturais que apontam as disparidades regionais. No imaginário brasileiro, as regiões "mais atrasadas" localizam-se no Norte e Nordeste do país, já as regiões Sul e Sudeste são consideradas "mais modernas".

A Amazônia brasileira localiza-se, majoritariamente, no Norte do país, tendo em seu desenvolvimento histórico distintas interpretações e narrativas. Conforme analisa Gondim (1994) sobre a invenção da Amazônia, as características sinalizadas para descrevê-la situam-na enquanto paraíso natural, inferno verde, vazio demográfico, população primitiva, fonte de riquezas, região do futuro, pulmão do mundo, dentre outras características que ainda atravessam o imaginário social do povo brasileiro e do cenário internacional.

A Região Amazônica chama a atenção do mundo, definida como Amazônia Continental e Amazônia brasileira, a última também conhecida como Amazônia Legal[3], possuem peculiaridades que devem ser bem compreendidas na formação profissional na Amazônia para somar forças ao avanço do Projeto Ético-Político profissional na garantia da luta contra a hegemonia do capital na região.

[3] Instituída pelo governo de Getúlio Vargas em 1953 para favorecer o progresso brasileiro.

III. As Particularidades Regionais Amazônicas

Reconhecendo que o trato das particularidades regionais é um componente indispensável ao processo formativo, damos destaque à Amazônia, que enquanto espaço rico e diverso, congrega uma pluralidade humana, animal, vegetal e mineral. Por isso, fazemos referência à sua sociobiodiversidade, de modo a remeter a esse emaranhado de elementos que a caracterizam.

A Amazônia é um dos territórios mais importantes do planeta, considerada por Batista (2007), Benchimol (2009) e Loureiro (2009) como uma das regiões mais complexas do mundo. Sua formação econômica, social, política, cultural e ambiental a encobriu de particularidades, não podendo ser analisada apenas sob a ótica de sua floresta, fauna, flora e biodiversidade, mas também, a partir dos povos que habitam essa região.

Para além de florestas e rios, a região é uma grande representante da diversidade e riqueza cultural de seus povos, portanto, exige um olhar particular a cada comunidade e a cada grupo populacional, uma vez que a heterogeneidade sociocultural e ambiental constitui uma das maiores particularidades da Amazônia.

Ao olhar para a riqueza das florestas e rios, a Amazônia possui a maior floresta equatorial do mundo e uma rica biodiversidade que abrange nove territórios da América do Sul, sendo que 60% da floresta faz parte do território brasileiro. Os "principais rios navegáveis da região amazônica são o Solimões/Amazonas, o Negro, o Branco, o Madeira, o Purus e o Juruá" (BNDES, 1998, p. 01), sendo a navegação hidroviária o meio de acesso da maior parte dos municípios da região.

Ao contextualizar a Amazônia sob a lógica do desenvolvimento e da cobiça do grande capital, destaca-se a sua inserção no cenário internacional a partir da exportação das drogas do sertão e do período econômico da borracha por meio da exploração do látex, que possibilitou uma acumulação capitalista contemporânea.

Essa acumulação vem se intensificando ao longo de sua formação sócio-histórica, à medida que a Amazônia passa a ser vista como

> fronteira do capital natural em nível global, em que se identificam dois projetos: o primeiro é um projeto internacional para a Amazônia, e o segundo é o da integração da Amazônia, sul-americana, continental (BECKER, 2005, p. 74).

O projeto internacional para a Amazônia a coloca como uma imensa unidade de conservação a ser preservada, visando a sobrevivência do planeta, uma vez que o desmatamento e as queimadas têm efeitos sobre o clima e a biodiversidade. Já o segundo projeto internacional que se refere à integração da Amazônia transnacional trata-se de uma nova escala para pensar e agir na Amazônia, porém sabe-se que o projeto de integração nacional acarretou perversidades em termos ambientais e sociais (BECKER, 2005).

Como palco da cobiça internacional, as tentativas de desenvolvimento da Amazônia se fizeram presentes com a criação de inúmeras agências, instituições, rodovias, ferrovias e grandes projetos associados aos acordos internacionais, principalmente a partir dos anos de 1960, com o desenvolvimento do Projeto Trombetas, Grande Carajás, Zona Franca de Manaus, indústrias madeireiras e projetos de construção de hidrelétricas. Estes projetos apresentaram grandes impactos econômicos, sociais, demográficos e ambientais na região, sobretudo quando se analisa sob a ótica da espoliação de populações amazônidas.

Pinheiro, Vallina e Vallina (2022, p. 94-95) avaliam que

> no desenvolvimento capitalista na Amazônia é o Estado ditatorial brasileiro que intervém para assegurar a expansão econômica e as condições de exploração do trabalho na região. As bases das antigas formas de economia são destruídas e instituem-se novas relações sociais de produção, que passam a conviver com formas "arcaicas". Há a desapropriação e reapropriação de terras e instrumentos de trabalho, ocorre o massacre dos povos originários (etnias indígenas) e, também, acontecem muitos conflitos envolvendo os povos tradicionais (ribeirinhos, varjeiros, quilombolas, pescadores, extrativistas), incentiva-se o fluxo migratório para cumprir as funções de mão de obra. Convivem a exploração e o "progresso", semisservidão e grande capitalismo, violência e crescimento econômico.

A história do desenvolvimento do capitalismo na Amazônia se dá com intensa exploração econômica e revela a barbárie capitalista que, sob a violência e a devastação na região, privilegia os interesses privados, distancia-se de uma integração social e democrática, revela as contradições engendradas pelo movimento do capital na região em um contexto de acumulação capitalista contemporânea e potencializa o empobrecimento dos povos da Amazônia em meio às riquezas naturais, favorecendo a emergência de diferentes refrações da questão social que atingem tais povos, como: fome, desemprego, violência, falta de acesso a serviços de saúde e saneamento básico, desastres ambientais, expropriação de terras etc.

Henriques (2000) analisa que a Amazônia brasileira reproduz duas características da desigualdade e pobreza no Brasil, sendo a primeira, que o Brasil não é um país pobre, mas, um país com muitos pobres, cuja origem da pobreza não reside na escassez de recursos. A segunda característica diz respeito à concentração de renda. Com a concentração de renda na Amazônia brasileira, os benefícios do crescimento na região ficaram restritos a determinados segmentos sociais, sinalizando as contradições de um crescimento econômico com a manutenção das desigualdades sociais.

Diante do avanço de geração de riqueza, produção e circulação do valor na Amazônia,

> a partir do golpe de 2016, mas, sobretudo desde o início do governo Bolsonaro em janeiro de 2019, o processo de espoliação da Amazônia é intensificado, sobretudo com o *boom* econômico das *commodities* (PINHEIRO, VALLINA, VALLINA, 2022, p. 96).

atrelados ao moderno sistema financeiro, utilizando-se de processos violentos, sobretudo nas expropriações de terras e extermínio de indígenas. Sabe-se que

> dinheiro e extermínio caminharam juntos em processos de expansão da fronteira capitalista na Amazônia, com novos repertórios de violência a cada nova frente econômica (MICHELOTTI, MALHEIRO, 2020, p. 646).

As violências, tensões e conflitos relacionados à propriedade somam-se aos componentes das particularidades amazônicas. Assim,

> a violência sobre os povos originários e tradicionais que habitam a região têm sido algumas das graves e emblemáticas refrações da questão social que se apresentam na Amazônia (PINHEIRO, VALLINA, VALLINA, 2022, p. 100).

Hoje, graves problemas ambientais são intensificados com a invasão de garimpeiros, principalmente em terras indígenas, que também têm as águas poluídas com os despejos dos mercúrios, além de desmatamento e derrubadas de árvores pelas indústrias madeireiras e queimadas das florestas.

A resistência dos povos indígenas coloca em evidência a reflexão de Iamamoto (2008), quando analisa que a questão social sendo desigualdade é também rebeldia, por envolver sujeitos que vivenciam as desigualdades e a ela resistem, se opõem, “expressando a consciência e a luta pelo reconhecimento dos direitos de cada um e de todos os indivíduos sociais” (p. 160).

A história de massacre e extermínio na Amazônia presente no período colonial ainda se evidencia em tempos atuais, em que a resistência política que levanta a bandeira de luta de reivindicações pela Amazônia, envolve, muitas vezes, colocar em risco a própria vida, como ocorreu com os ativistas Chico Mendes, Dorothy Stang, Dom Phillips e Bruno Pereira, dentre outros que perderam a vida em defesa da Amazônia.

Essa situação nos leva a refletir sobre as diversas faltas de cobertura de proteção aos povos que vivem na Amazônia, principalmente quando falamos de proteção social diante de um estado em que prevalece uma modernização conservadora acoplada ao estado neoliberal. O desmonte de políticas públicas de interesse regional atinge fortemente os povos da floresta (seringueiros, castanheiros, ribeirinhos, pescadores, caboclos, índios, dentre outros), expostos às diversas formas de violação de direitos.

Teixeira (2008) analisa que os povos da floresta no espaço regional não seriam pobres, miseráveis, “excluídos”, se pudessem continuar com a livre apropriação dos produtos do rio ou da floresta e de suas terras. Os trabalhadores amazônidas seriam no máximo típicos, mas não pobres. O movimento do capital na região tornou-os mais do que pobres, tornou-os miseráveis.

Além do movimento do capital na região, as particularidades geográficas implicadas pela extensão territorial e ainda pouco povoada em comparação às demais regiões brasileiras revela a oferta de serviços concentrados, principalmente, nas cidades. As áreas rurais e as mais longínquas ficam, geralmente, sem acesso ou com acesso limitado aos serviços básicos essenciais à vida. São locais onde o poder público não chega e as pessoas sem recursos financeiros para custear o trânsito de uma viagem permanecem desassistidas e vulneráveis, apesar da potencialidade em seus territórios.

Cada município amazônico possui especificidades territoriais em seu modo de vida e na sua relação com a natureza diante da diversidade dos ecossistemas regionais, caracterizada em muitas localidades pelas terras de várzea que sofrem com as enchentes dos rios e as terras firmes.

> A Região Amazônica caracteriza-se por dois grandes tipos de ecossistema: a terra de várzea que são as áreas baixas nas beiras dos rios, sujeitas a inundações durante o período em que os rios enchem e as terras firmes que são as áreas relativamente altas que não estão sujeitas às inundações sazonais (SCHERER, 2004, p. 2).

Os regimes de cheia e seca dos rios demandam várias mudanças no modo de vida dos ribeirinhos e das comunidades rurais que são atingidas pelos movimentos das águas, que rege a vida amazônica e impacta a região como um todo. Apesar do grande volume de água na Amazônia, a maioria dos ribeirinhos e moradores de comunidades rurais não dispõe de água própria para o consumo humano, muitas vezes, a água bruta sem tratamento é sua única opção, colocando a saúde em risco.

Sobre a falta de acesso às políticas públicas, pode-se refletir à luz da análise de Scherer e Oliveira (2006), ao sinalizarem que a Amazônia ainda vive inúmeras contradições evidenciadas em planos de governo desenraizados da história e dos lugares, do espaço e do tempo, onde ao mesmo tempo pode-se notar o acesso às avançadas tecnologias da modernidade e a falta de acesso da grande maioria da população às necessidades sociais básicas.

Diante das riquezas, das carências e das potencialidades que se apresentam em meio às particularidades regionais, sugere-se olhar para a Amazônia, para os investimentos em políticas públicas adequadas à população local e à formação qualificada de profissionais que possam debater o seu futuro e contribuir para o seu desenvolvimento com uma formação na Amazônia e para a Amazônia, a fim de enfrentar os dilemas e desafios que se projetam sobre a região frente à crise do mundo globalizado.

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IV. Por Que Precisamos Formar na Amazônia e Para a Amazônia?

Sendo a Amazônia um espaço plural e sociobiodiverso, requer um conjunto vasto e articulado de conhecimentos que permita aos profissionais formados nas diversas áreas do conhecimento a construção de estratégias de trabalho que respondam às demandas gerais e particulares dos povos que habitam a Amazônia.

Neste artigo, o foco está na formação profissional em Serviço Social na Amazônia, reconhecendo a imprescindibilidade de que as expressões da questão social nesta região possam ser compreendidas a partir da historicidade e processualidade que se revelam na tríade categorial da universalidade, particularidade e singularidade.

Ao referirmo-nos à tríade dialética universalidade, particularidade e singularidade, merecem destaque as contribuições de Lukács (1978), Pontes (2008) e Netto (2005), os quais postulam que a dialética desta tríade se revela na realidade da vida cotidiana. No campo da singularidade, as determinações ainda estão obscurecidas, restritas aos objetos em si mesmos, na medida em que se visualiza a imediaticidade. Ao superar a imediaticidade e avançar para a particularidade, temos a possibilidade de vislumbrar as mediações e as determinações que incidem sobre os processos sociais. Esse movimento

> não se trata de uma busca externa ao objeto, de nenhuma determinação transcendente ao ser; trata-se de uma captação a partir dos próprios fatos [...] e do seu automovimento, das mediações com a dinâmica de Universalidade (PONTES, 2008, p. 85).

É na universalidade que as grandes determinações são apreendidas, considerando a formação sócio-histórica. É nesse campo que as manifestações particulares são conectadas às determinações macroestruturais. Para fazer essa passagem e captar as conexões entre universal, particular e singular, as mediações são imperiosas, porque

> têm a função de conduto de 'passagens' e 'conversões' entre as várias instâncias da totalidade. Por isso, a categoria mediação é estruturante da particularidade (PONTES, 2008, p. 86).

Trazendo a tríade dialética universalidade, particularidade e singularidade para interpretar a formação sócio-histórica da sociedade brasileira e, necessariamente, a formação da Amazônia, temos a possibilidade de compreender que a Amazônia não é um simples espaço geográfico "exótico", é um complexo social, cultural, político, econômico, biológico que precisa ser captado em sua processualidade, como parte de uma totalidade.

O capitalismo desigual e dependente que se desenvolveu na Amazônia tem determinações mais amplas que são percebidas nas várias sociedades capitalistas, porém possui também particularidades que se expressam na realidade amazônica, marcada por ambientes de várzea e terra firme, povos tradicionais e originários, diferentes etnias, costumes e tradições etc.

Se procurarmos entender a Amazônia sob a perspectiva da singularidade, sem a relação com a universalidade e a particularidade, esvaziamos a interpretação, porque buscaremos explicar a Amazônia por ela mesma, no nível de sua existência imediata. Com isso, a interpretação será pobre em captação de determinações. Ao fazermos a mediação, temos a possibilidade de entender a Amazônia como atravessada por elementos universais que ganham conformações singulares nesse recanto do planeta, mas que carregam em si a universalidade.

Ainda que reconheçamos que a formação profissional em Serviço Social tenha no horizonte um perfil generalista, isso não significa primar apenas por debates conjunturais, internacionais e nacionais. É preciso conectar o local e o global, o regional e o nacional, o amplo e o específico, de modo que os profissionais em formação sejam conduzidos à construção de uma análise de conjuntura que lhes permita interpretar a realidade a partir de uma perspectiva de totalidade. Nesse processo, a categoria mediação contribui sobremaneira ao articular universal, particular e singular.

Em pesquisa realizada com egressos de duas universidades localizadas na Amazônia, Pontes et. al. (2019) constatam que a categoria mediação confunde-se com a intermediação de conflitos quando, na verdade, trata-se de uma categoria intrínseca ao método materialismo histórico-dialético. O que se percebe é que, no espaço institucional, onde se realiza potencialmente o trabalho profissional, esta categoria tecnificou-se. Isto se deve à fragilidade da compreensão acerca do real sentido da mediação, que não se atém ao relacionamento entre usuário e outros profissionais. A mediação permite a apreensão das determinações mais gerais e, ainda, das manifestações mais singulares dos fenômenos sociais.

A mediação é uma categoria dialética que contribui para que as demandas institucionais sejam transformadas em demandas socioprofissionais quando são despidas da pseudoconcreticidade da forma como se apresentam (em seu aspecto fenomênico) para serem compreendidas na tríade universalidade – particularidade – singularidade. Ao lançar mão da mediação, torna-se possível perceber o universal no singular e o singular no universal, mediatizados pelo particular.

Uma formação profissional desenvolvida no espaço amazônico não pode ser alheia às particularidades da Amazônia, de modo a favorecer um trabalho profissional qualificado, capaz de responder às demandas dos diversos povos e etnias que habitam a Amazônia.

Entretanto, este ainda é um grande desafio, visto que, de acordo com pesquisas conduzidas por Andrade, Costa e Sousa (2018) e Nascimento et al. (2021), muitos egressos de Serviço Social formados em universidades públicas e privadas situadas no coração da Amazônia apontam parcas discussões mais específicas sobre a realidade da questão social nos estados amazônicos e o conhecimento a respeito dos povos amazônidas (negros, indígenas, ribeirinhos e outros).

Nascimento et. al. (2021) asseveram que os currículos dos cursos de Serviço Social da Universidade Federal do Amazonas (UFAM) e da Universidade Federal do Pará (UFPA), por exemplo, não assumem a questão étnico-racial como conteúdo explicativo das desigualdades sociais, apesar da composição demográfica do Amazonas e do Pará ser predominante de negros e indígenas e descendentes. Segundo os autores, somente em 2017, a disciplina proposta, denominada "Relações Étnico-Raciais no Brasil e na Amazônia", foi aprovada, mas não pôde ser implementada em razão de que a avaliação do projeto pedagógico não tinha sido finalizada.

A UFAM, por sua vez, tanto no campus sediado na capital Manaus quanto no campus na cidade de Parintins, não possui em seus projetos pedagógicos a disciplina raça/etnia/classe social em caráter obrigatório. Esse debate pode ou não ser incorporado de forma transversal em outras disciplinas regulares da matriz curricular, como Questão Social na Amazônia ou História da Cultura da Amazônia, a depender da afinidade do professor com este tema (NASCIMENTO et. al., 2021).

A incorporação da discussão de raça/etnia/classe social no interior da categoria profissional é tardia e as produções são incipientes. E não é pelo fato de este tema ter conseguido visibilidade na agenda do Serviço Social que ele seja diretamente incorporado no currículo de formação profissional. A pesquisa dos autores aludidos comprova que este tema, com maior envergadura voltada para a população negra, tem tido maior aceitação nos estados do sul e do sudeste do país, levando, inclusive, à reivindicação pela presença de professores negros no quadro docente da Pontifícia Universidade Católica (PUC) de São Paulo em 2018.

Espera-se que a temática indígena tenha maior envergadura de abordagem no debate de raça/etnia/classe social nos estados do Norte do país, haja vista que a formação profissional na região amazônica não tem dado a primazia esperada a esta discussão e nem em relação à realidade dos outros povos que compõem o cenário demográfico e social neste local do país.

É importante destacar, como frisa Lima (2010), que a questão regional amazônica não é unicamente ambiental; é política, econômica e social. Desde o início do processo de colonização da região, os seus territórios têm sido saqueados e os seus povos têm sido expulsos de suas terras para a expansão de grupos econômicos, causando uma agressiva devastação da natureza, dizimação de povos originários e mazelas sociais em sua população.

No tempo contemporâneo, a economia capitalista mundial deixa de ser internacional e passa a ser transnacional. Isto significa que, frente ao esgotamento das reservas naturais nos países centrais, estes buscam suprir as suas necessidades com os recursos dos países da América Latina. A face predatória do capitalismo na Amazônia tem levado ao esgotamento de suas reservas naturais com o apoio e incentivos do Estado nacional e, principalmente, desencadeado o agravamento da questão social no contexto de vida dos povos que vivem na região.

O desafio à formação dos assistentes sociais na região amazônica é relacionar a problemática ambiental e suas políticas públicas específicas (LIMA, 2010). Mas, não apenas isso, se quisermos alinhar os objetivos do nosso trabalho profissional aos princípios do projeto ético-político é necessário que os assistentes sociais estejam preparados para contribuir no fortalecimento das lutas sociais dos povos que aqui existem/resistem, instrumentalizando-os para a participação social nas esferas democráticas de direito para o reconhecimento público de suas pautas políticas.

O Serviço Social tem reafirmado o seu compromisso com uma formação profissional de qualidade, crítica e comprometida com os interesses das classes subalternas. Sendo as demandas da profissão provenientes da realidade social, a qual se encontra em permanente transformação, a formação profissional precisa estar sintonizada com o tempo contemporâneo.

O tempo contemporâneo sinaliza as investidas avassaladoras do capitalismo na região amazônica que são sentidas pelos assistentes sociais diante de demandas advindas de novas formas destrutivas do meio ambiente, dos ataques aos povos originários e à força de trabalho. Desafia, assim, os profissionais à constante atualização teórica e a uma rigorosa análise crítica do movimento do real, sem perder de vista o compromisso ético-político e a direção social da profissão.

O debate contemporâneo da formação profissional para a Amazônia deve reforçar a incorporação destas questões regionais apreendidas em suas particularidades, sob a perspectiva da totalidade, compreendendo que, embora global, o capitalismo tem formas particulares de se aprofundar e avançar de modo destrutivo na região amazônica.

V. Considerações Finais

Uma formação profissional conduzida na Amazônia não pode ser alheia às particularidades da Amazônia. Pensar em Amazônia implica considerar seus povos, a diversidade cultural, o direito à terra e ao território, por isso requer uma formação profissional que volte o olhar para a promoção de políticas públicas que alcancem as pessoas das zonas urbanas e rurais e tragam soluções para problemas ambientais, para o crescimento sustentável, para se unir à luta dos povos indígenas, bem como para novas intervenções que contribuam para o desenvolvimento social e econômico da região.

Requer a compreensão das transformações societárias que impactam o mundo contemporâneo e se particularizam na região com o avanço do capitalismo a fim de maximizar os lucros, atingindo a biodiversidade, a riqueza mineral e os povos amazônicos.

Este artigo chama a atenção para o conhecimento e a visibilidade das particularidades/ diversidades regionais amazônicas como uma necessidade para a formação em Serviço Social, impulsionando a interlocução acadêmica, sobretudo diante da grande inflexão histórica decorrente da mundialização do capital que se adensa na região, intensificando as expressões da questão social.

Debater sobre a formação na Amazônia face aos desafios e potencialidades da região incentiva a criação de recursos humanos qualificados para defender o seu futuro. Como bem diz Benchimol (2009, p. 498), "o bom saber e o bem fazer serão instrumentos indispensáveis para a materialização desse futuro". Portanto, os modos de vida das populações que vivem na floresta, a sobrevivência das populações nativas, o desenvolvimento articulado à sustentabilidade requerem uma formação profissional comprometida e de mente aberta para receber o futuro.

O diálogo sobre as diversidades/ particularidades regionais brasileiras está sinalizado nas Diretrizes Curriculares da ABEPSS de 1996, considerando as particularidades históricas no debate profissional. A discussão de raça/etnia/classe social também é visibilizada pela ABEPSS, situando a importância para a formação profissional do Serviço Social brasileiro, porém ainda há incipientes reflexões nos cursos de Serviço Social da região Amazônica.

Avançar nesse debate requer situá-lo nos projetos pedagógicos e nos encontros nacionais e regionais, haja vista a necessidade de adensamento dos debates sobre as particularidades regionais que conformam a questão social no país. O Brasil apresenta um rico cenário de diversidade étnica e cultural, além de realidades sociais e econômicas diferentes, que precisam ser mais conhecidas e aprofundadas nos espaços de formação profissional.

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Unlocking the Potential of Smart Watersheds: Leveraging Iot and Big Data for Sustainable Water Resource Management and Indicator Calculation

By Silva, Maria Luiza Ramos da, Falsarella, Orandi Mina, Mariosa, Duarcides Ferreira, Conti, Diego de Melo, Brígida Brito, Moraes, Marcela Barbosa & Quaresma, Cristiano Capellani

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Abstract- The present work aims to show how the Water Quality Indicators (IQA), defined in the Brazilian legislation, can be obtained using Information and Communication Technologies, such as the Internet of Things (IoT) and Big Data, and organizing them in decision support systems. This allows a decision based on up-to-date data and evidence, turning thewater management smarter. Methodologically, based on bibliographic and documentary data, it describes and evaluates the use of IoT and Big Data in calculating indicators applied to water resource management. The study also shows, in a practical way, how a network of sensors obtains the necessary data for the calculation of the Water Quality Indicator and how they were calculated using Big Data applications. With this, the results demonstrate how Information and Communication Technologies (ICTs) can be used to calculate different indicators in the management of water resources and, with the conceptual elements exposed here, provide greater familiarity with the theme of intelligent watersheds to fill a literature gap.

Keywords: *water resources management, internet of things, big data, smart watersheds, indicators.*

GJHSS-H Classification: *DDC: 628.1*

UNLOCKINGTHEPOTENTIALOFSMARTWATERSHEDSLEVERAGINGIOTANDBIGDATAFORSUSTAINABLEWATERRESOURCEMANAGEMENTANDINDICATORCALCULATION

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Keywords: water resources management, internet of things, big data, smart watersheds, indicators.

I. Introduction

Recent advances in solutions and the increasing availability of Information and Communication Technologies (ICT) allow, with precision and very high speed, it is possible to collect, transmit and process large volumes of data. Given this, paradigms can be established for the sustainable management of water resources that were previously unimaginable or difficult and complex to implement. However, as Bartos, Wong, and Kerkez (2018) observe, although we have some admittedly smart infrastructure applications, such as autonomous vehicles, energy grid management, and structural health monitoring of buildings and constructions, the integration of these technologies to operate with water is still incipient.

Watersheds refer to the territorial unit, the area of land drained by a river and its tributaries. On the highest part of the terrain, considered as the upper geographical limit of the watershed, are the slopes, or topographical dividers that guide the flow and influence the volume of water and transported sediments; delimited below is the watershed outlet, confluence with a main river or outflow (TOMAZ, 2006). It should be noted that all urban, industrial, agricultural, or preservation areas are part of some watershed. Everything there is "a consequence of the forms of occupation of the territory and the use of the waters that converge there" (PORTO & PORTO, 2008, p. 45). As water is one of the essential resources for human survival, it is in the context of watersheds that phenomena such as water scarcity, floods, or the degradation of springs can be perceived and evaluated.

Xue and Shao (2019) emphasize that watersheds with limited flow capacity, short confluence time, and high ecosystem vulnerability are more vulnerable to natural disasters. However, in geographic areas where the global water crisis is accelerated by scarcity, difficult access, and use, prolonged drought, or inefficient management, nature can help through intelligent techniques that create or increase resilience in the watersheds.

Among the natural resources and common goods threatened by the effects of human activities, water is the main consumption item, surrounded by uncertainties about its sustainability. The fundamental issue is not linked to treatment's availability or technological capacity but to the complexity, effectiveness, and applicability of water resources management and governance tools (CHAFFIN et al., 2016). The systems and processes that need to be monitored require increasingly sensitive and accurate instruments that can capture the full lifecycle of water and associated climatic and environmental factors. The effectiveness of the water balance, therefore, includes observing generation through natural hydrological cycles, its retention, and storage; capture, treatment, distribution, and consumption by the various actors,

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whether consumers are individuals or companies; and treatment and return to watercourses or for reuse in urban and rural activities.

Managing water resources remains an important global challenge to achieve water security and effectively meet human needs (GÓMEZ et al., 2020). In fact, water security only occurs when, in the hydrographic space considered, it is possible to guarantee that a certain amount of water reaches the set of consumers in quality, volume, and adequate continuity for the maintenance of life (GLEICK & ICELAND, 2018). This condition requires managers define policies and action strategies that achieve ecological sustainability and water security. However, this can only be achieved if preceded by the correct diagnosis, when problems are converted into indicators, facilitating their understanding and decision-making (SOARES, SILVA FILHO & ABREU, 2011).

Das, Laishram, and Jawed (2019) argue that water governance is an important process to improve transparency and decision-making, allowing a clear view of individual responsibilities and the choice of actions based on a participatory process. In this regard, the authors point out that stakeholder engagement is extremely important in creating alternatives to water scarcity and the real dynamics of water resource management.

Magalhães and Barp (2014, p. 201) observe that "the integrated management of watersheds, particularly water management, depends especially on the capacity of public and private organizations to make decisions and outline strategies to achieve predetermined objectives." Thus, it is essential that the decision is based on information and not just on intuition, randomly, or on the opinion of those who make it. For this purpose, indicators are suggested to be used in the context of water resources management.

An *indicator* can be defined as a measure that summarizes important information about a given phenomenon. It is not just a value associated with this measure, as data only becomes an indicator "when its understanding goes beyond the number, the measure, in the sense of acquiring meaning through the interpreted information" (MALHEIROS, COUTINHO & PHILIPPI JR, 2012, p. 35) In the case of sustainable management of watersheds, using ICT to assist in the collection, processing and calculation of the variables that make up the indicators is much more relevant and accurate when done with the help of the Internet of Things (IoT) and Big Data. These, however, are only some of the possible technological solutions.

Kalehhouei et al. (2021) ensure that the use of ICT in watershed management practices to improve decision-making or favor more efficient exploration and management operations can draw on precision equipment, Internet of Things (IoT), sensors, geo-positioning systems, Big Data, uncrewed aerial vehicles, and robotics. These options must be evaluated according to availability, costs, the feasibility of operation, and the goals of watershed stakeholders such as residents, farmers, experts, land use planners and managers, and public policymakers. We will consider in this study only the contribution of IoT and Big Data.

Whitmore (2014) notes that IoT represents an evolution of already existing technologies, proposing to connect everyday devices and make them available for online access through the internet, even if they were not designed for this purpose. Big Data is a concept applied to systems and informational resources used to process an extensive set of information, such as those collected by IoT devices and sensors, as it enables the achievement of more accurate diagnoses and makes smarter decisions since decisions supported by evidence are more assertive. Macafee and Brynjolfsson (2012) state that Big Data, in the same way as IoT, can potentially transform organizations and management processes.

Given the challenges and the unprecedented use of IoT and Big Data for the sustainable management of water resources, this study examines the possibility of gathering existing information produced in the context of watersheds to build indicators that faithfully portray a given situation that is of interest or vital importance to analyze. We suggest that using Information and Communication Technologies (ICT), particularly IoT and Big Data, can improve the decision-making process in managing water resources, metaphorically making watersheds smarter.

Results exemplify how the water quality indicators, as defined in the Brazilian legislation, can be obtained using IoT and Big Data and organized in decision support systems. Indeed, although the study considers local legislation issues, the smart solutions identified can be adopted by watersheds in different parts of the world, highlighting the importance of this paper.

II. Conceptual Elements and Theoretical Background

a) *Water resources management*

Water resources management comes into focus with the growth in urban centers of environmental problems and the risks brought by the dynamics of ecological loss to economic and social security (SANTIN & GOELLNER, 2013; DAS, LAISHRAM & JAWED, 2019). The disproportionality between the population's demand, in all its activities and needs, and what it is possible to capture for water supply is just one of the aspects to be considered.

Miranda (2012) and Zhang (2022) point out that water resource, although essential for the survival of all living beings, is finite and scarce. These authors observe that the exponential growth of occupation in urban centers has been accompanied by wasteful practices, misuse, and irregular disposal of large amounts of polluting materials that will contaminate groundwater and watercourses. These adverse and stressful conditions make it even more difficult for the entire population to access drinking water and basic sanitation, with serious consequences for health, the economy, and the environment.

Almeida and Brito (2002) state that hydric resources are a fundamental element for the balanced development of human activities in any region but that their management is of great complexity. Good management of hydric resources demands analysis, planning, and actions from an integrated perspective. To this, it needs that incorporates short, medium, and long-term time horizons, considering solutions for present problems or those that may occur in the future.

Porto and Porto (2008) emphasize that water resources sustainable management requires the use of a minimum set of instruments that provide the essential data and information base on the life cycle of water, knowledge of use rights and distribution mechanisms, control of anthropic and environmental impacts on water resources, and the decision-making process.

Magalhães and Barp (2014) note that water management in the context of river basins is based mainly on the ability of public and private organizations to carry out planning activities, outline strategies, and make decisions to supply previously determined users who depend on water and share the same source of resources and territory. Since several sectors share the resources of watersheds, they need to be under a complex regime of use and regulation, which is necessarily dynamic.

For managers to handle water resources efficiently and effectively, it is essential to have information, metrics, and indicators to support all stages of the decision-making process (MIZUTANI & CONTI, 2021). Indicators are important, for example, to measure scale, corrosion, odors, and contaminant removal. In this way, Tang et al. (2021) advises that the indicators be quantified considering local conditions and the source of water that will be used to obtain a better result.

b) Indicators for water resources management

An indicator is characterized by information collected about a given reality, such as indexes, variables, and standardized reference values that make situations measurable. The author Dias (2018) explains that indicators are tools for obtaining information with the main objective of synthesizing them in a simple, logical, and clear way to be informative and facilitate the manager's understanding.

According to Mizutani and Conti (2021), using indicators enables data transformation into measurable information to make them accessible. The way to measure, therefore, allows the redefinition by the concept of tangibility, which assists in determining policies and the performance evaluation process.

Chaves et al. (2020) point out that indicators can be classified into three distinct categories:

- Descriptive indicators, which use direct data without a previous specification of use.
- Performance indicators, which generate more information to demonstrate progress or seek to achieve a certain goal.
- Composite indicators, which generate complete and detailed information on performance evaluation and propose to convey information more broadly, covering different audiences.

Tang et al. (2021) state that in addition to the various ways of using the indicator system, there are many other measures that, when used to support the management of water resources, help guide actions and decision-making. The study of Hafeez et al. (2019), for example, shows the importance of indicators to measure and manage water quality, which are defined using remote sensing and machine learning technologies.

Neto et al. (2009) state that the importance of environmental indicators lies in the possibility of using them to measure the evolution of an ecological system, as they are representative parameters and simple to interpret, used to demonstrate the characteristics of a given region. As suggested by Libânio et al. (2005), in many situations, sanitation indicators correlate with others that demonstrate the living conditions of populations, such as social development indicators, mortality, and morbidity rates due to parasitic diseases and waterborne infectious diseases.

Sugahara et al. (2021, p. 303), in turn, add that "when developing and applying sustainability indicators, these should consider the particularities of a region; otherwise, they will be subject to ineffectiveness or compromising the decision-making process." Dias (2018) complements this by stating that, concerning water resources management, the indicators used are specific to cover all the conditions considered in the water supply process, consumption, and treatment.

Chaves et al. (2020) present indicators that are useful in the management of water resources, such as the geometric rate of annual growth, erosion, sliding and silting, water demand, ecological contamination, effluents from industries and sanitation, social responsibility and human development, population, waterborne diseases environmental damage, water quality (surface and underground), water availability, flood and drought, waste collection and disposal, effluent collection and treatment, improvement of the treatment system, protected areas, water use permits, environmental contamination control, infrastructure, and sanitation.

According to Trojan (2012), an important parameter is given by the flow measurement to help control water loss, including the size of lengths of pipes, and water flow control, based on adopted standards and thus assist in maintenance. Ferraz et al. (1998) contextualize the theme by pointing out that it is important to use industrial consumption indicators, which use water as a source of abstraction and urban release for good management of water resources. Gloria et al. (2017) note that the qualitative and quantitative monitoring of water resources is an excellent way to evaluate the water supply and support managers in making decisions regarding the multiple and integrated uses of water, including the concern with minimizing environmental impacts.

c) The Contribution of ICT's IOT and Big Data

Neves (2021) describes the term Internet of Things (IoT) as being the interaction produced between everyday objects, which are connected through internet networks and systems, and are considered intelligent, due to the exchange, generation, and processing of data through wireless communication mechanisms, without the need for human intervention.

Zabadal and Castro (2017) point out that, through the internet, it is possible to control them and exchange data between all connected points, devices, systems, and objects so that they have applications in various areas of society, such as health, cities, and smart homes, among others. Smart objects remain active in the system during the exchange of information, and their architecture is composed of four units:

- A power source that feeds the components (such as rechargeable batteries or not).
- Sensors for monitoring the environments in which the objects are inserted or that are acting and performing certain functions.
- Processing and memory that stores the data.
- Wired or wireless communication.

In water resources management, applications involving Information and Communication Technologies (ICT) still need to be improved or, at most, inexpressive. In this sense, Tan (2016) highlights that, within the context of Industry 4.0, 55% of the Internet of Things covers the area of public services and the development of smart cities, while 45% is related to home appliances and vehicles. In a more recent study, Silva et al. (2022) suggests the validity and the potential of IoT and Big Data contribution to the processes of decision-making in the context of watersheds, which this article advances in the proposal and complements it.

Complementarily, the exponential growth of the volume of data generated, especially in the context of smart objects and IoT, imposes the need to develop technologies capable of processing them proportionally and evolutionarily, as is the case of Big Data. According to Caldas (2016), the term Big Data expresses the data currently produced by society and focuses on processing large amounts of data, such as those from social media or sensor networks. In addition, Caldas (2016) emphasizes that Big Data platforms consist of a compilation of functions that act with a high power of data processing, allowing the interaction with stored data to organize them, applying computational techniques, and ensuring the highest possible quality.

Big Data, for management and decision-making processes, is characterized by the junction of five properties: Volume, which is related to the amount of data available for processing; Variety of sources and types, including structured and unstructured information; Speed with which information arises and accumulates; Veracity of data and information generated; and finally, Value that is added to the data, which after processing becomes useful and valuable information (TAURION, 2013).

III. Methodology

The methodological procedures involved documentary and bibliographical research with an exploratory approach. Since the subject still needs to be explored, it is necessary to obtain references to the use of IoT and Big Data to assist in calculating useful indicators for managing water resources (Gil, 2008). The conceptual elements exposed here aim to provide greater familiarity with the theme of intelligent watersheds and thus make it better known (SAMPIERI, COLLADO & LUCIO, 1991).

To exemplify how IoT and BIG Data can contribute to data collection and analysis of indicators in "smart river basins," the Water Quality Index (WQI) will be considered due to its importance and relevance. The IQA was created in 1970 by the National Sanitation Foundation (NSF) in the United States and, later, was used by the Environmental Company of the State of São Paulo (CETESB) in Brazil (ANA, 2022).

According to Gloria et al. (2017, p. 3), the reference made to water quality does not concern "only the state of purity of the water, but the physical, chemical and biological characteristics and, depending on these characteristics," the various destinations that will be given to it to the analyzed water. Water quality is demonstrated, therefore, from the set of quantitative measurements of certain substances found in the observed sample.

Almeida and Schwarzbold (2003) explain that the WQI was developed to assess raw water quality to make it available for public supply after treatment. The parameters used in calculating the WQI indicate, for the most part, the contamination caused by the disposal of domestic sewage. Nine variables considered the most relevant for the calculation of the WQI are collected: dissolved oxygen (% Saturation), fecal coliforms (Coli thermotolerances), pH, biochemical oxygen demand (BOD), total phosphorus, nitrate (total nitrogen), turbidity, solids (Total residuals) and temperature). With this, the quality curves and relative weights are determined, attributing a degree of quality referring to the values of the analyzed variables.

The National Water Agency (ANA, 2022) describes the calculation of the WQI according to the following equation:

$$IQA = \prod_{i=1}^{n} q_i^{w_i}$$

Where:

WQI = Water Quality Index is a number between 0 and 100.

Qi = quality of the ith parameter. It is a number between 0 and 100, obtained from the respective quality graph, as a function of its concentration or measurement (analysis result).

wi = weight corresponding to the ith parameter fixed according to its importance for the global conformation of quality, that is, a number between 0 and 1, so that:

$$\sum_{i=1}^{n} w_i = 1$$

Where:
n is the number of parameters entering into the calculation of the WQI.

Fernandes (2006) points out that there are environmental and microbiological standards for the discharge of effluents from water bodies in Brazil destined for countless activities of society that are defined by CONAMA Resolution 357/05 and that Ordinance 05/89-SSMA establishes standards for the emission of liquid effluents used to observe polluting sources.

Table (1) presents the parameters used to calculate the WQI, their nomenclatures, and units of measurement.

Table 1: Parameters used for quality determination

Parameter	Nomenclature	Unit	Weight - wi
Thermotolerant Coli	Coli	NMP/100mL	0,15
pH	pH		0,12
BOD5	BOD	mg/L	0,1
Total nitrogen	NT	mgN/L	0,1
Total phosphorus	EN	mgP/L	0,1
Temperature	DiffT	oC	0,1
Turbidity	Turb	NTU	0,08
Total waste	ST	mg/L	0,08
Dissolved Oxygen	OD	% saturation	0,17

Lopes and Junior (2010) describe the index as a weighted average in which multiple test results are represented in a single value from 0 to 100. This index is used as a tool for water quality assessment. It can be applied at various points in rivers and lakes over time, comparing them on a quality scale between poor and great.

IV. Results and Discussions

Using IoT, it is possible to create an information collection system on the water quality parameters from a Wireless Sensor Network (WSN) scattered in the space of a watershed, as exemplified by Figure (1), which represents the space of the Piracicaba, Capivari and Jundiaí Rivers Watershed, which has an area of approximately 15,377 km², being 92.45% in the State of São Paulo and 7.55% in the State of Minas Gerais.

To calculate the WQI, many sensors, each with a specific purpose, would be distributed in strategic locations within the catchment area to collect the necessary information in real-time and transmit it to an information storage and processing center.

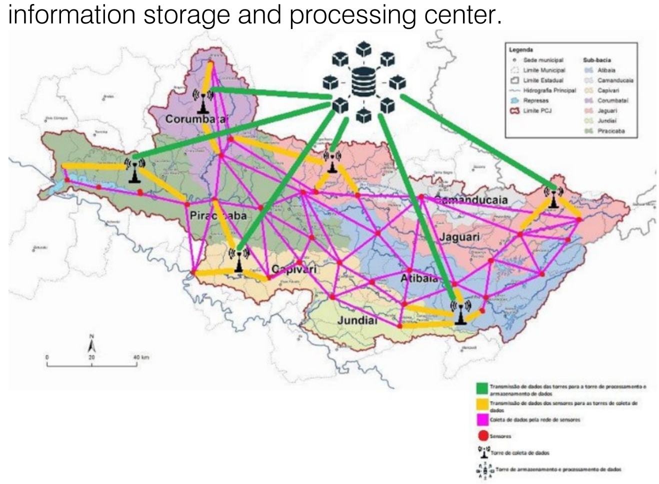

Fig. 1: Simulation of wireless sensor networks to collect water quality parameters in PCJ Basins

Given the variety and volume of information collected from each of the sensors, a database would be required to store the parameters received, and then send them to the Big Data application that would perform the analysis and WQI calculation based on the formula for calculating this indicator.

Seeking to exemplify how IoT and Big Data can contribute to determining the water quality indicator, the parameters already described in Table 1 will be used.

Based on the PH indicator, useful for calculating water quality, it is possible to identify the value using a PH transmitter that measures the acidity or alkalinity of a liquid. PH is calculated using a logarithmic scale with a range from 0 to 14, in which the value 7 corresponds to pure water, and values below 7 show the acidity of the water. In contrast, the values above correspond to basic (alkaline) water.

Daigavane and Gaikwad (2017) describe a low-cost IoT sensor option for obtaining PH values of water using a sensor that works with a 5V power supply and interfaces with Arduino. We have too, n the article by Jiang et al. (2009), the example of a systematic structure of monitoring nodes, which can be divided into five modules, divided into five modules, processing module, transmitter module, detection module, power module, and ZigBee radio and frequency module. The mentioned modules should be waterproofed and placed in a waterproof structure to stay on the surface. Jiang et al. (2009) explain that the power module would provide the electricity required for the pH transmitter, processing module, and ZigBee radio frequency module. The pH transmitter collects the values while the processing module processes and stores them then transfers them to the database station through the ZigBee module. The base station connects and controls each sensor through the ZigBee communication protocol.

Another necessary parameter for the determination of the WQI is the temperature. The temperature value can be obtained using an IoT sensor and subsequent verification with CONAMA Resolution No. 357/05 (2005) patterns, which establishes that the average water temperature for the discharge of effluents must be less than 40ºC, while the variation of temperature of the receiving body must not exceed 3°C.

Lima (2018) exemplifies that temperature collection can be performed through a sensor composed of resistance that uses metals with a high degree of linearity of resistance in the temperature range for which it was made. It can be used as a thermistor, a semiconductor whose electrical resistance varies according to the temperature, or more robust thermocouples that support high temperatures.

Another important information for calculating water quality is the amount of Thermotolerant Coliforms present in the water body analyzed, which, according to the CONAMA Resolution (2005), is characterized by the set of bacteria belonging to the E. coli group. Some strains of Klebsiella and Enterobacter present this thermotolerance characteristic. However, only E. coli has the human and animal intestine as its primary habitat, which can ferment lactose at 44.5 ± 0.2 °C in 24 h.

Medeiros (2016) points out that Thermotolerant Coliforms are considered the specific parameter of water quality intended for potability and bathing, in which the microbiological standard of potability of water for human consumption should be characterized by the absence of E. coli in 100 ml of sample of treated water. Medeiros (2016) cites that the information on Thermotolerant Coliforms, as well as Total Waste, can be obtained through colorimetric sensors based on Polydiacetylenes (PDAs) because they have high sensitivity to external stimuli, demonstrating significant changes in structural, chemical, and physical properties with their fluctuations in environmental conditions, and can even detect pathogens.

A wireless sensor can obtain the amount of dissolved oxygen in the water, measure it, and determine if it is within the normal range established by the CONAMA Resolution (2005).

Lima (2018) demonstrates that an alternative is using sensors in conjunction with Arduino boards, as an example given of sensors acquired from Atlas Scientific, which has available a Kit with the following sensors: pH, temperature, conductivity, redox, and dissolved oxygen. These kits come with transmitters and cables for connection to the Arduino for data collection and calibration.

IoT can also be applied to identify water turbidity through a wireless sensor characterized by an infrared light emitter and receiver, in which the reception level of the emitted light is measured. In this verification, the greater the number of particles suspended in the water, the greater the absorption and reflection of infrared light by the liquid, consequently making the water darker, thus increasing the turbidity of the water.

Cardoso (2011) says that the turbidity sensor, called a turbidimeter, is the equipment used to measure the turbidity of a liquid. In this device, the evaluation compares the scattering of a light beam passing through the sample with that of a beam of equal intensity passing through a standard suspension.

As for BOD5, obtaining its measurement through specific sensors is also possible. Some BOD sensors are placed directly in contact with the sample, and through the pressure transducer, the variation inside the bottle is measured, together with a microprocessor that converts the pressure value into mg/l O2 (BOD) showing the BOD value directly on display.

Similarly, information on total phosphorus and nitrogen can be collected via wireless sensors, which can capture the values in real-time by connecting to the network.

Data processing and analysis would then be based on Big Data applications. In addition to offering a flexible solution that allows processing data from the sensor network, these applications can also use external databases and information stored in histories.

V. Conclusion

The feasibility and predictive potential of smart watersheds was discussed throughout the text. The work specifically exemplified how IoT and BIG Data would be used to collect, analyze, and process the variables that comprise the Water Quality Indicator.

With the functionalities described, it is possible to create a system to analyze the data received from each point where the sensors will be located, differentiate the areas, perform the water quality calculation, and then offer recommendations to managers as a subsidy to support decision-making in the field of water resource management. With the use of Big Data is too possible to generate tables and graphs that show future projections of each region based on historical data, confronted with other indicators calculated over the years, such as the flow of water courses, which vary depending on the volume of rainwater that falls along the watershed.

It is also possible, from the application of Big Data, to create a Dashboard to provide managers with detailed and consolidated indicators, such as, for example, the WQI in a specific collection location, in a region of the watershed, along a watercourse and its entire length, along a city or in a more consolidated way the WQI of the watershed.

In this way, with the support of data collected in real-time, and the analysis made by the Big Data platform, it is possible to subsidize and facilitate the decision-making process more assertively and ensure more effective care for the environment and the effects of anthropic activities and interventions.

With the IoT sensor network and Big Data, more thorough and effective control of areas possibly affected by debris discarded in water bodies from the incorrect disposal of materials in cities becomes possible. Once it is possible to obtain the WQI in each demarcated region and thus identify possible causes for the different values, apply specific treatments and more severe policies for each situation for the benefit of the population's health, thus contributing to the sustainability and safety in the territorial space of the watershed.

Some situations, however, require innovative solutions. Not all indicators are possible to have their data obtained through IoT sensors. Human intervention is often required to collect, calculate, and analyze the indicator. A network of sensors scattered in a watershed may need help transmitting information because the technology used may or may not be able to deal with the volume and speed at which the data must be transmitted. Another problem is security since sensors and data transmission equipment may be stolen, making collecting information unfeasible.

This study is limited to a conceptual basis proposal, and we recommend that Big Data and IoT applications be tested based on experimental studies, which will contribute significantly to the discussion on smart watersheds, enabling better management and conservation of water.

It is clarified, finally, that this work did not aim to exhaust the subject, only to demonstrate that Information and Communication Technologies such as IoT and Big Data can be useful by providing information and subsidies to assist the decision-making process for the management of water resources, making the space of a watershed more *intelligent*.

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To What Extent Can Body Politics be used to Define Afghan Women's Sexuality as Locations of Power and Control under Taliban's Rule? A Contemporary Foucauldian Interpretation of Femininity in Body Politics

By Chiara Rambaldi

Abstract- Central Asia. Iran to the west, and Pakistan to the east. We are in Afghanistan, and more specifically, in a Taliban-controlled country. The character of national politics and social connections in Taliban Afghanistan has been shaped by harsh gender policies and patriarchal restrictions. The Taliban's leadership has exacerbated the country's weak social structure and lack of a centralised, modern state, resulting in a severe case of underdevelopment (Goodson, 2001). Statistics are instructive: socio-economic issues such as unemployment and poverty account for 20% of national concerns, while education account for 12%, and finally, a lack of essential amenities for 8% (Bizhan, 2013). In this difficult situation, it is logical to wonder: who are the most vulnerable members of this fractured society? The focus turns to women. Indeed, women are the demographic segment paying the largest price for Afghan shortcomings in terms of Taliban decision-making. Taliban's severe regulations on women, who are denied of countless social opportunities under the Taliban patriarchal culture, disguise Afghan underdevelopment, resulting in detrimental inequalities inside the country (Moghadam 2002).

Keywords: women; foucault; body politics; afghanistan; development.

GJHSS-H Classification: LCC: HQ1735.6, JC599.A36

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I. Introduction

An examination of the restrictive situation women face in the Taliban-Afghan environment is required to establish the progress principle for a just, inclusive society free of misogyny and inequities. As a result, this essay will try to do so and will be divided into four main sections, each of which is mutually exclusive. The first part describes Taliban advent and ascend into Afghanistan, to better contextualise the following discussion of the analysed case study. Secondly, a discussion of Foucauldian bio-political conceptions and supporting contributions to his theory will follow, which help understand how bio-power and bio-politics are utilised to control women's bodies for Taliban to dominate Afghanistan. As Foucauldian ideas will be the driving force behind this essay's analysis, the third section will be an exploration of some Taliban policies used to exert authority over women's bodies. The latter will be investigated in terms of education, clothing, and health-care interventions. While Foucauldian principles are crucial to the examination of Afghan women's body subjugation, the final essay component will be a theoretical criticism of the Foucauldian power and resistance paradigm. Eventually, this study connects Foucault's theory with the Taliban's control over women's sexuality; an overall study pointing to the Taliban's creation of "docile bodies", which are key components of Taliban knowledge construction, public system domination, and authoritarian ascendancy.

Afghanistan and its people have been under Taliban authority since the autumn of 1994, when Taliban leader Omar created a fundamentalist and extreme religious student militia in reaction to widespread social unrest across the nation (Johnson, et al., 2007). In the twenty-first century, Taliban control and its governing power in Afghanistan have come and gone, enacting restrictive measures based on a rigid interpretation of Islam (Rashid, 2000). Because of their gender and class relations' patriarchal view, The Taliban's rise to power has been facilitated by the country's fragile state, which is ranked 15th out of 16 on the Fragile States Index, which is a valuable tool for identifying the most vulnerable states on the edge of collapse (Anon, 2021). Along with the lack of action of the international, and arguably feminist, community, Taliban have progressively increased their power over the whole country, taking advantage of the Afghan political instability and fragmented ethnic-based society, which resisted Western development strategies (Gallagher, 2005).

While the consequences of this harsh condition include LGBTQ people, persons with disabilities, orphans, and other vulnerable citizens, women remain the most vulnerable and widely oppressed part of society, as this paper will show. Patriarchy-based social order confines them, granting only men rights, dignity, and unlimited access to public space. To impose power and control over women, the Taliban employ a variety of measures, including imposing cultural norms through self-surveillance and self-discipline, particularly in areas affecting the body, such as hygiene, healthcare, and sexuality (Mottier, 2012). While the Taliban have exploited sexuality and (women's) bodies for biopolitical benefit, Foucauldian notions best define the disciplinary authority used directly on the bodies to maintain and perpetuate Taliban power structures. Therefore, the following Foucauldian theorisation of Afghan women's marginalisation may contribute to a better under-

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standing of the development challenges Afghan women and the international community face.

"Bio-politics" is probably Michael Foucault's major contribution to the literature on power rooted in sexuality. The concept of "bio-politics" has influenced development studies and other fields in the idea that contemporary State authority governs biological life (Agamben, 1998). Foucault expresses the concept of sovereign power embedded in sexuality in his work "Nietzsche, Genealogy, History" where power is understood as functioning at two poles: human population and human body (Foucault, M., 1984). Accordingly, he analyses traditional forms of power established in "domination practises" offering the concepts of "bio-politics of the population" and "bio-power" (McNay, 1991). The former is concerned with population control by scientific interventions in reproduction, mortality, and illness; the latter with individual body control and domination (Foucault, 2004). To clarify, Foucault claims political order is maintained by the production of "docile bodies"; thus, passive, subjugated, and productive individuals whose sexuality is the focus of micro and macro level power dispersal in social interactions, practices, and structures adopted by the sovereign. Thus, "biopower" acts on our bodies, regulating them through self-discipline, eventually subjugating ourselves. On a more concrete level, schools, hospitals, prisons, and family's nexus are under the State's control of disciplining, surveillance, and punishment creating docile bodies integrated in the systems of social controls (Foucault 1981).

Foucault's insights on sexuality, power, and knowledge enhance Development studies and related subjects, inspiring new perspectives on political agency, power regimes, and gender expression. Specifically, Foucauldian ideas have expanded the latter feminist works on women's subjugation. His thesis that power relations are essential to the social sphere and work largely via the human body allows feminists to debate the origins of gender inequality, which are said to be founded on anatomical distinctions caused by social hierarchies (Deveaux, 1994). This draws attention to the destructive consequences of cultural standards of attractiveness, which, according to Braidotti (1989), obstruct women feelings about their bodies, appearance, and social norms. On the one hand, the body is crucial to a feminist explanation of women's oppression since the construction of gender inequality is built and legitimised on biological sexuality becoming power sites. On the other, feminists pointed out Foucauldian limitations, claiming he overlooks the "gender myopia" traditionally characterised in sociological theories. For instance, Bartky (1988) claims Foucault considers the body as a genderless entity, thus failing to explain why men and women connect to contemporary institutions differently.

Bartky's argument of "gender blindness" may be found in Foucault's work Discipline and Punish (1977), where female bodies are examined without difference from masculine norms (2015). Undoubtedly, the entire contribution of Foucault to power and sexuality illustrates the existing political system, in which societies divide political authority both vertically and horizontally via the emergence of enforcing minute practises based on the sexes of the bodies they control. Foucauldian principles are not only applicable to a wide range of fields, but they are also relevant to the case study presented in this paper. Indeed, the following discussion will focus on the Taliban's use of power dynamics in the administration of sexuality, which disproportionately affects women. Foucauldian bio-politics eventually tries to explain Taliban's policies and practises for managing women's bodies, with the ultimate objective of attaining societal control through micro-level dominance policies (Foucault, and Sheridan, 1977).

II. Education

The absence of education for girls is a significant venue for Taliban bio-politics. Women are excluded from receiving education, from the most basic to the most advanced (Hartley-Blecic, 2001). Despite the Taliban's declaration that they will open certain educational facilities for females, many schools have been shuttered under their control, encouraging the creation of the docile individuals Taliban can control (Ruttig, 2011). Indeed, women's lack of schooling becomes a mean of imposing bio-politics via managing Afghan women's social subordination. Women subjection to Taliban rules requires them to align their bodies to Taliban socio-political systems of power; in Foucauldian words, a scenario explicative of how women's bodies are bio-politically subordinated to Taliban authority by being portrayed as subpar and in need of external control (Foucault, and Rabinow, 1984).

The lack of education has also had significant influence on women's employment, which is exacerbated when widows are involved. Since widowed women are the sole source of income for their families and since many women lack the fundamental knowledge to obtain employment, they have no other option than begging on the streets and sell their personal things to buy food for themselves and their children (Bordo, 2020). Again, the lack of schooling and career opportunities available to women make them vulnerable and subjugated to male superiority, as Taliban's mandate for female illiteracy creates social conduits for male dominance, subjugating and enslaving the inferior via their ignorance (Mottier 2012). Women are denaturalised by their sexuality, becoming docile bodies, perceived as passive, submissive, dependent, and inferior to the rest of society. In other words, Taliban's intervention in women's life and their biopolitical subordination lead to unrestricted State control over their micro-level dimension of life. The latter impedes women's personal growth, which may be developed by education, resulting, in Foucauldian terms, symbols and sources of Taliban power.

III. Clothing

Other Taliban policies include requiring women to wear a burqa. Indeed, control over women's clothing code is an essential aspect of Taliban politics, and women's bodies are the site of their authority. Hijabisation (the adoption of the hijab, which is the Arabic name for burqa) is a product of Taliban state coercion, since their government restricts women's ability to express themselves via clothes by mandating them to wear Muslim clothing (Pylypa, 1998). Mandatory clothing code is a climax of a condition of women deprivation, as local reports declared. The latter states that women are not allowed to wear white veils, socks, or shoes, and that if they do, they will be punished (Hafez, 2008). Arguably, clothing constraints become a symbol of the micro-level of physical discipline explained by Foucauldian theories. Taliban rule is exercised through Afghan women's bodies, which serve as sites of Taliban power-device and power-object through regulations of micro-level engagement in women's daily lives, such as the choice of dress code (or lack thereof). Consequently, dress rules are the result of social policies that establish gendered citizenship based on laws defining the body; eventually, the woman body itself becomes the definition of citizenship for women in Afghanistan (Mottier, 2012).

Furthermore, Taliban restrictions over women's clothing mandate public and police oversight, which allow any male to demand compliance (Ramirez 2015). This means that any men may function as a power controller over a woman's body, reinforcing women's subordination and fragility in society. Women who are caught without wearing a burqa are reported to the Taliban's Ministry for the Promotion of Virtue and the Suppression of Vice and beaten on the street (Zakhilwal, and Thomas, 2008).

However, a more problematic scenario arises when women cannot afford a burqa. Women without one are obliged to stay at home or fear being severely beaten by the Taliban. Similarly, handicapped women who require prostheses are confined to their houses since the burqa will not fit over this equipment to entirely conceal their bodies. Arguably, the Taliban regime's power dynamics is sovereign in determining what constitutes normative reality of feminine bodies. Wearing a burqa has given Afghan society the ability to define the "normal" and identify the "deviant" woman. Beyond biopolitics, Taliban body control affects physical intersectionality by controlling gender interactions with female disability, class, and other axes of difference, demonstrating that female bodies are at the crossroads of various identity markers and powers utilised by the Taliban (Foucault, 1975).

IV. Healthcare

Women are unable to receive open access to essential needs such as medical treatment under Taliban control. Internationally, the Physicians for Human Rights initially raised the issue in 1997, claiming the Taliban had stopped providing medical care to women (Amowitz, et al., 2002). Local reports also suggested that the only medical facility given to women was one in the capital, which was a 35-bed-makeshift construction, with no running water, nor power, nor surgical equipment (Browser, 2006). Therefore, many women are unable to receive medical care because of Taliban's prohibitions. If a woman is lucky enough to persuade a male doctor to cure her, he is not permitted to assess her or talk to her personally since all communication is conducted through her male companion (Pylypa, 1998). Again, micro-level control through bodily healthcare dominance exemplifies Taliban's surveillance and supervision of women, demonstrating power as unavoidable, fragmented, and impacting all parts of women's life, from their flesh to their brains.

After Taliban's control over the "anatomo-politics of the human body" (Mottier, 2012, p.143), most Afghan women health have deteriorated alarmingly due to limited access to clinical treatment, and in some cases, no access at all (Ahmed, 1992). There have been allegations of young women dying because of being denied admission to male-only facilities or being unable to seek professional help because they lacked a burqa or a male guardian (Doumato, 2000). Under Taliban control, women's bodies are rendered invisible to their natural needs, and they are just built bodies meant to fulfil their eugenics tasks for the welfare of the sovereign. While women's uniqueness is overshadowed by their eugenic biopolitics of life, eventually Afghan women's treatment is characterised by their social docility. This turns them into flexible body products and feasible sources of power.

Although Foucauldian concepts illuminate Afghan women bodily exploitation as sites of Taliban power in the context of a patriarchal society where cultural and religious norms set gender roles, Foucault's concepts also present limitations to this case study analysis which will be here discussed. The idea that "where there is power, there is opposition" is arguably the most significant limiting factor for Afghan women (Foucault, 1980b). Power, according to Foucault, is mostly generative, not oppressive. This might suggest that Afghan womens willingness to follow Taliban stringent norms drives them to willingly preserve their subjugation through self-discipline. However, I contend that when discussing the reality of Afghan women in such a repressive and male-dominated context, this idea of power supported by resistance is misleading. Contrarily, when the illusion of women resistance fades under the life threats of Taliban authority, Foucault's power-resistance paradigm reinforces the sense of Taliban empowerment. I argue that Foucault's power-resistance model prevents us from comprehending structural injustice in the context of Afghan women living under Taliban authority.

Under Taliban corridors of power, women are subjected to many types of control and subordination, such as strict behavioural canons and gender segregation, meaning that dominance is common and frequently unavoidable in this context. This viewpoint is supported by the large number of women who committed suicide to avoid being raped or mass hanged while fighting Taliban's control over their identities (Malik, and Jan, 2021). Questionably, when it comes to expatriated Afghan women activists who oppose the Taliban rule and are backed by a more liberal geo-political framework, the Foucauldian power and resistance paradigm may be a better match. Consequently, although being idealised within Afghanistan, resistance to the Taliban's gender policy is identified predominantly outside the nation (McLeod, 2011). The Afghan Women's Council based in Pakistan, and the Women's Association for Peace and Human Rights in Afghanistan based in the United States are just a few examples.

However, to show the discussed case study as a totality of meanings (Odysseos, 2009), it is critical to engage with Foucault's ideas on power, resistance, and sexuality interpretively via a hermeneutic filter. As a result, while Foucault's idea of power bears flaws, it remains an important contribution to our understanding of Taliban authority, Afghanistan's patriarchal social structure, and the lack of a developed and centralized state. As a result, the role of women's bodies as status and power indicators in the political system is illuminated.

Finally, this essay aimed to provide light on the condition of Afghan women under Taliban authority. Through an investigation of Taliban's employment of sexist policies that convert women into instrumental "bodies", sovereignty and societal control is exercised. From an introductory overview of the Taliban's ascension to power and their related governance programme, Foucauldian biopolitics is discussed in terms of his theoretical support to this essay. The latter provides a theoretical prism through which to comprehend how the Taliban's overarching socio-political control is entrenched in the symbolic and material management over women's bodies (Fluri, 2012). Based on the notion that power shapes meaning conditions that circulate "through the entire social body" (Shepherd, 2008, p.23), this paper studied the micro-level practical meanings of Taliban bio-political policies in terms of women's education, clothing, and medical treatment.

Eventually, it became obvious that the socio-political architecture of Afghanistan under Taliban control is as much a product of gender as of biopolitical activities. Exploring their place in life's politics helps us to think alongside and beyond Foucault, whose critique of power and resistance was addressed in the latest essay section. Arguably, understanding practises as means of the role biopolitics plays in the rational management of women's sexuality is fundamental to address gender apartheid as part of a larger developmental picture to avoid further suffering that could eventually lead to gender genocide. While the examined case study attempts to go beyond a practical exercise, I believe Foucault's theory of bio-power and control urgently calls for the global community to reflect on present body power producing methods. Individuals who have been silenced may only be given a voice by delving at the social discipline of human bodies, as the Afghan case demonstrates. Thus, a developmentalist project may be useful to end the replication of patriarchal power relationships and male privilege, as well as the persistence of gender inequity.

Disclosure statement

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Unveiling the Impact of Solid Waste Management on Health and Poverty Alleviation in Dhaka City

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Keywords: urbanisation, slum population, solid waste, health hazard, poverty alleviation, human development.

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UNVEILINGTHEIMPACTOFSOLIDWASTEMANAGEMENTONHEALTHANDPOVERTYALLEVIATIONINDHAKACITY

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Nahid Aktar

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Keywords: urbanisation, slum population, solid waste, health hazard, poverty alleviation, human development.

I. Introduction

Bangladesh has experienced numerous obstacles since its independence, with one of the most pressing issues still unresolved being solid waste management. Dhaka has a population of 22.4 million as of 2022 living in 360 km2 area, making it one of the most populous cities in the world (Dhaka, Bangladesh Metro Area Population 1950-2023, n.d.-b)[1]. Its urban population is expanding at a quicker rate of 3.4% annually than the entire population, which is growing at a high rate of 1.4%. It is estimated that 40 million people will live here by 2040 (Prodhan and Kaeser, 2020). As a result of the rise in population and consumer goods, solid waste production is increasing rapidly every year and the Dhaka City Corporation (DCC) is struggling to keep pace with the growing waste management of the city.

Due to colossal population growth and lack of awareness, the volume of waste generation is increasing indiscriminately in rapidly urbanised Bangladesh[2]. The waste generation in Dhaka city has witnessed a significant increase from 2013 to 2021. According to the Climate and Clean Air Coalition (2013), only half of the estimated 1.65 million metric tons of solid waste generated in Dhaka city was collected for disposal annually.

Looking ahead, it is projected that by 2021, Dhaka had to manage approximately 6,500 tonnes of waste per day (Islam, S. 2021). Moreover, the city's hospitals and clinics generate 200 metric tons of waste which contain radioactive materials, hazardous chemicals and pathogenic compounds (Yasmin and Rahman, 2017). This indicates a substantial increase compared to the earlier estimated waste generation in 2013. Furthermore, the waste generation is expected to further escalate to around 8,500 tonnes per day by 2032, highlighting a continuous upward trend in waste generation and management challenges in the city. This massive wave of uncollected garbage poses a significant threat to public health, contributes to environmental degradation and exacerbates poverty.

Therefore, the impact of poor SWM extends beyond environmental crises, significantly affecting public health and exacerbating poverty levels in the city (WHO, 2012). Improper disposal of solid waste, including open dumping and burning, releases harmful toxins and pollutants into the air, soil, and water sources. These pollutants pose a significant risk to the health of residents, leading to respiratory diseases, skin infections, and other illnesses (US Environmental Protection Agency, 2002-2013).

Furthermore, the oxidation of waste disposal sites provides breeding grounds for disease-carrying vectors such as flies, mosquitoes and rats, which increase the incidence of communicable diseases in the community (Choudhury, S. 2010). The ill effects of inadequate solid waste management are more

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[1] The current metro area population of Dhaka in 2023 is 23,210,000, a 3.26% increase from 2022. Source: Dhaka, Bangladesh Metro Area Population 1950-2023. (n.d.). MacroTrends. https://www.macrotrends.net/cities/20119/dhaka/population

[2] McAllister, Jessica, "Factors Influencing Solid-Waste Management in the Developing World" (2015). All Graduate Plan B and other Reports. 528. https://digitalcommons.usu.edu/gradreports/528

detrimental to the slum areas of Dhaka. The ill effects of inadequate solid waste management are more detrimental to the slum areas of Dhaka. Low-income neighbourhoods, often lacking basic amenities and proper sanitation facilities, bear the brunt of the waste crisis (Jerin, et al., 2022). Residents of these areas are disproportionately exposed to health risks associated with unregulated waste disposal, increasing the risk of disease and pushing them further into poverty.

Dhaka City Corporation DCC, North[3] and South[4] are making efforts to solve this ongoing crisis, though it seems to be getting worse every day. Until the residents of the city banded together to find a solution, this massive waste seemed beyond DCC's ability to manage on its own (Prodhan and Kaeser, 2020). Hence, the situation remains unsolved despite earlier efforts, raising questions about the effectiveness and efficiency of waste management schemes. Solid waste management solutions have, however, been outlined in various scholarly articles or at the policy-making level.

Nevertheless, much of the current literature addressed collection, environment, disposal, and recycling. This study prioritizes waste management as one of the variables in poverty reduction by focusing on the way individuals of all socio-economic levels participate in the economy as a means of human development. Moreover, the implementation of proper waste disposals practices, such as recycling and resource recovery, can yield economic benefits by fostering a circular economy and mitigating strain on finite resources. This research addresses the pressing need for a comprehensive solution to the solid waste management challenges in Dhaka. It emphasizes the importance of an efficient waste management system in safeguarding public health and supporting poverty alleviation efforts[5].

a) *Research Filed*

The study area covers Dhaka City Cooperation (DCC), especially slum areas. This study presents the results of a cross-sectional survey conducted among 200 slum households in Dhaka, providing insights into the adverse consequences of poor waste management on the health and productivity of low-income groups and slums. The survey was conducted in three slum areas of Dhaka: Korail, Mohakhali and Kamrangirchar, selected on the basis of their size, population density and accessibility on their waste management practices, healteh and socio-economic status.

b) *Target Waste*

The study covers two types of solid waste under Dhaka City Corporation: namely, domestic waste and medical waste. Liquid and gaseous wastes are not included in the scope of this study.

c) *The Significance of the Study*

This study offers fresh perspectives on the threats to human health and the effects of poor waste management practices on poverty reduction and health in Dhaka. By identifying the specific health risks associated with poor waste management and emphasizing waste management as a poverty alleviation variable, this research analyse evidence-based decision-making, supports the development of targeted interventions, and promotes sustainable human development. The study's potential lies in improving public health, creating employment opportunities, guiding policy formulation, and advancing knowledge in waste management, health, and poverty alleviation. Moreover, the analysis presented in this study contributes to the existing literature on urbanization and poverty, providing recommendations for policymakers to address the adverse effects of poor waste management on population health and well-being.

d) *The rationale for this study*

Solid waste management is a critical issue in Dhaka where waste collection and disposal are often insufficient and inappropriate (Dhaka City Corporation, The People's Republic of Bangladesh, Japan International Cooperation Agency, 2005). The existing evidence on the linkage between poor solid waste management and adverse health outcomes calls to action by all stakeholders in understanding, prioritizing, and addressing the issue of solid waste in our midst to ensure that our environment and health are preserved (Enayetullah, Sinha, & Khan, 2005).

The need to build on previous research is evident, as there are gaps in current knowledge and inconclusive or controversial findings from previous studies. For instance, the study by (Hasan & Chowdhury, n.d.). shows that solid waste poses a serious health hazard and leads to the spread of infectious diseases, while (Yasmin & Rahman, 2017a) highlights that poor waste collection leads to environmental and marine pollution and can block water drains, resulting in flooding and other standing waters that favour cholera and vector-borne diseases such as malaria and dengue.

Therefore, this study aims to unveil the impact of solid waste management on health and poverty alleviation in Dhaka City by presenting a framework that aids understanding of (poor) solid waste management and its impact on health with a view to stimulating research, guiding the development of policies and implementation of appropriate interventions. The study identifies and describes the main pathways through

[3] See, https://dncc.gov.bd

[4] See, https://www.academia.edu/24448799/A_Case_Study_on_Dhaka_South_City_Corporation_DSCC_

[5] Singh, P. K., & Chudasama, H. (2020). Evaluating poverty alleviation strategies in a developing country. PloS one, 15(1), e0227176.

which poor solid waste management affects health and poverty alleviation, updates concepts in light of new findings and/or new technical advancements, and answers unanswered questions.

II. Literature Review

Bangladesh's high population density and rapid urbanization contribute to increased waste generation, negatively affecting public health and poverty. The consequences extend beyond health and environment, affecting the poverty level and quality of life. According to Azom et al. (2012), uncontrolled waste management in urban areas leads to the accumulation of solid waste, which not only poses environmental challenges but also has detrimental effects on public health. Their study highlighted the negative impact of improper waste disposal on air quality, water contamination, and the spread of infectious diseases. Similarly, Triassi et al. (2016) emphasized the link between inadequate waste management and respiratory diseases, citing evidence of increased respiratory symptoms and decreased lung function among individuals living in close proximity to open dumping sites.

On the other hand, Yasmin and Rahman (2017) conducted a study on the awareness and practice of household solid waste management among community people and found that poor household solid waste management poses serious health risks and spreads communicable diseases. Their study emphasized the health risks of waste contamination. Poor waste collection also leads to environmental and marine pollution and can block water drains, resulting in flooding and other standing waters that favour cholera and vector-borne diseases such as malaria and dengue.

Silpa Kaza (2018), lead author of the What a Waste 2.0[6] and urban development expert at the World Bank argues that "Environmentally sound waste management touches many important aspects of development." Transitioning to sustainable waste management will take time and money. The article further claims that for many municipal governments, waste management is the single largest budget line item. It makes up an average of 20% of municipal budgets in low-income countries. "However, when it comes to designing liveable, healthy, and inclusive cities and communities, solid waste management is often an overlooked concern.

Therefore, in the interest of both its citizens and the environment[7], governments must take swift action to address waste management (What a Waste: An Updated Look into the Future of Solid Waste Management, 2018)." Furthermore, a study by Magaji & Dakyes, (2011) highlighted the socioeconomic implications of poor waste scavenging practices as a means of poverty alleviation in Gwagwalada, Abuja. Their findings revealed that substandard waste management disproportionately affects marginalized populations, leading to increased health disparities and hindering poverty alleviation efforts.

Similarly, Ashikuzzaman and Howlader, (2020) conducted a comprehensive analysis of the economic costs associated with inefficient waste management, underlining the potential economic benefits of implementing sustainable waste management practices.

Considering the circumstances of urban waste management in Bangladesh, Bhuiyan (2010) stressed that a well-structured public-private partnership may enable successful solid waste management and ensure good urban governance in Bangladesh. In their 2016 study on municipal waste management in Bangladesh, in Dhaka, Saifullah and Islam (2016) asserted that MSWM is a complicated issue with drastic consequences for human development, public health, and poverty reduction. The United Nations Human Development Index (HDI) report, covering 1990 to 2021, also emphasizes the importance of health, education and living conditions as key indicators for assessing a country's overall level of human development.

The existing literature reveals contrasting perspectives among academia, governments, and NGOs regarding the adverse effects of waste management. However, the well-being of slum dwellers in terms of health and poverty alleviation remains unattended, hindering their integration into the economy and progress in human development. Therefore, this study underscores the significance of comprehending the intricate interplay of social, economic, and environmental factors that contributes to inadequate waste management practices and their detrimental consequences. By investigating the multifaceted dimensions of waste management and its impact on the health, environment, and socio-economic aspects of the vulnerable population in the city, this research aims to bridge these knowledge gaps and address these pressing issues.

Overall, the study contributes to a growing body of research on waste management in Dhaka and provides a basis for further research and policy development in this area.

[6] See, What a Waste: An Updated Look into the Future of Solid Waste Management. https://www.worldbank.org/en/news/immersive-story/2018/09/20/what-a-waste-an-updated-look-into-the-future-of-solid-waste-management

[7] In Book: Environmental Thoughts, Part-I, 2019 (pp. 80 - 118) Edition: March-2019 Chapter: Municipal Solid Waste Management in Dhaka City: Current Status, Problems and Possible Solutions Publisher: Toyza Publications

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a) Methodology

This study employed a mixed-method research design[8], combining qualitative and quantitative approaches, to address the research question. It involved a cross-sectional survey conducted among 200 slum households in three areas of Dhaka. To address this, qualitative aspects were incorporated through 25 interviews including 5 expert interviews. The survey was conducted based on location, population density and accessibility in three slum areas of Dhaka such as Korail, Mohakhali and Kamrangirchar. The data collection methods included semi-structured interviews[9], a questionnaire survey, primary and secondary data analysis[10] from various sources. By integrating qualitative and quantitative data, the study designed to comprehensively understand the relationship between solid waste management, health outcomes, and poverty alleviation in Dhaka City, capturing both nuanced experiences and broader patterns associated with waste management practices and their effects on individuals and society.

b) Limitations of the Study

The study faced several challenges in collecting data from the target demographic profiles. The statistical survey included participants from both affluent and low-income areas. Since affluent areas enjoy adequate services from DCC waste pickers, they do not fully represent the vulnerable population resulting in a skewed representation that may not accurately reflect the larger vulnerable population. These limitations should be considered when interpreting the results, as they may give a misleading impression of the overall effectiveness of waste collection services.

Furthermore, the study was limited by the remote geographical location of the area and self-financing. Access to specific slum areas and government officials, NGO[11] representatives, hospital administrators and interviewers often posed additional barriers to data collection. Survey results indicate a gender distribution with a higher representation of male respondents, highlighting the need to acknowledge the survey's limitations in capturing the experiences and perspectives of those outside the male/female binary. It is momentous to note that the survey did not have the option of identifying outside of the traditional male/ female category.

Future surveys should include inclusive gender options so that respondents can accurately self-identify their gender. Despite efforts to address these limitations, an attempt has been made to provide an accurate result by analysing both primary and secondary data.

c) Ethical Consideration

Ethical considerations for the study on the impact of solid waste management on health and poverty alleviation in Dhaka City encompass several key aspects. Firstly, obtaining ethical approval from the relevant committee was sought to ensure the study adhered to established ethical guidelines. Secondly, the privacy and confidentiality of the participants[12] were strictly upheld, with measures implemented to safeguard their personal information. Informed consent, wherein participants were fully informed about the study's purpose and potential benefits, was obtained to ensure voluntary participation (Kothari, C. R. 2004).

The study also took into account the cultural beliefs and practices of the participants, ensuring that the research did not infringe upon their cultural values or customs (Connelly, L. M. 2014). Moreover, precautions were taken to prevent any harm to the participants or the community throughout the study duration. It was also ensured that the waste management practices under investigation did not pose any risk to public health or the environment (World Medical Association, 2013).

Furthermore, the study emphasized the principles of avoiding exploitation and coercion of participants, ensuring their autonomy and understanding of their rights (Giordano, et al., 2007). The research was designed to benefit society as a whole, while justifying any potential risks to participants by expected benefits, aligning with the principles outlined in the Nuremberg Code[13]. Overall, this study demonstrates a commitment to ethical principles, prioritizing the protection of human subjects and ensuring that the potential benefits of the study outweigh any associated risks.

III. Research Finding: Demographic Profile and Data Analysis

In this study, primary data collection was directed through a set of questionnaires (Williamson, C., 2013). Following a description of the responses given by the participants, the findings were highlighted in line with the data analysis and presentation. Correspondingly, it

[8] See, https://education.nova.edu/Resources/uploads/app/35/files/arc_doc/mixed_methods.pdf

[9] A semi-structured interview is a qualitative research method used to gain an in-depth understanding of the respondent's feelings and beliefs on specific issues.

[10] Johnston, M. P. (2014). Secondary data analysis: A method of which the time has come. Qualitative and quantitative methods in libraries, 3(3), 619-626.

[11] NGO stands for non-governmental organization. Source: ngosource.org

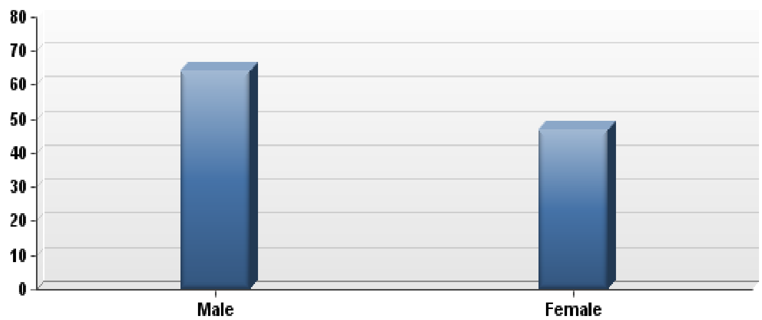
[12] American Planning Association. (2002). APA Policy Guide on Solid and Hazardous Waste Management. Retrieved from https://www.planning.org/policy/guides/adopted/wastemgmt.htm

[13] See, Nuremberg Code. https://research.unc.edu/human-research-ethics/resources/ccm3_019064/

involved a retrospective study[14], where a questionnaire was carefully analysed to ensure that the data collected was presented clearly with the help of tables, percentages and graphs. Largely, the results of these findings provide a comprehensive understanding of the use of questionnaires for data collection and subsequent data analysis and presentation of findings.

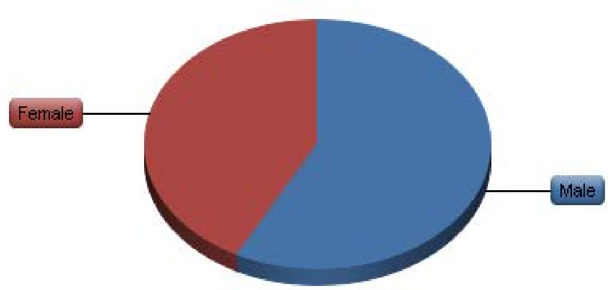
IV. Analysis of the Questionnaire: Key Findings and Data Analysis

Question 1: Which of the following best describes you?



#	Answer		Response	%
1	Male		64	58%
2	Female		47	42%
	Total		111	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.42
Variance	0.25
Standard Deviation	0.50
Total Responses	111



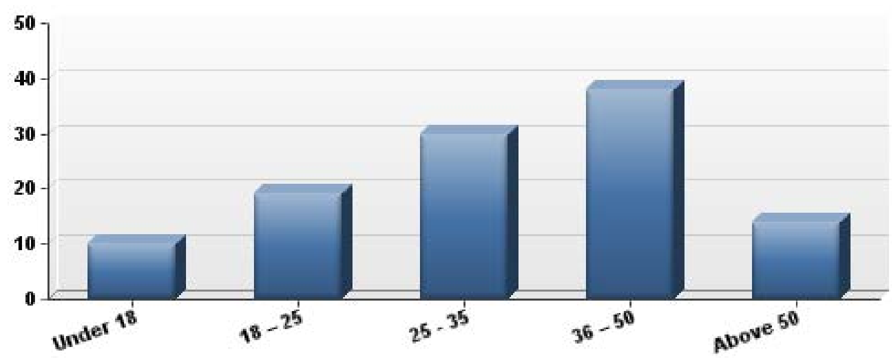
[14] Retrospective studies are research studies that look back in time, typically at medical records or other historical data, to identify risk factors for a disease or to determine outcomes of medical intervention. Source: Davis, M. B. (1989). Retrospective studies. *Long-term studies in ecology: Approaches and alternatives*, 71-89.

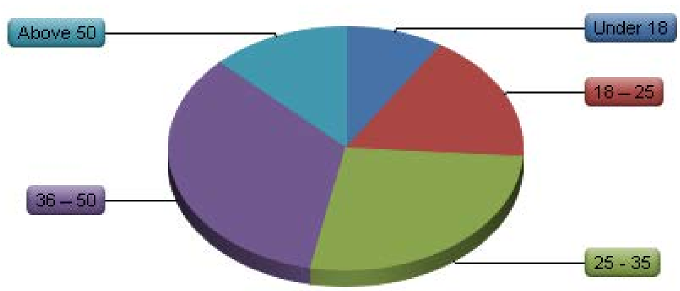
Source: Song JW, Chung KC. Observational studies: cohort and case-control studies. Plast Reconstr Surg. 2010 Dec; 126(6):2234-2242. doi: 10.1097/PRS.0b013e3181f44abc. PMID: 20697313; PMCID: PMC 2998589.

Analysis and Findings

The survey question aimed to determine the gender distribution of respondents, with 58% of the total respondents identified as male and 42% as female. The statistical analysis revealed a mean value of 1.42, indicating that the respondents were more likely to identify as male. At the beginning of the interview, women participated less than men in the survey while being fully aware of health risks and waste issues. It has been observed that Bangladeshi women today have access to education, but their participation and expression in society are low.

Question 2: Please select your age category from the options below:





#	Answer		Response	%
1	Under 18		10	9%
2	18 – 25		19	17%
3	25 - 35		30	27%
4	36 – 50		38	34%
5	Above 50		14	13%
	Total		111	100%

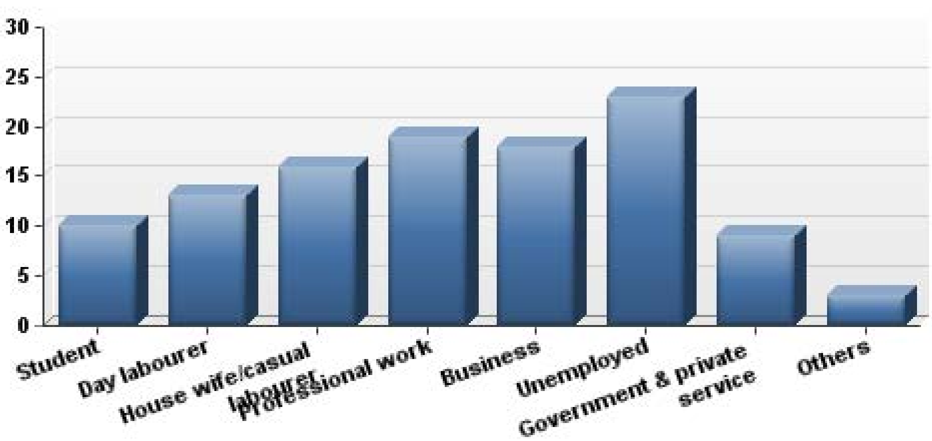
Statistic	Value
Min Value	1
Max Value	5
Mean	3.24

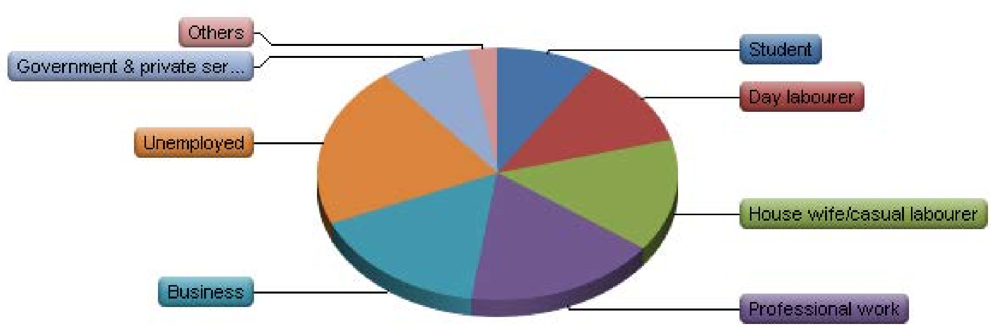
Variance	1.33
Standard Deviation	1.15
Total Responses	111

Analysis and Findings

The question is aimed at gathering information about the age distribution of the respondents. The majority of respondents fell into the age categories of 36-50 (34%) and 25-35 (27%). The other age categories were also represented, with 18-25 accounting for 17%, followed by Above 50 (13%) and Under 18 (9%). The statistical analysis revealed a mean value of 3.24, indicating that, on average, the respondents' age category falls between 25-35 and 36-50. The data highlights the importance of considering age diversity when designing waste management interventions and strategies, as it can lead to more effective strategies that resonate with individuals across various stages of life. By tailoring initiatives to different age groups and addressing their unique characteristics, it becomes possible to promote sustainable waste management practices among individuals of all ages.

Question 3: What is your current occupation?





#	Answer		Response	%
1	Student		10	9%
2	Day labourer		13	12%
3	Housewife/casual labourer		16	14%
4	Professional work		19	17%
5	Business		18	16%

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6	Unemployed		23	21%
7	Government and private service		9	8%
8	Others		3	3%
	Total		111	100%

Others
Sales Assistant
Maid
Musician (Sitarist)

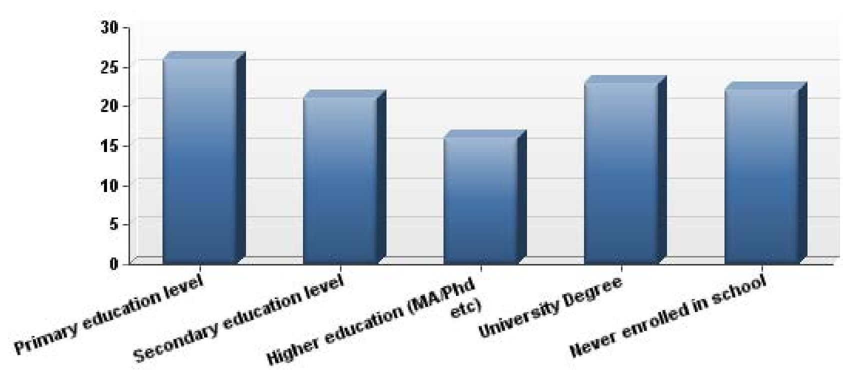
Statistic	Value
Min Value	1
Max Value	8
Mean	4.28
Variance	3.53
Standard Deviation	1.88
Total Responses	111

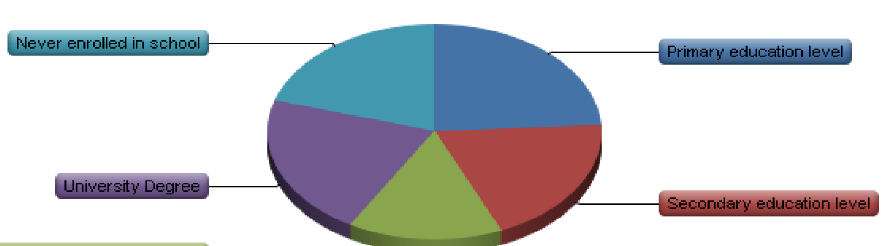
Analysis and Findings

The purpose of this question is to collect information about the occupation of the respondents. The majority of respondents reported being in the following professions: Unemployed (21%), Business (16%), Professional work (17%), and Housewife/casual labourer (14%). Other significant professions mentioned include Day labourer (12%), Student (9%), and Government and private service (8%). A smaller percentage of respondents indicated other professions, such as Sales assistant, Maid, and Musician (Sitarist). The statistical analysis revealed a mean value of 4.28, indicating that, on average, the respondents' professions fall between Professional work and Business.

Understanding the occupational profile of the surveyed population is crucial for tailoring waste management interventions and strategies to effectively engage different groups. By considering the respondents' professions, policymakers, organizations, and waste management initiatives can develop targeted approaches that address the specific needs, challenges, and opportunities associated with different occupations.

Question 4: What level of education have you received?





#	Answer		Response	%
1	Primary education level		26	24%
2	Secondary education level		21	19%
3	Higher education (MA/PhD. Etc.)		16	15%
4	University Degree		23	21%
5	Never enrolled in school		22	20%
	Total		108	100%

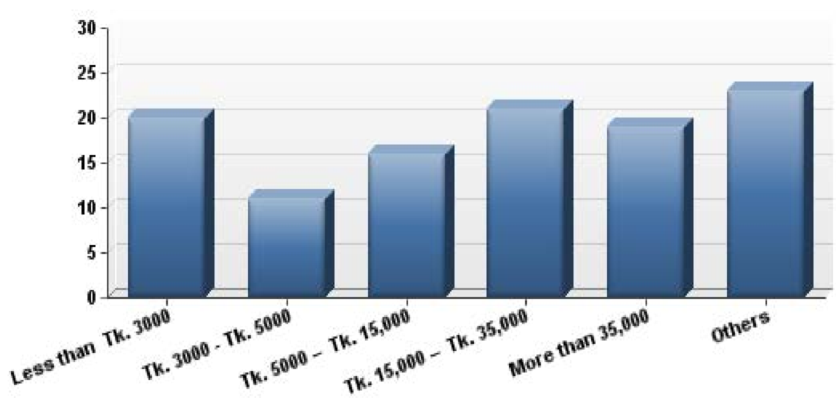
Statistic	Value
Min Value	1
Max Value	5
Mean	2.94
Variance	2.20
Standard Deviation	1.48
Total Responses	108

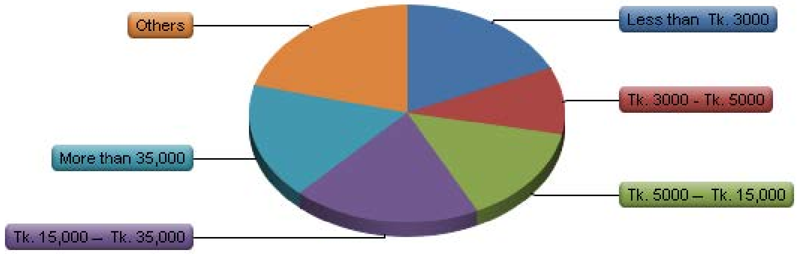
Analysis and Findings

The objective of this question was to collect information about the education level of the respondents. According to the responses, the majority of respondents had completed either Primary education level (24%) or University Degree (21%), Secondary education level (19%) or Higher education (15%), and 20% had never enrolled in school. The statistical analysis revealed a mean value of 2.94, indicating that, on average, the respondents' education level falls between Secondary education level and Higher education. Understanding the educational profile of the surveyed population is essential in designing effective waste management interventions and communication strategies. It highlights the importance of tailoring educational programs and awareness campaigns to cater to different educational backgrounds and literacy levels.

Targeting educational initiatives towards individuals with lower levels of education can help bridge the knowledge gap and promote sustainable waste management practices among a wider segment of the community. Overall, the data highlights the need for an inclusive and holistic approach to waste management education, ensuring that educational initiatives are accessible and beneficial to individuals with varying levels of education.

Question 5: What would be your average monthly income range (in BDT)? £1=BDT118





#	Answer		Response	%
1	Less than Tk. 3000		20	18%
2	Tk. 3000 - Tk. 5000		11	10%
3	Tk. 5000 – Tk. 15,000		16	15%
4	Tk. 15,000 – Tk. 35,000		21	19%
5	More than 35,000		19	17%
6	Others		23	21%
	Total		110	100%

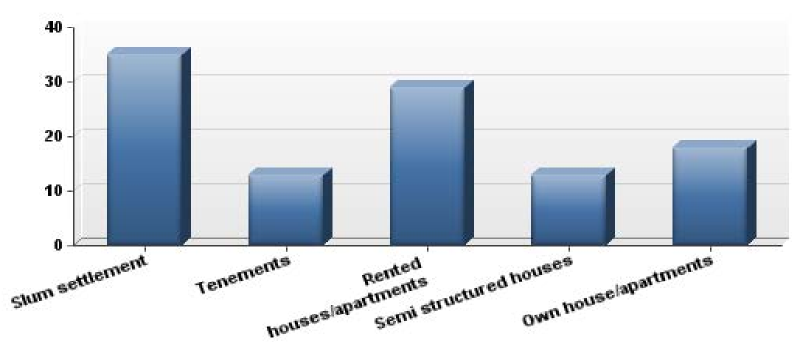
Statistic	Value
Min Value	1
Max Value	6
Mean	3.70
Variance	3.13
Standard Deviation	1.77
Total Responses	110

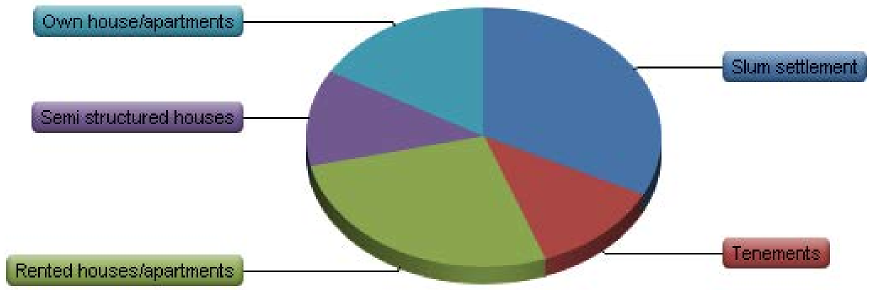
Analysis and Findings

The question aimed to determine the average monthly income range of the respondents. The majority of respondents fell into the following income ranges: Tk. 15,000 - Tk. 35,000 (19%), More than Tk. 35,000 (17%), and Less than Tk. 3000 (18%). Income ranges of Tk. 3000 - Tk. 5000 (10%) and Tk. 5000 - Tk.15,000 (15%) were also reported by a portion of the respondents. The statistical analysis revealed a mean value of 3.70, indicating that, on average, the respondents' income falls between the Tk. 15,000 - Tk. 35,000 range. Understanding the income distribution among the surveyed population is crucial in assessing the financial capacity to address waste management issues effectively.

Local authorities and relevant stakeholders can utilize this information to design inclusive and equitable waste management strategies that consider the varying income levels within the community. Policymakers and organizations can develop tailored approaches to waste management that are financially viable, sustainable, and supportive of the community's economic well-being.

Question 6: What type of housing do you live in?





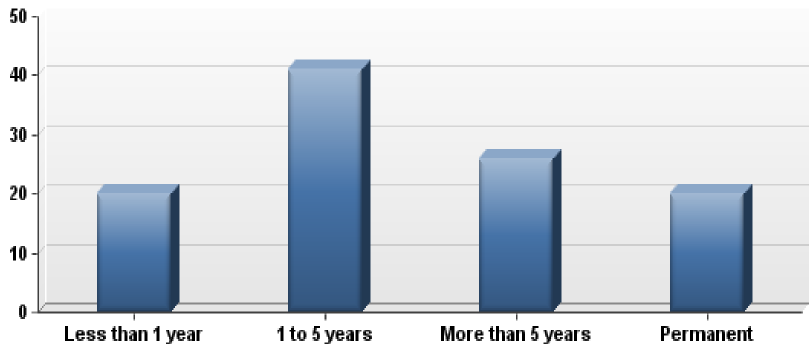
#	Answer		Response	%
1	Slum settlement		35	32%
2	Tenements		13	12%
3	Rented houses/apartments		29	27%
4	Semi-structured houses		13	12%
5	Own house/apartments		18	17%
	Total		108	100%

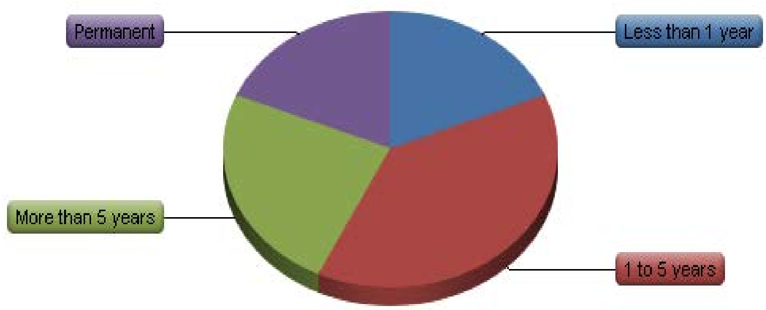
Statistic	Value
Min Value	1
Max Value	5
Mean	2.69
Variance	2.12
Standard Deviation	1.46
Total Responses	108

Analysis and Findings

This question was posed to gather information about the type of dwelling occupied by the respondents. The largest group of respondents (32%) reported living in slum settlements, while other common housing types (27%) and own houses/apartments (17%) were also reported. Tenements and semi-structured houses were reported by 12% of the respondents each. The statistical analysis revealed a mean value of 2.69, indicating that the respondents' housing falls between slum settlements and rented houses/apartments. Understanding the types of housing in the surveyed area can provide valuable insights into the living conditions and socioeconomic factors that may impact waste management practices. Local authorities and community organizations can develop comprehensive waste management strategies that address the specific needs and circumstances of different housing types, contributing to improving waste management practices, promoting hygiene, and enhancing the overall quality of life in the surveyed area.

Question 7: How long have you been a resident of this property?



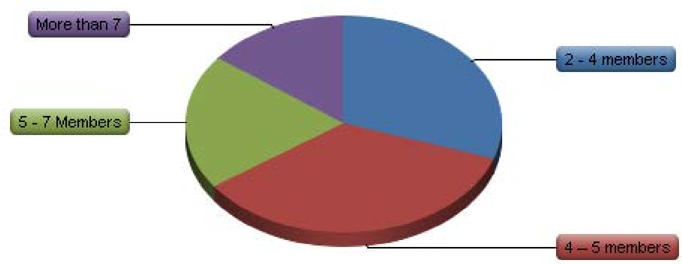


#	Answer		Response	%
1	Less than 1 year		20	19%
2	1 to 5 years		41	38%
3	More than 5 years		26	24%
4	Permanent		20	19%
	Total		107	100%

Statistic	Value
Min Value	1
Max Value	4
Mean	2.43
Variance	1.00
Standard Deviation	1.00
Total Responses	107

The question is intended to gather information about how long respondents have lived in their current property. According to the responses, the largest group of respondents (38%) reported living in their current property for 1 to 5 years, with a significant percentage (24%) having a residency of more than 5 years. The statistical analysis revealed a mean value of 2.43, indicating that the average duration of residency among the respondents is between 1 to 5 years. Understanding the length of time individuals have been living in their properties can provide insights into their familiarity with waste management practices and their potential engagement in community initiatives. By tailoring waste management efforts based on the duration of residency, local authorities and community organizations can foster a sense of ownership, engagement, and responsibility among residents, leading to more effective and sustainable waste management practices.

Question 8: How many family members are there within your household?



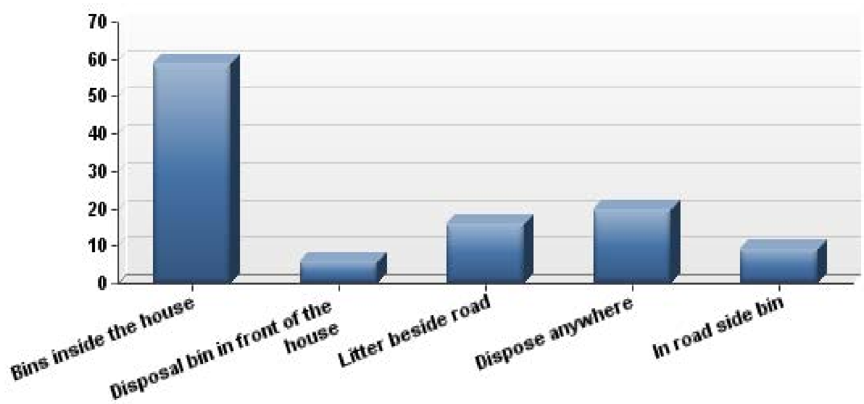
#	Answer		Response	%
1	2 - 4 members		33	30%
2	4 – 5 members		38	35%
3	5 - 7 Members		22	20%
4	More than 7		16	15%
	Total		109	100%

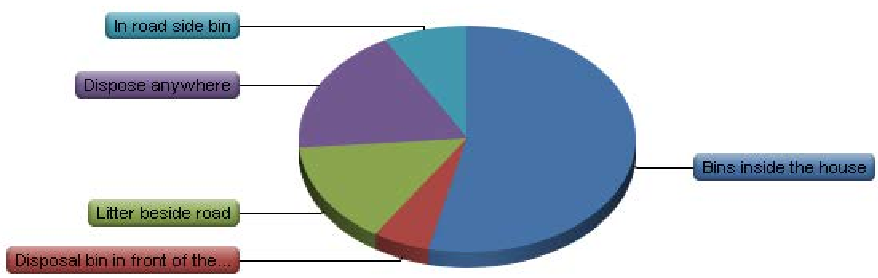
Statistic	Value
Min Value	1
Max Value	4
Mean	2.19
Variance	1.06
Standard Deviation	1.03
Total Responses	109

Analysis and Findings

The primary objective of this question is to ascertain how many people make up each family. The data collected provides insights into the household size distribution among the surveyed population. The largest group of respondents (35%) reported having 4-5 members in their household, while a slightly smaller percentage (30%) mentioned having 2-4 members, while 20% stated having 5-7 members. The statistical analysis revealed a mean value of 2.19, indicating that the average household size among the respondents is slightly larger than 2 members. The study also found that families in slum areas are larger and have more children than those in high-income areas. This information is valuable for understanding the demographic profile of the surveyed population and its potential implications for waste generation and management. Tailoring waste management efforts to the specific needs and characteristics of different household sizes can contribute to more efficient and sustainable waste management practices.

Question 9: Where do you keep your household waste initially?





#	Answer		Response	%
1	Bins inside the house		59	54%
2	Disposal bin in front of the house		6	5%
3	Litter beside road		16	15%
4	Dispose of anywhere		20	18%
5	In roadside bin		9	8%
	Total		110	100%

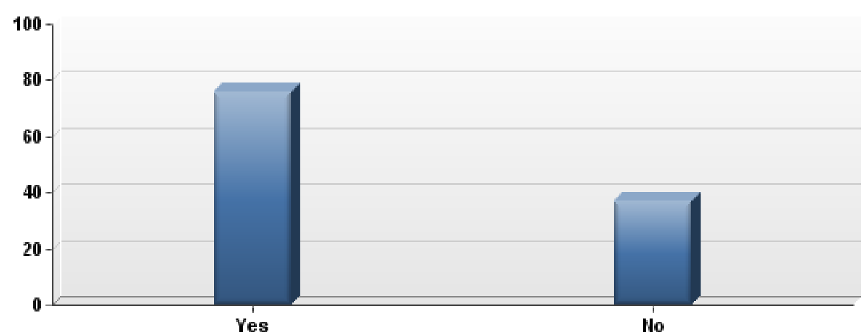
Statistic	Value
Min Value	1
Max Value	5
Mean	2.22
Variance	2.12
Standard Deviation	1.46
Total Responses	110

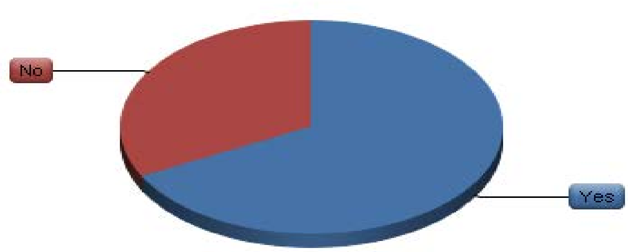
Analysis and Findings

The aim of this question is to identify the primary location where the respondents keep their household waste. The data collected provides insights into the common practices of waste disposal among the surveyed population. The majority of respondents particularly in affluent neighbourhoods (54%) reported binning their household waste indoors, while a smaller percentage (5%) reported using a disposal bin in front of the house. Due to a lack of resources, 15% of respondents admitted to littering on roadsides, especially in slum areas, while 18% mentioned littering anywhere. Only 8% stated that they keep their waste in a roadside bin.

The statistical analysis reveals a mean value of 2.22, indicating that keeping household waste in bins inside the house is the most prevalent practice among the respondents. However, a portion of respondents admitted to littering waste beside the road or disposing of waste anywhere, which can contribute to environmental pollution and health hazards. Overall, respondents from affluent areas adopt responsible waste disposal practices by using indoor bins. But this awareness and infrastructural opportunities are not created among slum dwellers about the dangers of littering. Nevertheless, addressing littering and inappropriate waste disposal behaviours is essential to mitigate the negative impacts associated with these practices.

Question 10: Is there any waste disposal service present in your area?





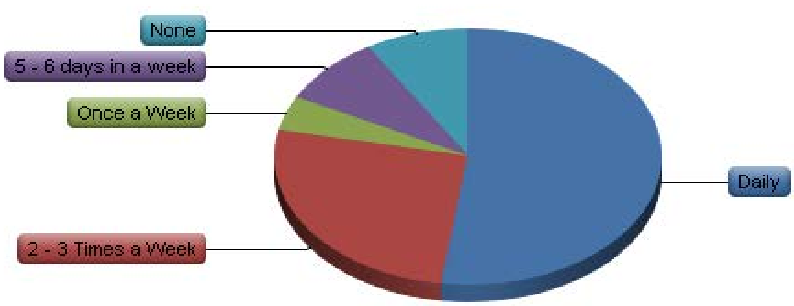
#	Answer		Response	%
5	Yes		76	68%
6	No		37	33%

Statistic	Value
Min Value	5
Max Value	6
Total Responses	111

Analysis and Findings

The purpose of this question is to ascertain whether the respondents' area provides waste disposal services. 68% of respondents confirmed the presence of waste disposal services in their area, while 33% indicated that there are no services available. While the study was conducted in both high and low-income areas, it was found that there were significant differences in waste management practices among the places. The findings indicate that a majority of respondents have access to waste disposal services, suggesting a well-established waste management infrastructure in high income area. However, a significant proportion of respondents reported the absence of waste disposal services, which highlights the need for attention and potential improvements in waste management infrastructure. To understand differences in waste management, respondents were selected from both high and low-income areas, showing significant differences in waste management practices between locations. Slums, where population density and waste management requirements are high, receive negligible services from DCCs indicating high health risks and, in turn, affecting incomes leading to poverty. However, efforts may be required to address the needs of those who currently do not have access to waste disposal services.

Question 11: If yes, how often does the waste picker collect waste from your household?



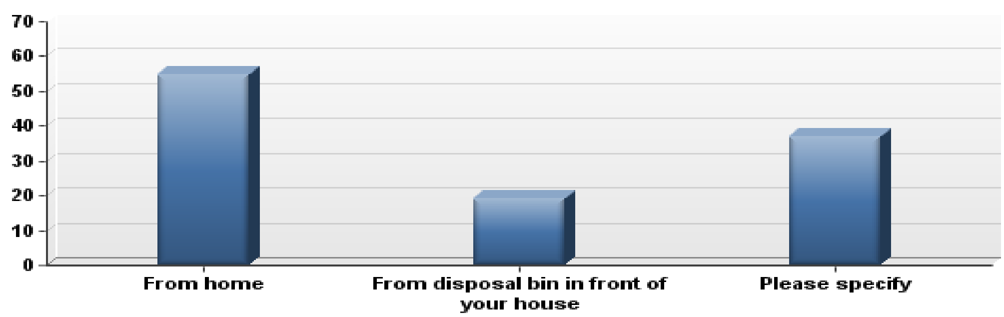
#	Answer		Response	%
1	Daily		12	52%
2	2 - 3 Times a Week		6	26%
3	Once a Week		1	4%
4	5 - 6 days a week		2	9%
5	None		2	9%
	Total		23	100%

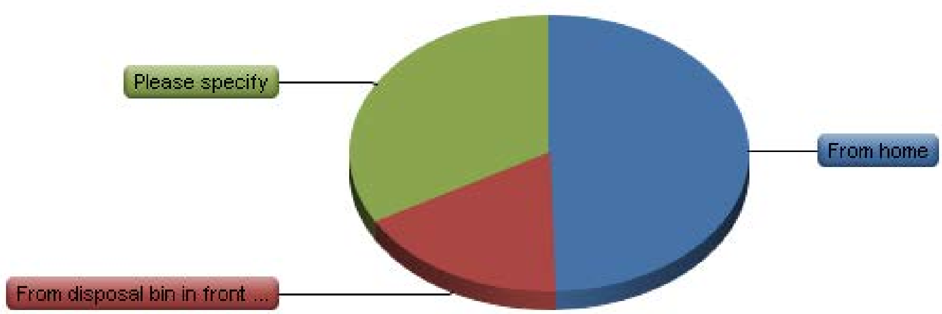
Statistic	Value
Min Value	1
Max Value	5
Mean	1.96

Analysis and Findings

The purpose of the poll is to find out how frequently respondents' homes are visited by DCC's garbage collectors. The data collected provides insights into the regularity of waste collection services provided by waste pickers. 52% of respondents reported that waste pickers collect waste from their households on a daily basis, 26% visited 2-3 times a week, and 4% indicated once a week, 9% mentioned 5-6 days a week, and 9% stated that waste pickers do not collect waste from their households. The statistical analysis showed a mean value of 1.96, indicating that waste pickers generally collect waste from households quite frequently. A small portion of respondents mentioned infrequent waste collection or the absence of waste pickers collecting waste from their households. However, respondents from high-income groups who receive adequate services from DCC waste collection responded positively to these survey questions, in contrast to respondents from low-income areas, particularly slum areas, where the population is substantial but absent.

Question 12: From where waste picker collects your household waste?





#	Answer		Response	%
1	From home		55	50%
2	From the disposal bin in front of your house		19	17%
3	Please specify		37	33%
	Total		111	100%

Please specify
None
None
N/A
Road
roadside
N/A
No idea
no idea
No idea
Don't know
No idea
None
None
On my own
None
None
Nowhere
No
None
None
no idea
no idea
None
N/A
roadside
None
roadside
None
N/A
None
None
no idea
None
None
Don't know

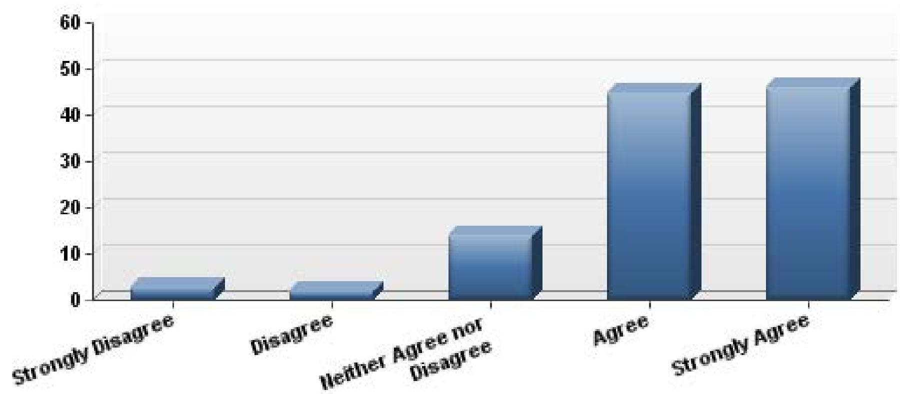
Statistic	Value
Min Value	1
Max Value	3
Mean	1.84
Variance	0.81
Standard Deviation	0.90
Total Responses	111

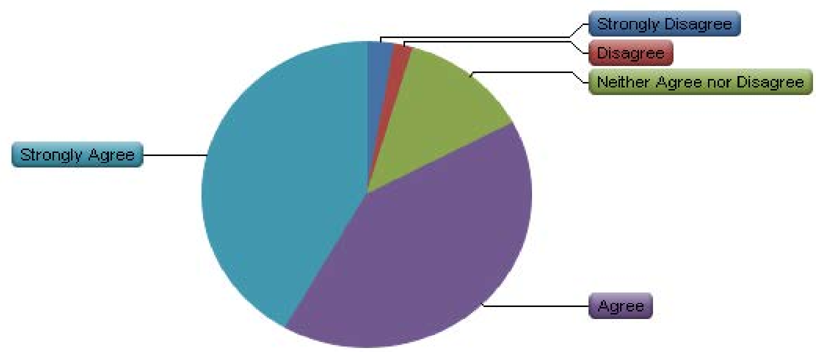
Analysis and Findings

The question inquired about the sources from which waste pickers collect household waste. Based on the responses, 50% of respondents reported that waste pickers collect waste directly from their homes. Another 17% mentioned that waste pickers collect waste from the disposal bin in front of their houses. Additionally, 33% of respondents provided other specifications about the sources from which waste pickers collect waste. Results showed that 50% of respondents reported that waste pickers collect waste directly from their homes, 17% from the disposal bin in front of their houses, and 33% provided other specifications about the sources from which waste pickers collect waste.

The statistical analysis revealed that the mean value was 1.84, with a minimum value of 1 and a maximum value of 3. The findings highlight the importance of establishing clear communication and understanding between households and waste pickers to ensure efficient waste collection. Additionally, proper waste segregation and disposal practices must be implemented to facilitate waste pickers' work. Overall, the survey data suggests that waste pickers retrieve waste from various sources, including homes and disposal bins.

Question 13: In order to maintain hygiene in your household, do you believe it is preferable to dispose of waste in a designated bin outside your house rather than inside, allowing waste pickers to collect directly?





#	Answer		Response	%
1	Strongly Disagree		3	3%
2	Disagree		2	2%
3	Neither Agree nor Disagree		14	13%
4	Agree		45	41%
5	Strongly Agree		46	42%
	Total		110	100%

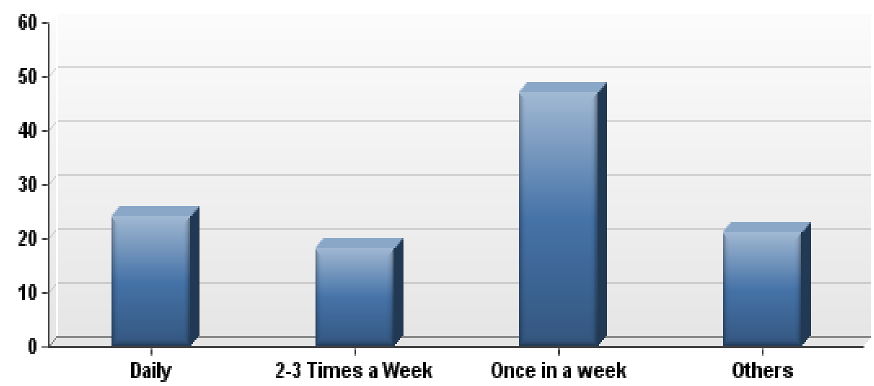
Statistic	Value
Min Value	1
Max Value	5
Mean	4.17
Variance	0.84
Standard Deviation	0.92
Total Responses	110

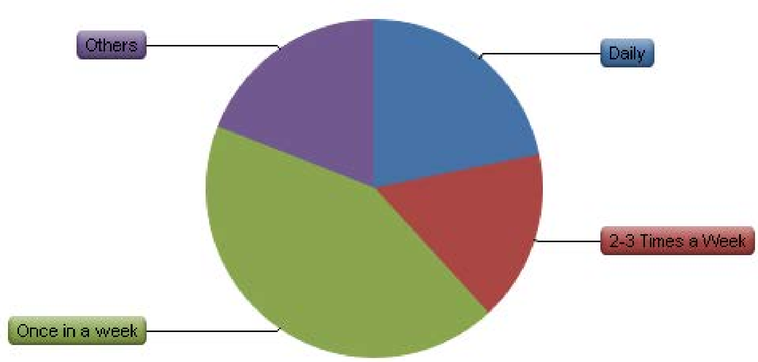
Analysis and Findings

The question explores respondents' views on waste disposal practices to maintain household hygiene. The analysis of responses reveals that the majority of respondents (83%) agree or strongly agree that it is preferable to dispose of waste in a designated bin outside their house, allowing waste pickers to collect directly. However, a small percentage of respondents (5%) disagree or strongly disagree with this method. Additionally, 13% of respondents neither agree nor disagree, indicating neutrality or uncertainty about the preferred waste disposal approach. The findings suggest that the majority of respondents prioritize maintaining household hygiene by endorsing the use of designated bins outside their homes, facilitating waste pickers' direct collection.

This preference aligns with the idea of efficient waste management and minimizing potential health risks associated with keeping waste inside the house. Overall, the survey data indicates a positive inclination towards utilizing designated bins outside the house for waste disposal, enabling waste pickers' direct collection.

Question 14: How often in a week do DCC waste collectors collect disposed waste from the roadside open bin?





#	Answer		Response	%
1	Daily		24	22%
2	2-3 Times a Week		18	16%
3	Once a week		47	43%
4	Others		21	19%
	Total		110	100%

Others
No idea
No idea
Sometimes
No idea
No idea
No idea
not specified
No idea
Never
N/A
N/A
No idea
N/A
No idea
No idea
N/A
N/A
No
N/A

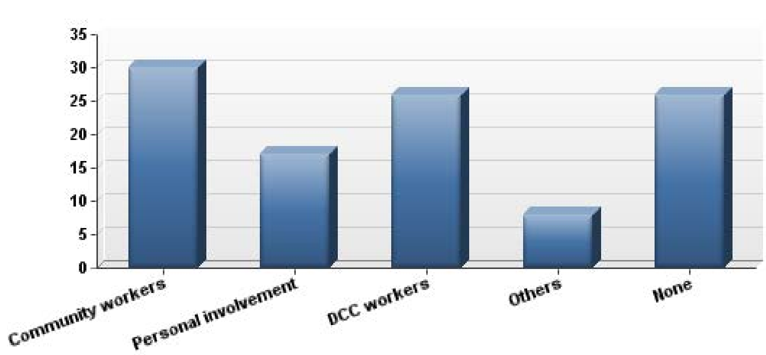
Statistic	Value
Min Value	1
Max Value	4
Mean	2.59
Variance	1.07
Standard Deviation	1.03
Total Responses	110

Analysis and Findings

The question inquired about the frequency of waste collection by Dhaka City Corporation (DCC) waste collectors from roadside open bins. The most common frequency reported was once a week, with 43% of respondents indicating this. Daily collection was mentioned by 22%, while 2-3 times a week was reported by 16%. A smaller proportion (19%) provided other responses, which varied and included "no idea," "sometimes," "not specified," and "never." The statistical analysis revealed that the mean value was 2.59, with a minimum value of 1 and a maximum value of 4. Overall, the survey data suggests that waste collection from roadside open bins by DCC is primarily reported as once a week, followed by daily and 2-3 times a week.

However, the presence of other responses indicating uncertainty or lack of knowledge emphasizes the need for improved communication and awareness about waste collection schedules. These findings highlight the importance of regular and efficient waste collection services to maintain cleanliness and hygiene in the community, and call for transparent and accessible information about waste collection schedules to ensure proper waste management and minimize potential health and environmental risks associated with waste accumulation.

Question 15: Who takes the initiative to clean your neighbourhood?



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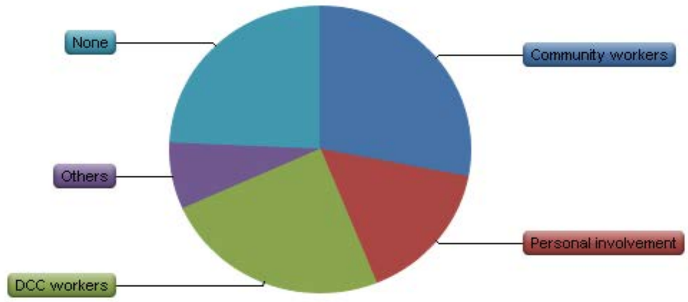

#	Answer		Response	%
1	Community workers		30	28%
2	Personal involvement		17	16%
3	DCC workers		26	24%
4	Others		8	7%
5	None		26	24%
	Total		107	100%

Others
LBN man
No idea
No idea
No idea
No idea
No idea
N/A

Statistic	Value
Min Value	1
Max Value	5
Mean	2.84
Variance	2.32
Standard Deviation	1.52
Total Responses	107

Analysis and Findings

The survey found various waste management methods in Dhaka City, 28% of respondents reported that community workers take the initiative to clean their neighbourhoods, while 16% reported personal involvement in waste management. 24% of respondents reported that DCC workers clean their neighbourhood, while 7% reported using other methods. Interestingly, 24% of respondents reported that none of these methods is used in their neighbourhood, indicating a lack of waste management services in those areas. This highlights the need for greater investment in waste management infrastructure and services, particularly in areas where these services are lacking. Additionally, the results suggest that community-based waste management initiatives may be effective in improving waste management in some areas.

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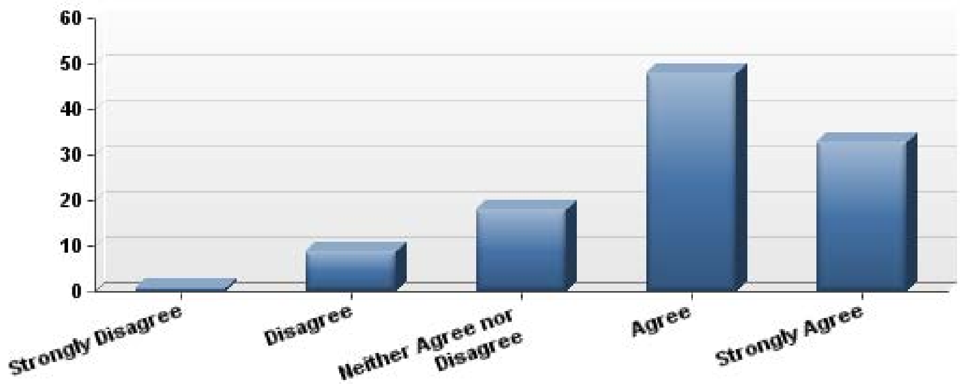
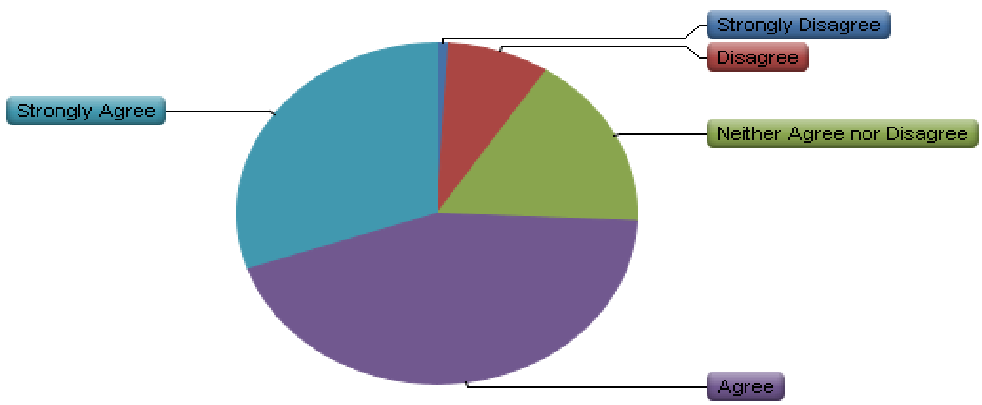
Question 16: Can individual/community involvement in waste clean-up improve health and the local environment?





#	Answer		Response	%
1	Strongly Disagree		1	1%
2	Disagree		9	8%
3	Neither Agree nor Disagree		18	17%
4	Agree		48	44%
5	Strongly Agree		33	30%
	Total		109	100%

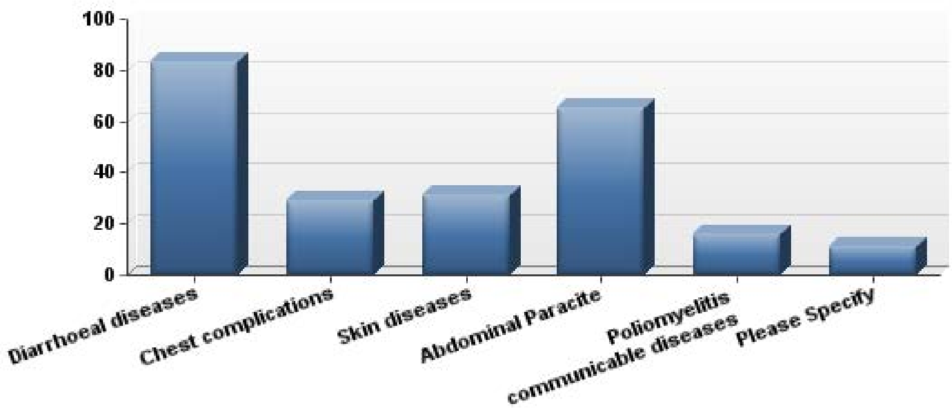
Statistic	Value
Min Value	1
Max Value	5
Mean	3.94
Variance	0.89
Standard Deviation	0.94
Total Responses	109

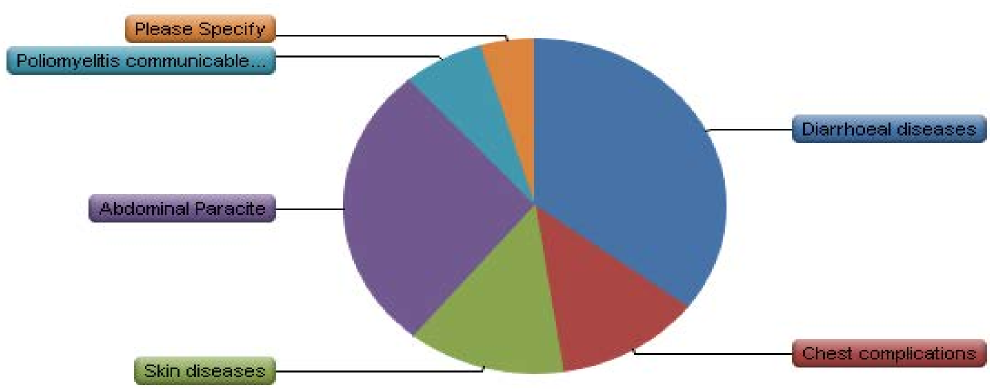
Analysis and Findings

This question examined the perception of respondents regarding the impact of individual and community involvement in waste clean-up on health and the local environment. The analysis of responses revealed that a significant portion of respondents (44%) agreed, (30%) strongly agreed that individual and community involvement in waste clean-up can improve health and the local environment. However, a smaller percentage disagreed (8%) or strongly disagreed (1%) with this statement. Additionally, 17% of respondents neither agreed nor disagreed, indicating neutrality or uncertainty about the relationship between waste clean-up and health/environmental improvement. The statistical analysis showed that the mean value was 3.94, with a minimum value of 1 and a maximum value of 5.

Overall, the survey data suggests that a majority of respondents believe in the potential positive outcomes of individual and community involvement in waste clean-up on health and the local environment. These results highlight the importance of promoting and supporting initiatives that encourage community engagement in waste clean-up efforts.

Question 17: Have you or any of your family members had any recent illness in the last 6 months?





#	Answer		Response	%
1	Diarrheal diseases		83	78%
2	Chest complications		29	27%
3	Skin diseases		31	29%
4	Abdominal Parasite		65	61%
5	Poliomyelitis communicable diseases		16	15%
6	Please Specify		11	10%

Please Specify
NAD/ Asthma
Asthma
Asthma
NAD/Asthma

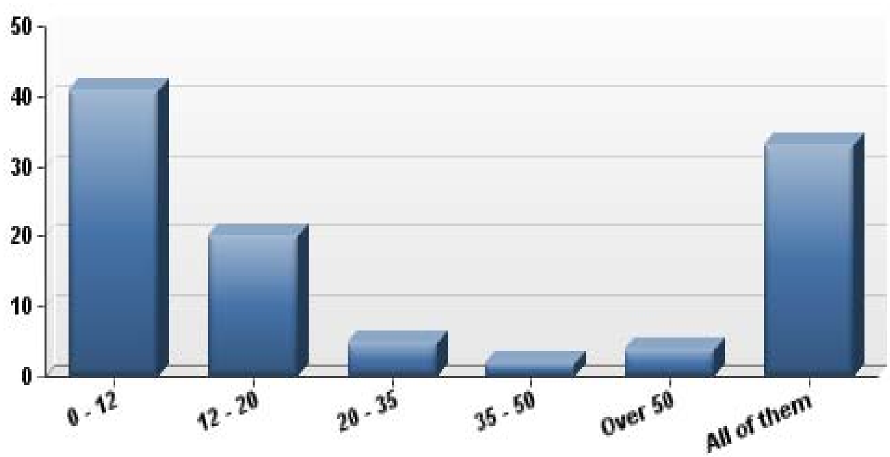
Statistic	Value
Min Value	1
Max Value	6
Total Responses	106

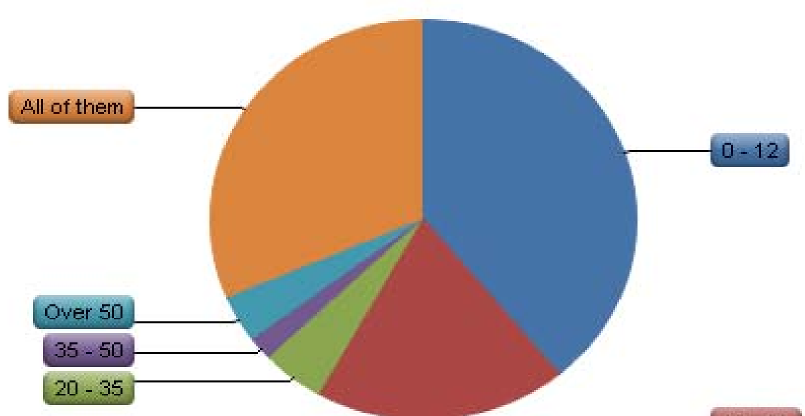
Analysis and Findings

In the past six months, respondents' or their families' recent illnesses were inquired about in the survey. The most often stated ailments were skin conditions (29%), chest complications (27%), stomach parasites (61%), and diarrheal infections (78%). Poliomyelitis communicable diseases (15% of respondents) were also mentioned. A small number of respondents (10%) specified other illnesses not listed in the provided options, such as non-allergic rhinitis (NAD) and asthma. These findings suggest a notable prevalence of illnesses associated with waste within the respondents' families.

The presence of diarrheal diseases and abdominal parasites aligns with the potential consequences of poor waste management on water and food contamination, skin diseases and chest complications may also be linked to unhygienic living conditions influenced by waste, and asthma and non-allergic rhinitis (NAD) indicate the possibility of respiratory conditions influenced by waste-related factors. The survey data underscores the importance of addressing waste management and improving sanitation practices to reduce the risk of communicable diseases.

Question 18: Which age group in your family is most affected by communicable diseases related to waste?





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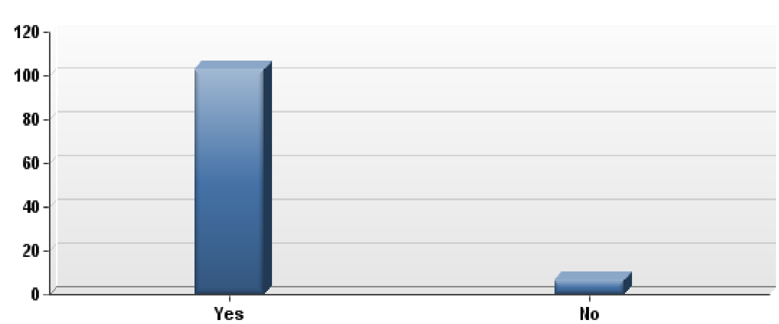
#	Answer		Response	%
1	0 - 12		41	39%
2	12 – 20		20	19%
3	20 – 35		5	5%
4	35 – 50		2	2%
5	Over 50		4	4%
6	All of them		33	31%
	Total		105	100%

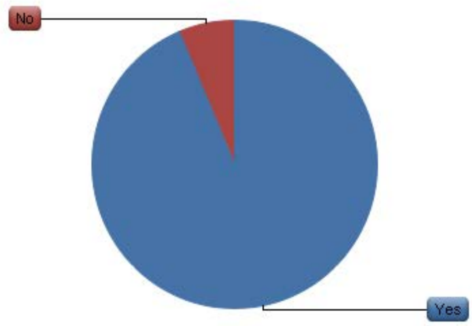
Statistic	Value
Min Value	1
Max Value	6
Mean	3.07
Variance	4.79
Standard Deviation	2.19
Total Responses	105

Analysis and Findings

The question explored the age group within respondents' families that is most affected by communicable diseases related to waste. The age group of 0-12 years appears to be the most affected, with 39% of respondents indicating that this age group experiences a higher incidence of communicable diseases related to waste. A smaller proportion of respondents reported the age groups of 20-35 years (5%), 35-50 years (2%), and over 50 years (4%) as being most affected. Additionally, 31% of respondents stated that communicable diseases related to waste affect all age groups within their family. These findings suggest that children (0-12 years) are perceived to be the most vulnerable to communicable diseases associated with waste, and the importance of safeguarding their health through effective waste management practices and preventive measures. Additional research and analysis is needed to establish a definitive correlation, but the data underscores the importance of targeted interventions and education initiatives to protect the health of children and other vulnerable age groups from the impact of waste-related communicable diseases.

Question 19: Is open waste responsible for infectious diseases frequently experienced by your family members?





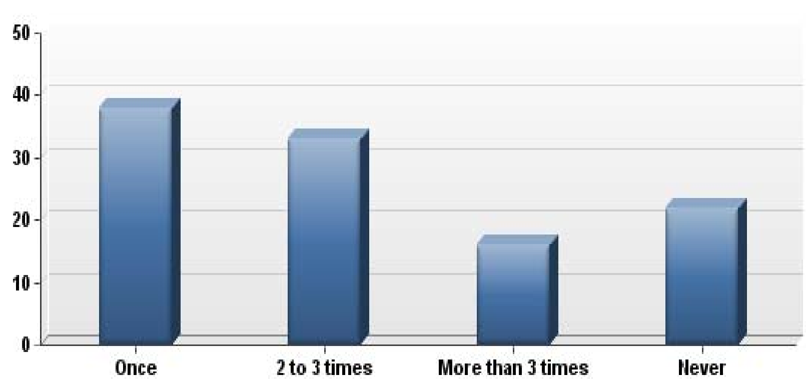
#	Answer		Response	%
1	Yes		103	94%
2	No		7	6%
	Total		110	100%

Statistic	Value
Min Value	1
Max Value	2
Mean	1.06
Variance	0.06
Standard Deviation	0.25
Total Responses	110

Analysis and Findings

This question seeks to comprehend the perceived responsibility of open waste for the incidence of infectious diseases among household members of the respondents. An overwhelming majority (94%) answered affirmatively, stating that open waste is responsible for the infectious diseases experienced by their family members. A small proportion (6%) responded negatively, suggesting that they do not attribute infectious disease incidence to open waste because they live in affluent areas. This suggests a recognition of the potential health risks associated with open waste and highlights the need for effective waste management practices to mitigate the spread of diseases. Further scientific research and analysis is necessary to establish a definitive causal relationship between open waste and infectious diseases.

Question 20: If yes, how often have you or family members visited a health centre for infectious diseases in the past 6 months?



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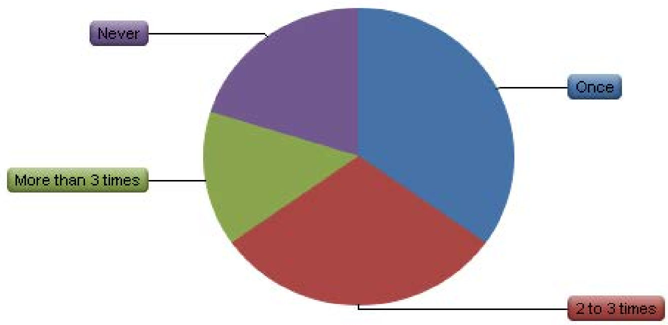


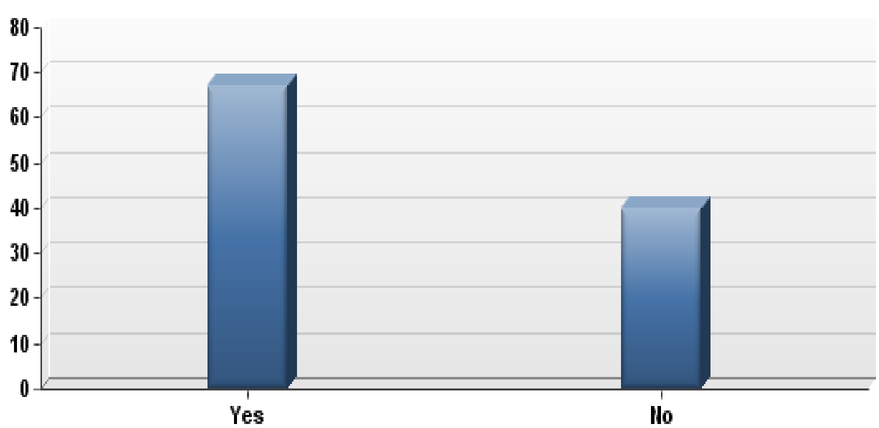
#	Answer		Response	%
1	Once		38	35%
2	2 to 3 times		33	30%
3	More than 3 times		16	15%
4	Never		22	20%
	Total		109	100%

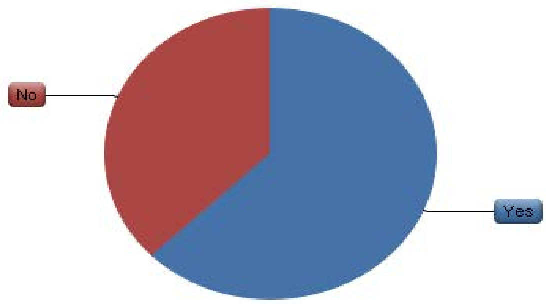
Statistic	Value
Min Value	1
Max Value	4
Mean	2.20
Variance	1.27
Standard Deviation	1.13
Total Responses	109

Analysis and Findings

The question studies the frequency of visits to a health centre for infectious diseases in the past 6 months among respondents and their family members. The data collected provides valuable insights into the utilization of healthcare services for infectious diseases. 35% of respondents visited a health centre once during the specified period, while 30% reported visiting 2 to 3 times, while 15% visited more than 3 times. A significant portion (20%) indicated they had not visited a health centre for infectious diseases within the past 6 months. Further analysis could provide additional context, such as the reasons for seeking healthcare or barriers preventing individuals from visiting health centres.

Question 21: If yes, did your doctor confirm that the disease was caused by waste?





#	Answer		Response	%
1	Yes		67	63%
2	No		40	37%
	Total		107	100%

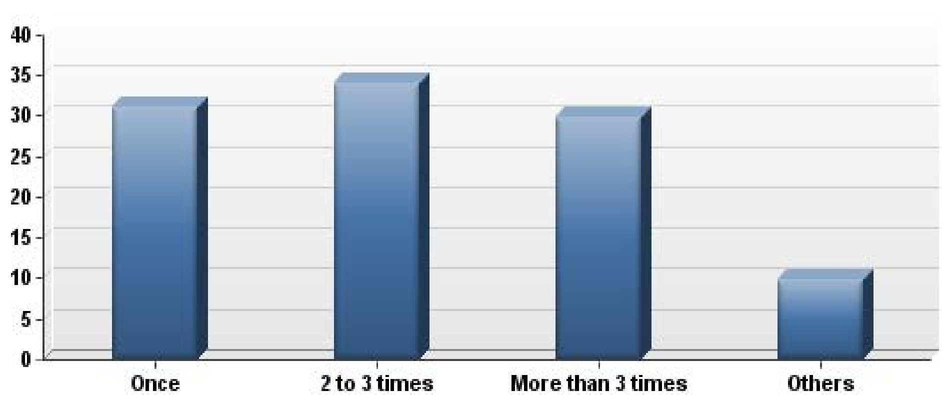
Statistic	Value
Min Value	1
Max Value	2
Mean	1.37
Variance	0.24
Standard Deviation	0.49
Total Responses	107

Analysis and Findings

The question asks whether the respondents' doctors have confirmed that the disease they experienced was caused by waste. The data obtained provides insights into the confirmation of waste-related diseases by medical professionals. Of the respondents, 63% answered affirmatively, stating that their doctors confirmed the link between their disease and waste. In contrast, 37% responded negatively, indicating that their doctors did not establish a direct connection between the disease and waste.

These findings suggest that a significant proportion of respondents received confirmation from medical professionals regarding the causal relationship between their illness and waste. However, it is essential to note that further investigation may be necessary to determine the specific types of diseases and waste sources involved, as well as the limitations of diagnostic processes. Overall, the survey highlights the importance of medical confirmation in establishing the connection between diseases and waste, which can guide public health interventions, waste management strategies, and healthcare approaches to mitigate the impact of waste-related illnesses.

Question 22: How many days did you or your family members miss work or school due to a communicable disease in the past 6 months? Please provide the average number of days missed.



#	Answer		Response	%
1	Once		31	30%
2	2 to 3 times		34	32%
3	More than 3 times		30	29%
4	Others		10	10%
	Total		105	100%

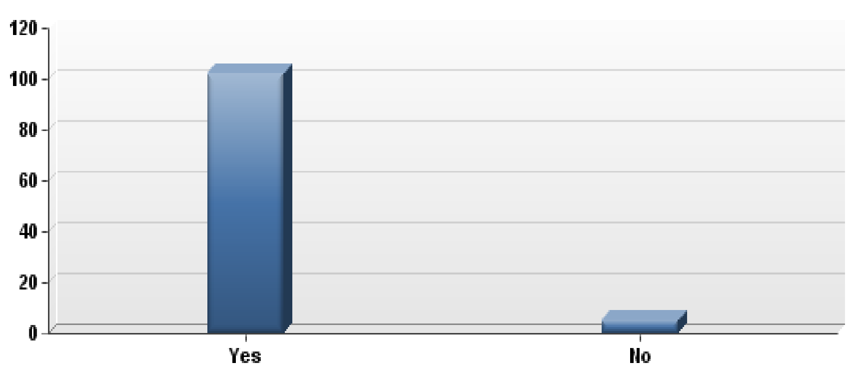
Statistic	Value
Min Value	1
Max Value	4
Mean	2.18
Variance	0.94
Standard Deviation	0.97
Total Responses	105

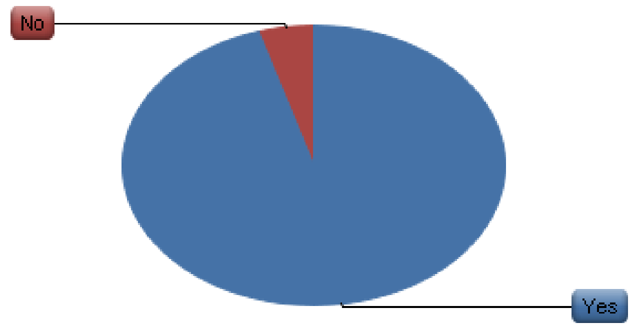
Analysis and Findings

The question looks into how many days in the past 6 months the person or their family members missed work or school because of an infectious disease. The data collected provides valuable insights into the frequency of absences. The responses reveal that the majority of respondents (30%) reported missing work or school once during the specified period. A similar proportion of respondents (32%) reported missing 2 to 3 times, while 29% reported missing more than 3 times. A smaller portion (10%) provided other responses, which were not specified.

Overall, the survey highlights a significant number of absences due to communicable diseases in the past 6 months, with a range from occasional absences to more frequent occurrences. These findings indicate the potential impact of communicable diseases on work and educational attendance. It is worth noting that further analysis could provide additional context and insights into specific factors contributing to the frequency of absences. Nevertheless, the data underscores the importance of implementing measures to prevent and manage communicable diseases, such as promoting vaccination, hygiene practices, and workplace/school policies that support the health and well-being of individuals.

Question 23: Can proper waste management effectively prevent such communicable diseases?





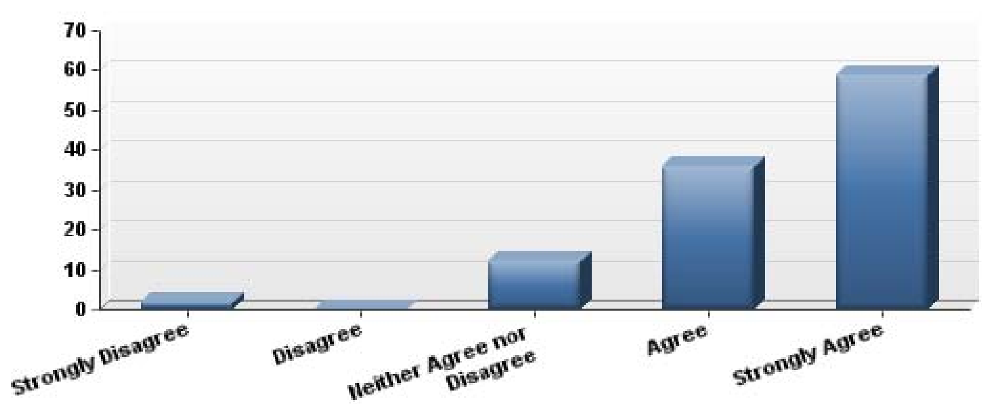
#	Answer		Response	%
1	Yes		102	95%
2	No		5	5%
	Total		107	100%

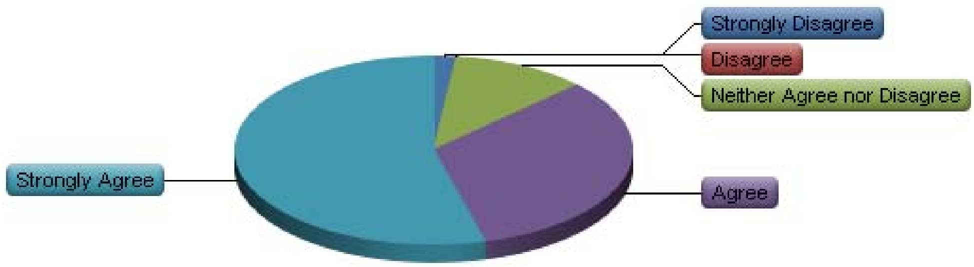
Statistic	Value
Min Value	1
Max Value	2
Mean	1.05
Variance	0.04
Standard Deviation	0.21
Total Responses	107

Analysis and Findings

The analysis explores the effects of waste-related health issues on a person's financial stability, productivity at work, and overall well-being. Based on the survey, 95% of respondents believed that proper waste management can prevent communicable diseases, according to an expert from the environment and health department. The statistical analysis of the responses suggests that waste-related health issues have a minimal impact, with a mean value of 1.05 and a minimum value of 1 and a maximum value of 2. The small variance and low standard deviation further support the notion that the impact is relatively consistent across the respondents. Further research could provide additional insights into specific factors that may affect the relationship between waste-related health issues and these aspects of life.

Question 24: To what extent do waste-related health issues impact a person's financial well-being, work efficiency, productivity, and overall prosperity?





#	Answer		Response	%
1	Strongly Disagree		2	2%
2	Disagree		0	0%
3	Neither Agree nor Disagree		12	11%
4	Agree		36	33%
5	Strongly Agree		59	54%
	Total		109	100%

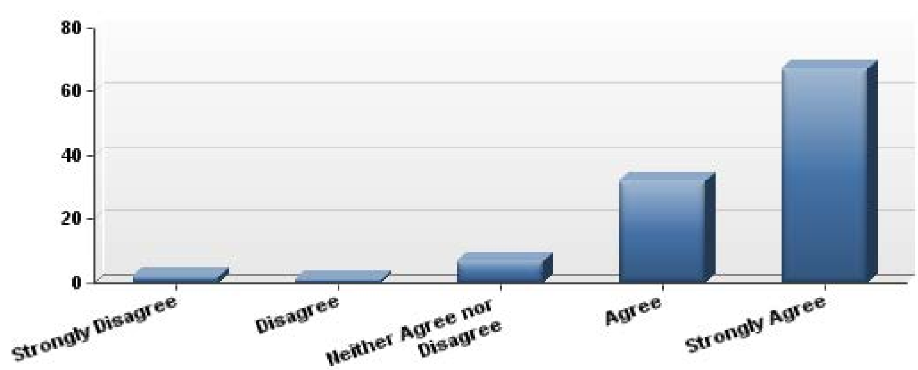
Statistic	Value
Min Value	1
Max Value	5
Mean	4.38
Variance	0.68
Standard Deviation	0.83
Total Responses	109

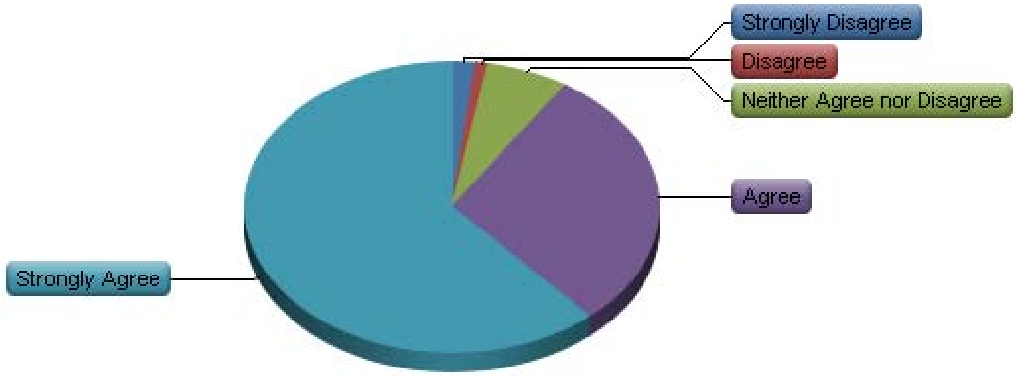
Analysis and Findings

The question seeks to recognise the effects of waste-related health problems on an individual's financial stability, workplace performance, productivity and general well-being. The statistical analysis of the responses suggests that waste-related health issues have a minimal impact, with a mean value of 1.05 and a minimum value of 1 and a maximum value of 2. The majority of respondents (54%) strongly agree that health issues can have a negative impact on their income, efficiency, productivity, and overall prosperity. A significant portion of respondents (33%) agree that health issues can have an adverse effect on their financial stability, work efficiency, productivity, and overall well-being. Neither Agree nor Disagree: A small portion of respondents (11%) neither agree nor disagree with the statement.

Overall, the data highlights the importance of good health and the acknowledgement of its potential influence on various aspects of life. These findings underscore the significance of addressing health concerns and implementing measures to mitigate their adverse effects on individuals' well-being and livelihoods.

Question 25: How does improved health status impact a person's earnings, job opportunities, and quality of life in terms of education, treatment, and nutrition?





#	Answer		Response	%
1	Strongly Disagree		2	2%
2	Disagree		1	1%
3	Neither Agree nor Disagree		7	6%
4	Agree		32	29%
5	Strongly Agree		67	61%
	Total		109	100%

Statistic	Value
Min Value	1
Max Value	5
Mean	4.48
Variance	0.66
Standard Deviation	0.81
Total Responses	109

Analysis and Findings

This question explores the relationship between improved health status and its impact on various aspects of a person's life, including earnings, work opportunities, and quality of life. A majority of respondents (61%) strongly agree that improved health status positively affects earnings, job opportunities, and quality of life, suggesting that there is a significant correlation between good health and these aspects of life. Additionally, 67% of respondents strongly agree that improved health status can have a positive impact on the quality of life in terms of education, treatment, and nutrition. However, a portion of respondents (29%) simply agree without strongly agreeing, suggesting that while they acknowledge the positive impact of improved health on earnings, job opportunities, and quality of life, they may not perceive it as an overwhelmingly strong relationship.

The findings from this survey align with existing research that supports the idea that improved health status has wide-ranging benefits and can significantly influence a person's economic and overall well-being. The study reveals that in slum areas, poor waste management is prevalent among 90% of respondents, resulting in health issues, decreased immunity, chronic diseases, and a subsequent decline in income. The findings emphasize the urgent need to improve waste management and healthcare in slum areas to enhance economic productivity and overall quality of life. Investments in infrastructure and targeted programs are necessary to achieve these goals.

V. A Review on the New Development: Insights from Studies and Reviews

The new developments in solid waste management (SWM) in Bangladesh can be organized as follows:

Current Situation in Dhaka

In recent years, solid waste infrastructure management in Dhaka, the capital of Bangladesh, has involved private and public partnerships (Zahur, M.

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2007). Despite these efforts, the city has not seen significant changes or a clean look. Additionally, the indiscriminate littering of city dwellers remains unabated.

Collaboration with Japan International Cooperation Agency (JICA)

In 2005, the Japan International Cooperation Agency (JICA) initiated a master plan to enhance Dhaka city's SWM capacity and management skills. The plan aimed to address the lack of regulatory administration and laws for waste management (Dhaka City Corporation & JICA, 2005).

Household Waste Management and Collection Systems

Ahsan & Zaman (2014) suggest that there have been changes in the household waste management and collection systems in both South and North Dhaka City Corporation, although there is no visible improvement in the appearance of streets and neighbourhoods.

Medical Waste Management

Dihan et al. (2023) report on Bangladesh's current medical waste management situation, predicting the generation of 50,000 tons of medical waste using an empirical model.

Technological Advances and Management Principles

Singh et al. (2013) highlight the importance of discussing recent technological advances, management principles, pitfalls, and challenges associated with SWM in urban areas.

Proposed Waste Disposal System

Vashi & Desai (2018) propose a waste disposal system that incorporates integrated informal recycling, small-scale bio-methanation, Mechanical Biological Treatment (MBT), and Refuse-Derived Fuel/Waste-to-Energy (RDF/WTE) technologies.

Adoption of the 3R Strategy

In 2010, the Department of Environment (DoE) in Bangladesh adopted the 3R strategy (reduce, reuse, recycle) to promote sustainable waste management practices. The 3Rs play a crucial role in reducing greenhouse gas emissions and transforming waste into valuable resources.

Construction of Waste Management Plants

The DoE launched a program to construct two waste management plants—one in Matuail (Dhaka South City Corporation) and another in Amin Bazar (Dhaka North City Corporation). These plants aim to produce compost fertilizer from solid waste collected in different parts of Dhaka, with a daily production capacity of 20 tonnes per plant (Yousuf & Reza, 2013).

Establishment of Secondary Transfer Stations (STS)

The construction of 52 STSs in Dhaka North City Corporation has helped in removing large quantities of waste containers from roads, thereby improving traffic conditions. However, progress in the construction of STSs in Dhaka South City Corporation has been slow, with only 12 of the planned 45 completed (Saqib, M. 2018).

Coordination of Primary Waste Collection

The Primary Waste Collection Service Provider (PWCSP), an NGO, coordinates the collection of waste from households to the STS. In 2016-17, 340 private operators were registered with PWCSP, but there are also unregistered operators involved in waste collection (Prodhan, & Kaeserb, 2019).

Review of Progress and Future Outlook

An overview of progress towards the implementation of solid waste management policies in Dhaka indicates that a modern and environmentally friendly approach is needed. The current waste management practices pose health and livelihood risks. The success of the waste-to-energy project and adherence to the master plan will determine the future of waste management in Dhaka (Jerin et al., 2022).

The developments in SWM in Dhaka, including compost production, construction of STS, and coordination of waste collection, reflect efforts to improve waste management practices (Kabir, 2015). However, the waste management situation in Dhaka requires a more modern and environmentally friendly approach to address the existing challenges effectively.

VI. Discussion

Solid waste mismanagement is a global problem with far-reaching consequences for environmental pollution, social inclusion and economic sustainability, especially in developing countries, and Dhaka, the capital of Bangladesh, is one of them. Dhaka City Corporation is facing serious challenges in providing a satisfactory service to city dwellers due to limited resources and poor management plans, highlighting the need for more comprehensive and sustained efforts to improve waste management practices in the city (Ahsan, et al., 2014).

Insufficient waste management practices pose significant threats to both the environment and the well-being of Dhaka's residents (Haque & Alam, 2012). Hence, it is essential to increase investment in education and training for waste management professionals, infrastructural development, awareness campaigns, and resources to support sustainable waste management practices (World Bank, 2011). This paper highlights the urgent need for innovative approaches, increased awareness, and targeted policies to address the challenges of solid waste management in Dhaka, Bangladesh.

Furthermore, this study provides insights into the challenges and implications of solid waste management in Dhaka. It emphasizes the need for comprehensive strategies involving awareness and education initiatives, policy interventions, and collaboration among stakeholders. Evaluating the effectiveness of these strategies, particularly those targeting vulnerable populations, and exploring innovative waste management approaches are essential for a cleaner and healthier environment, improved public health outcomes, and enhanced human development and poverty alleviation efforts in Dhaka.

As inadequate waste management disproportionately affects these communities, it is crucial to address the unique needs of vulnerable groups (Hoornweg, D. 2012). Solid waste management is interconnected with environmental health, poverty alleviation, and economic development (Wilson, et al., 2015). Therefore, waste management should be approached as an integral part of sustainable development, offering potential benefits such as employment opportunities, reduced health costs, and economic growth (World Bank, 2012).

Nevertheless, further studies should concentrate on assessing the efficacy of these methods, particularly those that target disadvantaged communities, and investigating cutting-edge waste management strategies in the context of Dhaka. By addressing these critical issues, Dhaka can work towards a cleaner and healthier environment, improved public health outcomes, and enhanced human development and poverty alleviation efforts.

VII. Conclusion

Inadequate solid waste management in Dhaka, Bangladesh has far-reaching implications for human development, poverty, and health. The city's poor waste management practices have led to an increased prevalence of infectious diseases, degraded air and water quality, and contributed to a high rate of poverty and illness. It is crucial to recognize the importance of sustainable solid waste management (SWM) in achieving human development goals and addressing these pressing concerns in Dhaka. This study sheds light on the significant impact of solid waste management (SWM) on health outcomes and poverty alleviation in the city. The findings reveal that inadequate municipal solid waste management practices contribute to disease prevalence and pose substantial risks to public health. The inadequate disposal of waste not only leads to environmental pollution but also exacerbates poverty, particularly among low-income groups and slum dwellers.

Although there are numerous causes why a community falls under the grip of poverty, it is crucial to acknowledge that unsanitary living conditions, compromised health, and the prevalence of waste-related communicable diseases significantly contribute to the perpetuation of poverty and the decline in living standards. This research nevertheless underscores the urgent requirement for comprehensive and effective strategies in solid waste management (SWM) specifically tailored to address the needs of vulnerable communities in Dhaka.

By revealing the negative consequences of poor waste management, it highlights the importance of prioritizing sophisticated waste management initiatives. These initiatives should encompass waste reduction, efficient collection systems, and recycling programs. Specifically, prioritizing solid waste management in slum areas should be a key focus. Furthermore, promoting community awareness and participatory campaigns is crucial to foster behavioural changes towards sustainable waste management practices. Achieving these goals requires collaboration between government agencies, non-governmental organizations, and local communities to develop and implement integrated waste management solutions.

The solution is achievable through the allocation of funds and the establishment of collaborative monitoring mechanisms among stakeholders. Applying these measures will yield significant benefits, including improved health, pollution control, reduced disease burden, increased income, and overall enhancement of human development. By striking a balance between these initiatives, Bangladesh can effectively address the challenges of waste management and pave the way for sustainable development.

Further research is required to explore the long-term impact and economic benefits of a comprehensive waste management system in Dhaka city. Scalability and replicability studies of successful waste management models in other urban contexts can contribute to broader knowledge and guide policy decisions. Furthermore, incorporating participatory approaches and engaging local communities will be instrumental in achieving equitable and sustainable SWM outcomes.

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To What Extent do Female Body Representations Create an Intersectional Understanding of Media Discourse?

By Chiara Rambaldi

Abstract- Despite media significance, a lot still needs to be learned about how women's bodies are (re)presented in media narratives and the ensuing implications of these representations for women's health. The construction of a uniform socio-culturally feminine image regime of truth owing to the feminine body shape standard evolved due to mainstream Western media's fascination with a slender female physique (Aapola, et al., 2005). In our culture, those who do not adhere to such aesthetic standards are often left out of discussions about feminine identity (Duncan, 1994).

Keywords: female body; media; representation; socio-cultural discourse; identity.

GJHSS-H Classification: LCC: HQ1190, HM621

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Keywords: female body; media; representation; socio-cultural discourse; identity.

I. Introduction

Although media appearance norms influence women's perceptions and behaviours, thus allowing body disorders to thrive in such standardised discourse, the tendency to promote the slender female body ideal has elicited little academic attention (Bordo, 1993a). Since scholars have yet to comprehensively address the media environment and related socio-cultural meanings (McGannon, and Spence, 2012), this essay aims to integrate research on media depictions by evaluating socio-cultural change, gender politics, and self-identity, based on an intersectional viewpoint on femininity and body image.

Thus, the following question examines such a feminine ideal by addressing: *To what extent do female body representations create an intersectional understanding of media discourse?* This argument necessitates a preliminary examination of sexuality's historicity and the role of media in such feminine body depiction. Second, this paper will provide an understanding of how patriarchy, market capitalism, feminist criticisms, and Foucauldian conceptions of bio-politics are crucial to the media discourse around today's feminine bodies' socio-cultural representations through a study of intersectional theoretical frameworks. The key analytical component is based on an inquiry into how media impact women's self-perceptions by imposing a restricted picture of society's female beauty standards; how women objectify their own bodies by internalising an ideal figure that causes ill health; and how such media processes promote self-surveillance, forcing women to conform and objectify themselves to societal power constructs.

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II. Background Context

a) *The Historicity of Sexuality and the intersectionality of media discourse*

Sexuality and the of media discourse evolved as a response to the European Industrial Age, according to the idea that civilizations could be dominated by an ideal ethnic representation of body image, differentiated by the somatic components of the "other" inferior colonised cultures (Weeks, 1981). The colonisation endeavour established an objectification system where the development of various racialized characteristics was intertwined with the establishment of a dualistic worldview. While colonists' female bodies were seen as the ideal mainstream symbolic picture of beauty, the colonised ones were regarded as a less respectable non-Western representation of a deviant female form (Doan, 2006; Robinson, 1976). Such a trend for sexuality studies shaped the post-colonial era to become the basis of a mainstream media discourse (Wieringa, and Sívori, 2013). Sexuality, and especially female body representation, was imagined in the format of central core interactions from a Eurocentric perspective, akin to the imperial world map: the "standard" being the usual white skin, a thin woman figure at the core, and the "deviant, "other", curvaceous woman on the periphery (Bleys, 1995; Epprecht, 2004).

The dominant discourse on sexuality and women's bodily dominance served as a primary indicator of social distinction during the 20th century, as post-colonial notions of sexuality replicated the colonist construction of non-Western women's identity (Hyam, 1991; Stoler, 1995). (Post) imperialism, the Cold War, and the emergence of capitalist international development ideologies and policies all had an impact on female instructions of normative bodily practises, and sexual subjectivities (Ahmed, 2005; Loomba, 2005; Manalansan and Cruz-Malavé, 2002; Manalansan, 2003). Bhabha (1994) highlights how globalisation and transnational institutions impacted the portrait of sexual identities from the end of the 20th century. Conceptual frameworks are aimed at the instruction of a female body type where the Western media dictates over what the ideal female body image should be like, while nations in the Global South are viewed as representations of the less-than-ideal minority culture embodied by the "other" female body (Spivak, 1999).

In post-9/11 communications, such perspectives became the mainstream socio-cultural

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representation of women's sexual body images and the fundamental instrument of social control. Right-wing Western politicians used populist instigation of nationalistic "clash of civilizations" media networks in anti-immigration movements which attacked women's sexuality as a means of disconnecting from the historical female otherness of colonies (Wieringa, and Sïvori, 2013). Undoubtedly, the diversity of current representations of women (across traditional media as well as the internet) and the manner in which they encourage disjunctive femininities demands a more theoretical understanding to examine how the female body has become the media discourse construction of socio-cultural representations.

b) Theoretical understandings of sexuality and media discourse

Women's bodies are made available for debate, dissection, and exhibition in today's dominant Western culture (Wykes, and Gunter, 2004). Gender relations are reproduced in the media discourse of body images. This is understood by feminist critiques, who offer an understanding as media representation being kinds of neoliberal mechanisms central to women's exploitation and oppression (Blood, 2005). Feminist perspectives agree on the fact that the images of femininity should be presented as polysemous, wide, and continuous. This is explained in relation to the proliferation of the concept of women's bodies being consumers and seekers of identity in the media everywhere ranging from opera performances to the internet (Wykes, and Gunter, 2004).

While feminist critiques point to the neoliberal marketisation of women's bodies, Malson (1998) discusses the patriarchal image of media discourse, where men retain the societal decision-making power whereas women are elucidated as the 'aesthetic' sex (Bordo, 1993a, 1993b; Wolf, 1990). Heidensohn reinforces such a viewpoint by claiming that patriarchy is embedded in women's femininity of compliance (1985). This is because women are taught how to be polite, in terms of personality and behaviour. Counihan (1999) argues that the Western value of patriarchy is probably the means used by the media to achieve effective neoliberal commerce that depends upon a specific construction of femininity (1999). Put differently, gender representation and the socio-cultural construction of women's bodies rely on the mass media to promote neoliberal policies because the media supports a climate wherein women's bodies are a legitimate site of reconstruction and a legitimate market for reconstructive products (Counihan, 1999).

Constructivism contributes to such a theoretical discussion as the ideal female body has been reduced to a patriarchal, neoliberal image of what it means to be a conventional family member and ideal consumer (Basu, et al., 2001; Mohanty, et al., 1991). Accordingly, constructivists view fashion, nutrition, fitness, and cosmetic re-modelling as construction sites to which popular culture and the majority of neoliberal consumerism have become contemporary socio-cultural femininity devices (Billig, 1991). Thus, the neoliberal analysis of women's body representation is aided by the construction of femininity and designed through media discourse, which has supported Western power through cultural forms and the human behaviours they foster (Wykes, and Gunter, 2004).

Foucauldian conceptions of sexuality and bio-politics, which refer to myriad strategies used for subjugating (female) bodies and controlling people (Lemke, 2001), is an important theoretical concept that has contributed to this debate. Foucault (1978) claims that sexuality has become a mechanism for the sovereign to govern human behaviour, resulting in a new type of female bio-political subjectivity. Biopolitics and the concept of women as docile bodies have become integral parts of the governance of colonies in the past and the present nation-states (Foucault, 1985). Thus, bio-politics is relevant to the current debate because it is being exploited as a tool to regulate and self-regulate women's bodies (Pigg, and Adams, 2005). They denote the central site for the construction of sexuality, as well as the policing of counter-normative images that are deemed dangerous to the patriarchal order's stability concerning what is conformally patriarchal and what is "subversive" (Bruner, 1990; Orbach, 1978). Eventually, the separation between the two is aided by intersectional conceptualisations of feminist criticisms of patriarchal and bio-power theories; an intersectional theoretical understanding transmitted through the media to define and regulate the typology of women's bodies that shapes socio-cultural representations.

III. Analysis

a) Mainstream media representation of the female body

The conventional media idealisation of slim femininity subtly compels women to be slimmer, skinny, and tender (Garner, 1997). This allows certain prescription of standards socio-cultural mainstream representation of beauty leading to a perception that the "morphed" female form represents "standard" femininity and "ordinary" gender roles (Morris, et al., 1989). Butler (1990) opines that gender is done to us rather than by us, as it is inscribed on the body. The socio-cultural images of female bodies are delivered not only through mainstream pictures of skeleton bodies but also through a discursive context where feminine pictures have social value. In this context, the mainstream media has a role to play, through their omnipresence, viewership, marketing, and assertion of continued patriarchal dominance (Silverstein, et al., 1988; Silverstein, et al., 1986). It can be argued that the media's portrayal of femininity is continually entangled in a socio-cultural construction developed by a gendered worldview whereby the worthiness of women is linked to their sexualisation. As Blood (2005) claims, if it is not politically proper to broadcast sexually suggestive tales, then (women) news is just not worthy to broadcast. The everyday story of womanhood in our media uses repetition, regularity, and authoritative sources to provide a mythological character that lends the impression of truth (Levi-Strauss, 1958). Media give us a picture of femininity that is restricted, white, and patriarchal — it is a view that serves men's and businesses' interests (MacDonald, 1995).

The ideal woman's body must be slim, devoid of "excess hair", deodorised, scented, and elegantly dressed in society. According to Orbach (1988), women must adhere to an ideal body shape in which girls are taught to "groom" themselves correctly through networking from the time they go to school to when they come back home. Through the decades, femininity models have always promoted ideals of flawless femininity and such notions have percolated through media channels from one generation to the next. Accordingly, in mainstream media, women are presented to the public if they are married, heterosexually open, parental, thin, but also economically appealing and renowned (Bruch, 1978). In other words, a slim body form is linked to personal, career, and skills to succeed.

b) Food, dieting, and the anxiety of standardised bodies

Food may take on a negative meaning for many women in an obsessive media discourse since it is perceived as a source of weight gain (Chernin, 1983; Orbach, 1978). Food pleasure supposedly constitutes a temptation that must be subdued by restricted eating habits to achieve some socially accepted beauty standard. Despite academic findings of cross-cultural disparities in body form standards, evidence has begun to emerge that non-Western groups, particularly those who have interacted with Western society, exhibit Western-style weight and shape anxieties. For example, a study conducted by Wassenaar et al. (2000) explored the linkage between negative body images and dieting attitudes among white and Asian women living in London. The researchers found that such connections were comparable links to blend into Western culture for fear of being decriminalised.

According to Blood (2005), the influenced image of women alters a cultural context that relies on promoting capitalism by utilising women's desire for independence and income, while convincing them to criticise their physiques so they can spend lavishly on measuring up to the socially acceptable standards of beauty. Wolf (1990) referred to this as a predominant dual-nature culture that expects women to conform to certain pre-determent criteria of beauty to enjoy themselves while being persuaded their true selves are inadequate; yet, they need not fear as they are capable of acquiring the projected self - a feminine copy.

Women impacted by mainstream adverts and media advertising are more likely to want to lose fat, according to large-scale polls (Button, et al., 1997; Serdulla, et al., 1993). From the 1980s until today, 82% of women globally started dieting or limiting their eating; this tendency has continued to grow annually (Jacobovits, et al., 1977). Explanations for these disparities have progressively been directed to the media discourses perpetuated by a patriarchal society where women need to be appealing to men who are the true breadwinners (Streigel-Moore, et al., 1996). Accordingly, feminists allege that an idealised, slim female form is over-represented, with potentially negative implications for women who suffer from eating disorders (Orbach, 1978). Certainly, the main mass media played a pivotal role in propagating the cultural ideal of beauty. Modern advertising, shopping, and entertainment systems develop vivid ideals of beauty that pressurise women to adhere to the prevailing body shape craze.

c) Power and docile female bodies

Many women's self-perceptions are now mediated by body image discourse/knowledge, which is actively building the cultural meanings we assign to diet, nutrition, and body dimension. A constant obsession with calories, nutrition, and skinniness that primarily affect women may emerge as the most influential normalising strategies of our millennium. This may ensure the production of self-monitoring and self-disciplining "docile bodies" who become obsessed with self-improvement and modification to adhere to such lofty standards of beauty (Bordo, 1993a).

As the effects of power upon the female body lead women to passively become societal docile bodies, other meanings or interpretations of women's negative experiences with food and body size are hidden, Specifically, surveillance through dieting and body shape make women establish what is "normal" and classifies them with respect to this standard (Jeffreys, 1985). The power of regulating dominant discourses of femininity shapes the way traditional feminine practises (such as dieting and other body-management strategies) educate the female body in ways of complying with societal standards, although these practises are frequently viewed as "power" and "control" (Bartky, 1988).

These norms effectively influence and define women's wants, feelings, and identities within the practical site of mainstream magazines and newspapers, including "training" women on how to view their bodies in contrast to that norm (Bordo, 1993a). Such normalised views of a feminine body cause women to become subjugated by societal power through daily practices, as societal power forces female bodies to accept patriarchal dominance (Bartky, 1988). Thus, women alter and even mutilate themselves to identify with standardised socio-cultural depiction. A woman must cultivate a beautiful self-image to be attractive to everyone else. Otherwise, she will be scrutinised and judged as an "otherising", "different" individual who does not fit into the predominant socio-cultural representation of beauty.

IV. Conclusions

Many women's difficulties with body acceptance are linked to a socio-cultural image of what an ideal feminine shape should be. The ability to normalise being thin and slender as societal standards of beauty and femininity to be normalised is mainly established by the media, which determines such socio-cultural norms (Binnie, 2004). Such normalisation of feminine beauty through media, as Levi-Strauss (1958) notes, has developed cultural and gender markers socially accepted as social truths. Media devices use to convey notions about 'body image' in a way that suits markets' financial aims. This, in turn, reproduces body image as a fundamental organising characteristic of women's understandings of their identities.

This essay discussed that the representation of female bodies is entrenched in the media's power to construct female thinness and their related discourses. By exploring the embedded socio-cultural representation of femininity, female bodies become the means by which a patriarchal order is reinforced in society. Accordingly, pressured to conform to the idealised norm of beauty, women are reduced to their sexualised bodies and become passive individuals or docile members of society. This study aimed to demonstrate the effect of the media in promoting female thinness and associated discourses on the topic of female body representation cultivates a patriarchal structure in society. The latter feeds capitalist markets by pushing women to work as clients to meet the idealised standard of feminine beauty. While women's identities are sexualized, feminist and counter-public critiques of such socio-cultural representations still remain far from deconstructing what has been recognised as the feminine regime of truth, and this study aims to build on such counter-public criticism.

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2. Authors must accept the privacy policy, terms, and conditions of Global Journals.
3. Ensure corresponding author's email address and postal address are accurate and reachable.
4. Manuscript to be submitted must include keywords, an abstract, a paper title, co-author(s') names and details (email address, name, phone number, and institution), figures and illustrations in vector format including appropriate captions, tables, including titles and footnotes, a conclusion, results, acknowledgments and references.
5. Authors should submit paper in a ZIP archive if any supplementary files are required along with the paper.
6. Proper permissions must be acquired for the use of any copyrighted material.
7. Manuscript submitted *must not have been submitted or published elsewhere* and all authors must be aware of the submission.

Declaration of Conflicts of Interest

It is required for authors to declare all financial, institutional, and personal relationships with other individuals and organizations that could influence (bias) their research.

Policy on Plagiarism

Plagiarism is not acceptable in Global Journals submissions at all.

Plagiarized content will not be considered for publication. We reserve the right to inform authors' institutions about plagiarism detected either before or after publication. If plagiarism is identified, we will follow COPE guidelines:

Authors are solely responsible for all the plagiarism that is found. The author must not fabricate, falsify or plagiarize existing research data. The following, if copied, will be considered plagiarism:

- Words (language)
- Ideas
- Findings
- Writings
- Diagrams
- Graphs
- Illustrations
- Lectures

- Printed material
- Graphic representations
- Computer programs
- Electronic material
- Any other original work

Authorship Policies

Global Journals follows the definition of authorship set up by the Open Association of Research Society, USA. According to its guidelines, authorship criteria must be based on:

1. Substantial contributions to the conception and acquisition of data, analysis, and interpretation of findings.
2. Drafting the paper and revising it critically regarding important academic content.
3. Final approval of the version of the paper to be published.

Changes in Authorship

The corresponding author should mention the name and complete details of all co-authors during submission and in manuscript. We support addition, rearrangement, manipulation, and deletions in authors list till the early view publication of the journal. We expect that corresponding author will notify all co-authors of submission. We follow COPE guidelines for changes in authorship.

Copyright

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Appealing Decisions

Unless specified in the notification, the Editorial Board's decision on publication of the paper is final and cannot be appealed before making the major change in the manuscript.

Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

Declaration of funding sources

Global Journals is in partnership with various universities, laboratories, and other institutions worldwide in the research domain. Authors are requested to disclose their source of funding during every stage of their research, such as making analysis, performing laboratory operations, computing data, and using institutional resources, from writing an article to its submission. This will also help authors to get reimbursements by requesting an open access publication letter from Global Journals and submitting to the respective funding source.

Preparing your Manuscript

Authors can submit papers and articles in an acceptable file format: MS Word (doc, docx), LaTeX (.tex, .zip or .rar including all of your files), Adobe PDF (.pdf), rich text format (.rtf), simple text document (.txt), Open Document Text (.odt), and Apple Pages (.pages). Our professional layout editors will format the entire paper according to our official guidelines. This is one of the highlights of publishing with Global Journals—authors should not be concerned about the formatting of their paper. Global Journals accepts articles and manuscripts in every major language, be it Spanish, Chinese, Japanese, Portuguese, Russian, French, German, Dutch, Italian, Greek, or any other national language, but the title, subtitle, and abstract should be in English. This will facilitate indexing and the pre-peer review process.

The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

Authors should carefully consider the preparation of papers to ensure that they communicate effectively. Papers are much more likely to be accepted if they are carefully designed and laid out, contain few or no errors, are summarizing, and follow instructions. They will also be published with much fewer delays than those that require much technical and editorial correction.

The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, “What words would a source have to include to be truly valuable in a research paper?” Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

For scanned images, the scanning resolution at final image size ought to be as follows to ensure good reproduction: line art: >650 dpi; halftones (including gel photographs): >350 dpi; figures containing both halftone and line images: >650 dpi.

Color charges: Authors are advised to pay the full cost for the reproduction of their color artwork. Hence, please note that if there is color artwork in your manuscript when it is accepted for publication, we would require you to complete and return a Color Work Agreement form before your paper can be published. Also, you can email your editor to remove the color fee after acceptance of the paper.

Tips for writing a good quality Social Science Research Paper

Techniques for writing a good quality homan social science research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of homan social science then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.

Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.
Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

19. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

20. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

21. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

22. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

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Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.
- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- o Single section and succinct.
- o An outline of the job done is always written in past tense.
- o Concentrate on shortening results—limit background information to a verdict or two.
- o Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- Explain the value (significance) of the study.
- Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

The Administration Rules

Administration Rules to Be Strictly Followed before Submitting Your Research Paper to Global Journals Inc.

Please read the following rules and regulations carefully before submitting your research paper to Global Journals Inc. to avoid rejection.

Segment draft and final research paper: You have to strictly follow the template of a research paper, failing which your paper may get rejected. You are expected to write each part of the paper wholly on your own. The peer reviewers need to identify your own perspective of the concepts in your own terms. Please do not extract straight from any other source, and do not rephrase someone else's analysis. Do not allow anyone else to proofread your manuscript.

Written material: You may discuss this with your guides and key sources. Do not copy anyone else's paper, even if this is only imitation, otherwise it will be rejected on the grounds of plagiarism, which is illegal. Various methods to avoid plagiarism are strictly applied by us to every paper, and, if found guilty, you may be blacklisted, which could affect your career adversely. To guard yourself and others from possible illegal use, please do not permit anyone to use or even read your paper and file.

Criterion for Grading a Research Paper (Compilation) by Global Journals

Please note that following table is only a Grading of "Paper Compilation" and not on "Performed/Stated Research" whose grading solely depends on Individual Assigned Peer Reviewer and Editorial Board Member. These can be available only on request and after decision of Paper. This report will be the property of Global Journals

Topics	Grades		
	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

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