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All communications should be addressed to:

The Editor:
SUB Journal of Public Health (SUBJPH)
Department of Public Health
State University of Bangladesh
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How Hospital Accreditation Systems Avoid Medical Malpractice? A Rational Overview

*MZ Karim[1], KR Alam[2], LTT Thao[1], NTN Hanh[1], MG Khue[1], Yasmin N[3]

Abstract

Medical malpractice is a global concern for healthcare organizations, practitioners as well as it endangers patient's safety. Only in USA, the cost of medical malpractice is estimated at about $55.6 billion a year and another $45.6 billion of which is spent on defensive medicine practiced insurance by physicians seeking to stay clear of lawsuits. The amount comprises 2.4% of the nation's total health care expenditure. In Bangladesh, ASK's publication Chikitshay Obohela (2008:150-185) reported 504 incidents of severe medical negligence leading to death or loss of organ during June 1995 to September 2008. In the meantime, Joint Commission International, a healthcare accreditation body published their 'staff qualifications and education (SQE)' standards on 2017 which are directing clear guidelines on how to prevent medical malpractice and make sure to preserve patient wellbeing. Although these guidelines are evidence based; still couldn't manage medical malpractices totally. Till today, medical malpractices have also been reporting even in JCI accredited hospitals, however the occurrence rate is much lower compared to non-accredited hospital.

Key words : Hospital Accreditation systems, Medical Malpractice, Patient Wellbeing.

Introduction

The concept that every person who enters into a learned profession undertakes to bring to the exercise of a reasonable degree of care and skill dates back to the laws of ancient Rome and England. Writings on medical responsibility can be traced back to 2030 BC when the Code of Hammurabi provided that "If the doctor has treated a gentlemen with a lancet of bronze and has caused the gentleman to die, or has opened an abscess of the eye for a gentleman with a bronze lancet, and has caused the loss of the gentleman's eye, one shall cut off his hands".[1]

Under Roman law, medical malpractice was a recognized wrong. Around 1200 AD, Roman law was expanded and introduced to continental Europe. After the Norman conquest of 1066, English common law was developed, and during the reign of Richard Coeur de Lion at the close of the 12thcentury, records were kept in the Court of Common Law and the Plea Rolls. These records provide an unbroken line of medical malpractice decisions, all the way to modern times. One early medical malpractice case from England, for example, held that both a servant and his master could sue for damages against a doctor who had treated the servant and made him more ill by employing "unwholesome medicine".[2] In 1532, during the reign of Charles V, a law was passed that required the opinion of medical men to be taken formally in every case of violent death; this was the precursor to requiring expert testimony from a member of the profession in medical negligence claims, to establish the standard of care.

[1] Hanh Phuc International Hospital, Ho Chi Minh City, Vietnam

[2] Universal Medical College and Hospital, Dhaka, Bangladesh

[3] Department of Public Health, The State University of Bangladesh, Dhaka

*Corresponding author: Dr. M Z Karim, Senior Adviser, Hanh Phuc International Hospital, Binh Duong Province, Ho Chi Minh City, Vietnam. email: drmzkarim@gmail.com

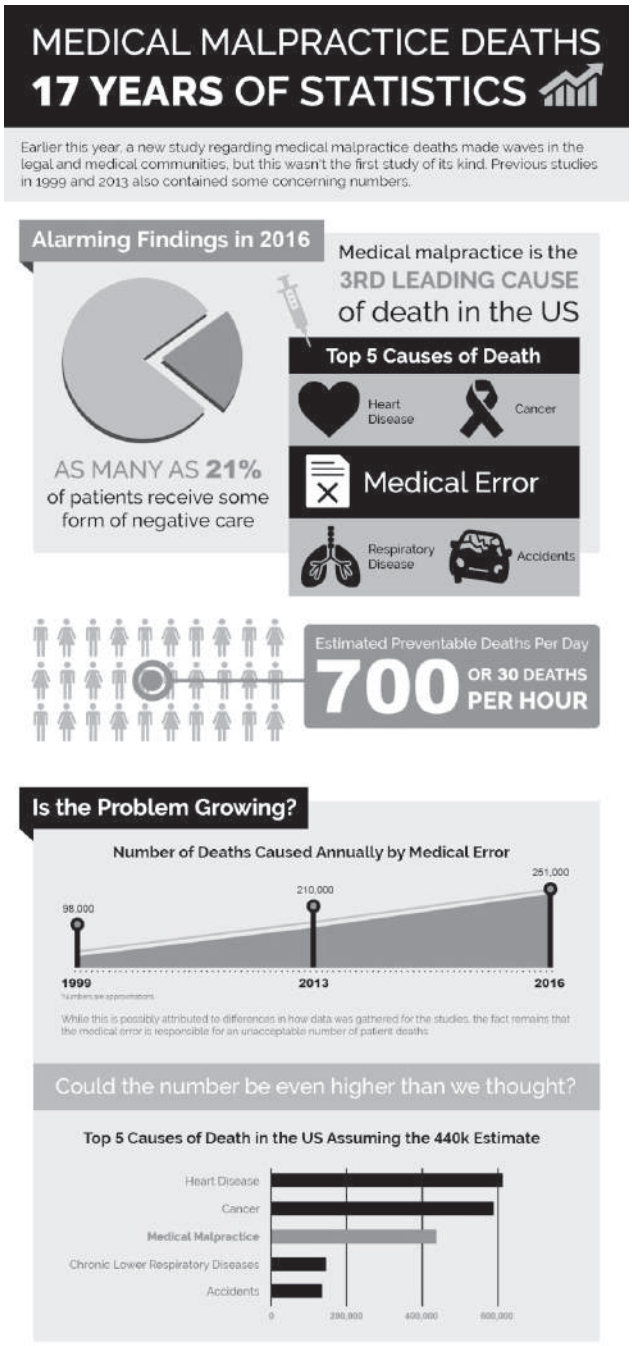


Fig.1: Injuris report on Medical Malpractice in USA, 1999-2013.

In the United States, medical malpractice suits first appeared with regularity beginning in the 1800s. [3] However, before the 1960s, legal claims for medical malpractice were rare, and had little impact on the practice of medicine.[4] Since the 1960s the frequency of medical malpractice claims has increased; and today, lawsuits filed by aggrieved patients alleging malpractice by a physician are relatively common in the United States. One survey of specialty arthroplasty surgeons reported that more than 70% of respondents had been sued at least once for medical malpractice during their career.[6] Since medical malpractice litigation is a pervasive phenomenon, it is likely surgeons will encounter it at some point in their career. Once a lawsuit is filed, the defendant physician must deal with unfamiliar legal territory, where the goals, professional conduct, and procedures followed by the parties to the litigation are different from the practice of medicine. The goal of this article is to provide how Joint Commission International hospital standards can avoid medical negligence, particular more emphasis on practitioners credentialing and privileging process.

Medical Malpractice Situation

Medical negligence includes a wide range of negligent conducts i.e. acts or omissions. If medical negligence is construed in a broader sense to include different types of medical malpractice and misconduct, then it becomes all the more important to categorically identify the nature and trends of such negligence or malpractice prevailing in a given jurisdiction. In order to determine the areas of intervention for law and policy reform, the predominant trends of medical negligence must be taken into account.

However, it is not meant to say that those types of negligence or malpracticewhich are less recurrent need not be taken seriously. But to address an overwhelmingly malfunctioning medical service system, prioritization is essential. Besides, assessments of the recurring trends will definitely renderan insight to the root of the problem. Most of the terribly shocking incidents ofmedical negligence shows some common traits, an analysis of which can givean idea about the missing triads.

Although there is no methodical study till date that categorically reveals the statistics of medical

negligence in Bangladesh; this information is enough to establish the general public contention regarding health care service. Based on the reported incidents of medical negligence published in different national dailies, ASK's publication Chikitshay Obohela (2008: 150-185) provides a list of 504 incidents of severe medical negligence leading to death or loss of organ etc. over the period from June 1995 to September 2008.[4] This figure obviously could be much higher if all the incidents had been counted, and if unreported incidents had also been taken into account. However, there are some limitations in Bangladesh that cannot be denied. According to a report of World Health Organization (WHO), expenditure on health sector should be $34 per person, whereas in Bangladesh it is only $5. In Bangladesh, the Doctor to Nurse ratio is 1:0.48, where the standard ratio should be 1:3.

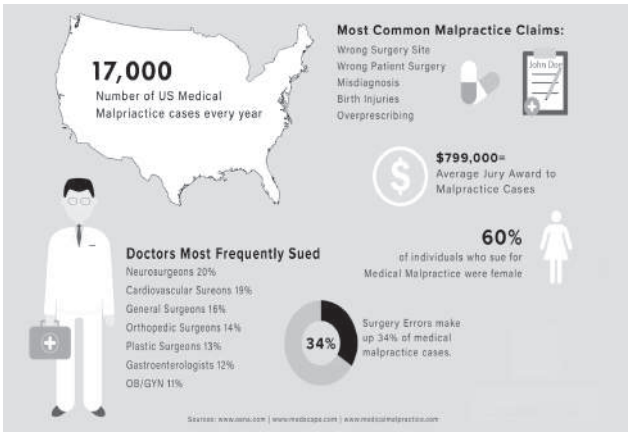


Fig.:2: Medical Malpractice distribution in USA between 1999 and 2013.

In the United States, the Diederich Healthcare has done an analysis of the medical malpractice payouts in 2016 as recorded by the National Practitioner Data Bank (NPDB). Taking the data from the NPDB's records, statistics showed an interesting curve where in 2016 noticed the first time that malpractice payout amounts declined since 2012, ending a three-year climb. However, the NPDB data in 2014 saw an increase of 4.4% in total payout amounts, bringing the total closer to the $4 Billion which is the highest thresold.[1] In fact, if the trend continues, 2015 could be the year that the United States crosses the $4 Billion threshold.

A new study reveals that the cost of medical malpractice both in public and private prayers in the United States is running at about $55.6 billion a year and $45.6 billion of which is spent on defensive medicine practiced by physicians seeking to stay clear of lawsuits.[5] The amount comprises 2.4% of the nation's total health care expenditure. There is a proportioned relationship between medical malpractice and negligent credentialing.[2-6]

Concept of negligent credentialing

Many patients know little more about their doctor's qualifications than what they see hanging from a clinic office wall. They are at their most vulnerable, trusting their family's health to a qualified healthcare professional that they must hope that there's more than meets the eye behind the confusing abbreviations listed across those medical school diplomas. Medical credentialing is increasingly important because it is the one process that allows patients to confidently place their trust in their chosen healthcare providers. Through a standardized process involving data collection, primary source verification and committee review by health plans, hospitals and other healthcare agencies, patients are assured of their healthcare professional's merit and experience. Credentialing is therefore a prime area for increased efficiency and process improvement. Generally, physicians need to engage in a tedious, paper-based credentialing process before a health plan can contract with the provider or a hospital can grant membership.

Medical errors are responsible for the deaths of 98,000 Americans each year and, by and large, this statistic impels industry leaders to fight for enhanced standards of competency and greater disclosure of recorded disciplinary actions against healthcare workers.[6]

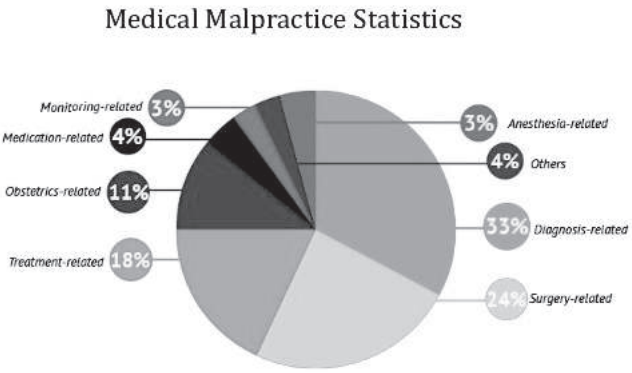


Fig.3: Clinical Distribution of Medical Malpractice, AANA report, USA

There is no tangible medical error data in developing countries such as Bangladesh, Vietnam, Cambodia, even in India. Yet organizations continue to use slow, manual and paper-based credentialing processes that will never truly guarantee transparency of providers' credentials. With one simple human error in handling the current clutter of paper documentation necessary to credentialing, a nurse can be authorized to perform services beyond his or her experience, or a physician with an expired license can be allowed to continue to practice. This can have serious negative consequences to patient safety, a physician's professional survival and an affiliated institution's reputation. Hospitals and other healthcare organizations have traditionally viewed credentialing as a check-the-box regulatory burden and have largely overlooked the benefits of a streamlined approach. Without an understanding of the cost benefits, risk mitigation and general efficiency of credentialing system, it's no wonder that most healthcare organizations only check credentials at the time of hire and then once every two or three years. More continuous monitoring is neglected because of the time and cost involved with manually validating employee records against various primary sources. In many cases, manual data acquisition and verification on a single provider can take anywhere from several days to several months to complete.

In identifying the basis for the "negligent credentialing" cause of action, the Massachusetts Court in USA reasoned that a hospital has a duty to its patients to safeguard them from "incompetent or careless" physicians, and that such a duty is foreseeable given that they deal with the public. This court declaration is related with a suspected physician had been credentialed and re-credentialed by a Massachusetts hospital despite a number of past and pending medical malpractice cases against him and having failed multiple board certification exams, in addition to eyesight that was apparently failing at the time of treatment. The underlying negligence action arose from a surgical procedure performed by the physician on the plaintiff. Notably, Massachusetts Court holding considers liability both when a hospital knows that the physician was "incompetent" and fails to take action, and when it fails to discover this incompetence prior to credentialing.

Hospital accreditation perspective

Accreditation is usually a voluntary program, sponsored by a non-governmental organization (NGO), in which trained external peer reviewers evaluate a healthcare organization's compliance and compare it with pre-established performance standards.[7] Quality standards for hospitals and other medical facilities were first introduced in the United States in the "Minimum Standard for Hospitals" developed by the American College of Surgeons in 1917. After World War II, increased world trade in manufactured goods led to the creation of the International Standards Organization (ISO) in 1947.[8] Accreditation formally started in the United States with the formation of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) in 1951. This model was exported to Canada and Australia in the 1960s and 1970s and reached Europe in the 1980s. Accreditation programs spread all over the world in the 1990s.[9] There are other forms of systems used worldwide to regulate, improve and market the services of healthcare providers and organizations, including Certification and Licensure. Certification involves formal recognition of compliance with set standards (e.g., ISO 9000 standards) validated by external evaluation by an authorized auditor. Licensure involves a process by which governmental authority grants permission, usually following inspection against minimal

standards, to an individual practitioner or healthcare organization to operate in an occupation or profession.[9] Although the terms accreditation and certification are often used interchangeably, accreditation usually applies only to organizations, while certification may apply to individuals, as well as to organizations.[8] The Joint Commission evaluates more than 20,000 healthcare organizations in USA and inspires them to excel in providing safe and effective care. The international arm of 'the Joint Commission' founded in 1994 by the name of Joint Commission International (JCI) has touched more than 130 countries and already accredited 1,013 Organizations. Joint Commission International (JCI) identifies measures, and shares best practices in quality and patient safety with the world. JCI accreditation is considered the gold standard in global health care. JCI consultants are the most skilled and experienced in the industry. The mission of JCI is to improve the safety and quality of care in the international community through the provision of education, publications, consultation, and evaluation services.

The JCI accreditationstandards for hospital are updating in every three years and the latest one is 6th edition which is effective from July, 2017 and it is valid till 2020. This 6th edition has 4 sections and 16 chapters. Among those 16 chapters, in section-II, one chapter is describing precisely about credentialing and privileging of healthcare practitioners under'**Staff Qualifications and Education (SQE)'**standards.The overview of SQE is about a health care organization needs an appropriate variety of skilled, qualified people to fulfill its mission and to meet patient needs. The organization's leader's work together to identify the number and types of staff needed based on the recommendations from department and service leaders. Recruiting, evaluating, and appointing staff are best accomplished through a coordinated, efficient, and uniform process. It is also essential to document applicant skills, knowledge, education, and previous work experience. It is particularly important to carefully review the credentials of medical and nursing staff, because they are involved in clinical care processes and work directly with patients. Orientation to the organization and programs, as well as orientation to specific duties related to the position is an important process. Health care organizations should provide staff with opportunities to learn and to advance personally and professionally. Thus, in-service education and other learning opportunities should be offered to staff. In order to ensure staff physical and mental health, productivity, staff satisfaction, and safe working conditions, the organization provides a staff health and safety program that can be offered by the hospital or provided through contracted services. The program includes matters affecting the health and well-being of staff such as initial employment health screening, control of harmful occupational exposures, preventive immunizations and examinations, safe patient handling, staff as second victims, and common work-related conditions.

The SQE chapter fundamentally mentions about HR planning. HR planning will start from the department/service leaders when define staffing requirements to meet the needs of patients. They define the desired education, skills, knowledge, and any other requirements for individual positions or for classes of similar positions; for example, intensive care nurses. To project staffing needs, department/service leaders use factors such as: the hospital's mission; the mix of patients served by the hospital and the complexity and severity of their needs; the diagnostic and clinical services provided by the hospital; the volume of inpatients and outpatients; the medical technology used in patient care. The hospital also needs to comply with laws and regulations that identify required education levels, skills, or other requirements of individual staff members or that defines staffing numbers or a mix of staff for the hospital. Individual staff members who are not licensed to practice independently have their responsibilities defined in current job descriptions.

The Credentials are documents issued by a recognized entity to indicate completion of requirements or the meeting of eligibility

requirements, such as a diploma from a medical school, specialty training (residency) completion letter or certificate, completion of the requirements of a medical professional organization, a license to practice, or recognition of registration with a medical or dental council. These documents, some of which are required by law or regulation, but some by hospital policy, must be verified from the original source that issued the document. Credentials can also be documents from individuals and entities that address some aspect of the applicant's professional history or competency, such as letters of recommendation, a history of all previous hospital medical staff appointments, records of previous clinical care, health history, picture, or police background check, for example. These documents may be required by hospital policy as part of the credential-gathering process, but are not verified from the source that issued the document unless required by hospital policy. This requirement for verification of the credential will vary by the position the applicant is seeking. For example, for an applicant for leader of a department/clinical service, the hospital may want to verify information regarding the individual's previous administrative positions and experience. Also, for clinical positions, the hospital may require a certain number of years of experience and thus would verify this level of experience.

Besides credentials, JCI also defines *the Medical staff* whoare all physicians, dentists, and other professionals who are licensed to practice independently (without supervision) and who provide preventive, curative, restorative, surgical, rehabilitative, or other medical or dental services to patients; or who provide interpretative services for patients, such as pathology, radiology, or laboratory services. All classifications of appointments, all types and levels of staff (employed, honorary, contract, visiting, and private community staff members), are included. Visiting staff include those who are locum residents, or invited experts, "master class" teachers, and others allowed providing patient care services temporarily. A hospital must define those other practitioners, such as "house officers," "hospitalists," and "junior doctors," that are no longer in training, but may or may not be permitted by the hospital to practice independently. The term medical staff is thus inclusive of all physicians and other professionals permitted to treat patients with partial or full independence, regardless of their relationship to the hospital. Note that in some cultures traditional medicine practitioners, such as acupuncturists, chiropractors, and others, may be permitted by law and the hospital to practice independently. Thus, they are considered medical staff members, and these standards apply in full. It is important to understand the process for issuing some credentials. For example, does the government agency that issues the license to practice base its decision on any or all of the following: verification of education, an examination of competence, training by a medical specialty association, or membership and payment of fees? Also, if admission to a specialty education program is based on verification of education and experience to date, the hospital does not need to verify education again. The process used by the government agency is documented by the hospital. If the hospital does not have direct knowledge of the process used by the agency to verify education, or the hospital has never had an opportunity to verify that the agency carries out the process as described, then the hospital needs to perform its own verification.

The verification is the process of checking the validity and completeness of a credential from the source that issued the credential. This process can be accomplished by an inquiry to a secure online database of, for example, those individuals licensed in the hospital's city or country. The process can also be accomplished by documenting a telephone conversation with the issuing source, or by sending an e-mail or conventional postal letter inquiry with the source. Verification of credentials from outside the country may be more complex andin some cases not possible. There should, however, be evidence of a credible effort to verify the credential.

A credible effort is characterized by multiple (at least two within 60 days) attempts by various methods (for example, phone, e-mail, and letter) with documentation of the attempts and result(s). The three following situations are acceptable substitutes for a hospital performing primary source verification of credentials:

1) Applicable to hospitals overseen directly by governmental bodies, the government's verification process, supported by the availability of published governmental regulations about primary source verification; plus government licensure, or equivalent such as a registration; and the granting of specific status (for example, consultant, specialist, and others) are acceptable. As with all third-party verification processes, it is important to verify that the third party (for example, a government agency) implements the verification process as described in policy or regulations and that the process meets the expectations described in these standards.

2) Applicable to all hospitals, an affiliated hospital that has already conducted primary source verification of the medical staff applicant is acceptable as long as the affiliated hospital has current Joint Commission International (JCI) accreditation with "full compliance" on its verification process. Full compliance means the hospital's Official Survey Findings Report indicates that all measurable elements are fully met, or any not met or partially met measurable element required to be addressed by Strategic Improvement Plan (SIP) actions have been addressed and are now in full compliance.

3) Applicable to all hospitals, the credentials have been verified by an independent third party, such as a designated, official, governmental, or nongovernmental agency, as long as the following conditions apply: Any hospital that bases its decisions in part on information from a designated, official, governmental, or nongovernmental agency should have confidence in the completeness, accuracy, and timeliness of that information. To achieve this level of confidence in the information, the hospital should evaluate the agency providing the information initially and then periodically thereafter to ensure that JCI standards continue to be met.

It is important to understand the process for issuing some credentials. For example, does the government agency that issues the license to practice base its decision on any or all of the following: verification of education, an examination of competence, training by a medical specialty association, or membership and payment of fees? Also, if admission to a specialty education program is based on verification of education and experience to date, the hospital does not need to verify education again. The process used by the government agency is documented by the hospital. If the hospital does not have direct knowledge of the process used by the agency to verify education, or the hospital has never had an opportunity to verify that the agency carries out the process as described, then the hospital needs to perform its own verification.

At the time of the initial JCI accreditation survey, hospitals are required to have completed primary source verification for new practitioners who joined the medical staff within the twelve (12) months leading up to the initial survey. During the twelve (12) months following the initial survey, hospitals are required to complete primary source verification for all other medical staff members. This process is accomplished over the 12-months post-survey period according to a plan that places priority on the verification of the credentials of active medical staff providing high-risk services. Note: This exception refers only to the verification of credentials. All medical staff members have to have their credentials gathered and reviewed, and their privileges granted. There is no "phasing in" of this process.

The appointment is the process of reviewing an initial applicant's credentials to decide if the individual is qualified to provide patient care services that the hospital's patients need and the

hospital can support with qualified staff and technical capabilities. For initial applicants, the information reviewed is primarily from outside sources. Hospital policy identifies the individuals or mechanism accountable for this review, any criteria used to make decisions, and how decisions will be documented. Hospital policy identifies the process of appointment of independent practitioners for emergency needs or a temporary period. For such individuals, the appointment and identification of privileges are not made until at minimum licensure has been verified.

The reappointment is the process of reviewing the medical staff member's file to verify

- continued licensure;
- that the medical staff member is not compromised by disciplinary actions of licensing and
- certification agencies;
- that the file contains sufficient documentation for seeking new or expanded privileges or duties in the hospital; and
- that the medical staff member is physically and mentally able to provide patient care and treatment without supervision.

The information for this review is from both internal and external sources. When a clinical department/service (for example, a subspecialty service) does not have a leader, there is a hospital policy that identifies who will do the review of the professionals in that department/service. The credential file of a medical staff member should be a dynamic source of information and under constant review. For example, when a medical staff member presents a certificate of achievement related to an advanced degree or advanced specialty training, the new credential should be immediately verified from the issuing source. Similarly, when an outside agency investigates a sentinel event related to a medical staff member and issues sanctions, this information should be used promptly to reevaluate the clinical privileges of the medical staff member. To ensure that medical staff files are complete and accurate, the files are reviewed at least every three years, and a note in the file indicates any actions taken or that no action is necessary and the appointment to the medical staff continues.[7-10]

Medical staff membership may not be granted if the hospital does not have the special medical equipment or staff to support the professional practice of the individual. For example, a nephrologist seeking to provide dialysis services at the hospital, may not be granted medical staff membership if the hospital does not provide such services. Finally, when an applicant's licensure/ registration has been verified from the issuing source, but other documents—such as education and training—have yet to be verified, the individual may be granted medical staff membership, and privileges may be identified for the applicant for a period not to exceed 90 days. Under such circumstances, these individuals may not practice independently and require supervision until all credentials have been verified. Supervision is clearly defined in hospital policy as to level and conditions, and is not to exceed 90 days.

The determination of a medical staff member's current clinical competence and making a decision about what clinical services the medical staff member will be permitted to perform, often called *privileging*, is the most critical determination a hospital will make to protect the safety of patients and to advance the quality of its clinical services. Considerations for clinical privilege delineation at initial appointment include:

(a) Decisions regarding a practitioner's clinical competence, and thus what clinical privileges he or she is to be granted, are based primarily on information and documentation received from outside the hospital. The source may include specialty education programs, letters of recommendation from previous medical staff appointments and/or close colleagues, and any quality data that may be released to the hospital. In general, these sources of information, other than those from educational institutions such as medical specialty programs, are not verified from the source

unless required by hospital policy. Although these outside sources may not give clear, objective evidence of current clinical competence, at least the areas of presumed competence are identified. Ongoing professional practice review will validate the areas of presumed competence;

(b) There is no one best way to delineate those clinical activities, the new medical staff member is privileged to perform. Specialty training programs may identify and list the general competencies of that specialty in areas of diagnosis and treatment—with the hospital assigning privileges to diagnose and treat patients in those specialty competency areas. Other organizations may choose to list out in detail each type of patient and treatment procedure;

(c) Within each specialty area the process of privilege delineation is uniform; however, this process may not be the same in all specialty areas. Thus, the privileges will be different for general surgeons, pediatricians, dentists, or radiologists, for example; however, within each of these groups the process for privilege delineation will be standardized. For family practitioners, primary care practitioners, and others that provide a variety of general medicine, obstetrics, pediatrics, and other services, the privilege delineation for these practitioners identifies which "specialty" services can be provided;

(d) The decision as to how clinical privileges are delineated in a specialty area is linked with other processes, including selection by the department/service leaders of what processes are to be monitored through data collection; use of those data in the ongoing monitoring and evaluation process of the medical staff in the department/service; and use of the monitoring data in the process of reappointment and the renewal of privileges;

(e) In addition to the privileges granted in relation to the individual's education and training, the hospital identifies areas of high risk, such as the administration of chemotherapeutic agents, other classes of drugs, or high-risk procedures for which the medical staff member is explicitly granted such privileges or denied such privileges. The high-risk procedures, drugs, or other services are identified by each specialty area and evident in the privilege delineation process. Finally, some procedures may be high risk due to the instrumentation used, such as in the case of robotic and other computerized or remotely operated surgical or therapeutic technology. Also, implantable medical devices require skills in implantation, calibration, and monitoring for which privileges should be specifically granted.

(f) Also, privileges are not granted if the hospital does not have the special medical technology or staff to support the exercise of a privilege. For example, a nephrologist competent to do dialysis, or a cardiologist competent to insert stents, are not privileged for these procedures if the hospital does not provide such services.

(g) Finally, when an applicant's licensure/registration has been verified from the issuing source, but other documents—such as education and training—have yet to be verified, privileges are identified for the applicant.

However, these applicants may not practice independently until all credentials have been verified by the processes described above. Such supervision is clearly defined in hospital policy as to level, conditions, and duration.[11-16]

Ongoing Monitoring and Evaluation of Medical Staff Members: Ongoing monitoring and evaluation compose the process of continuously accumulating and analyzing data and information on the behaviors, professional growth, and clinical results of medical staff members. The department/service leader is responsible for the integration of the data and information on medical staff and taking appropriate actions. Immediate actions may be to

counsel the staff member, place him or her under supervision, limit privileges, or other measures intended to limit risks to patients and improve quality of care and patient safety. Longer-term actions include synthesizing the data and information into a recommendation for continued medical staff membership and clinical privileges. This process occurs at least every three years. Other actions may be to note to other medical staff members the benchmark behaviors and clinical results evident in the data and information of the medical staff member. The ongoing monitoring and evaluation of medical staff members provides critical information to the process of maintaining medical staff membership and to the process of granting clinical privileges. Although three-year cycles are required for renewing medical staff membership and clinical privileges, the process is intended to be ongoing and dynamic. Critical quality and patient safety incidents can arise if a medical staff member's clinical performance issues are not communicated and acted on when they arise.

The process of ongoing monitoring and evaluation is intended to improve individual practices as they relate to high-quality, safe patient care; provide the basis for reducing variation within a department/service through comparisons among colleagues and the development of practice guidelines and clinical protocols; and provide the basis for improving the results of the entire department/service through comparisons with external benchmark practices and published research and clinical results. The ongoing monitoring and evaluation of medical staff members encompasses three general areas—behaviors, professional growth, and clinical results. Medical staff members are models and mentors in creating a safe culture in a hospital. A safe culture is characterized by full participation by all staff, without fear of reprisal or marginalization. Safe cultures also include high respect between professional groups in which disruptive and other behaviors do not occur. Staff feedback through surveys and other mechanisms can shape desired behaviors and can support medical staff role models.

An evaluation of behaviors can include evaluation of whether a medical staff member understands and supports the hospital's code of behavior and the identification of acceptable and unacceptable behaviors; an absence of reported behaviors by the medical staff member that are identified as unacceptable; and gathering, analysis, and use of information and data from staff surveys and other sources regarding the culture of safety in the hospital. The ongoing monitoring and evaluation process should indicate, as part of the review process, the relevant achievements and challenges of the medical staff member in efforts to be a full participant in a safe and just culture. Medical staff members grow and mature as the organizations in which they practice evolve, introducing new patient groups, technologies, and clinical science. Each medical staff member, to varying degrees, will reflect growth and improvement in the following important dimensions of health care and professional practice.

In summary, the ongoing medical staff member monitoring and evaluation process is standardized by type of medical staff member and/or department or clinical services unit; uses the monitoring data and information for internal comparisons to reduce variation in behaviors, professional growth, and clinical results; uses the monitoring data and information for external comparisons with available, objective, evidence-based best practice or benchmark sources of clinical result data and information; is conducted by the individual's department or service head, senior medical manager, or a medical staff review body; includes the monitoring and evaluation of senior medical staff and department heads by an appropriate professional; and provides information that will

be documented in the medical staff member's file, including the results of reviews, actions taken, and the impact of those actions on privileges (if any).

Finally, while the process of monitoring and evaluation of medical staff members is intended to be ongoing, and data and information may be accumulated on an ongoing basis, hospital policy requires a review at least once during a 12-month period. The review is conducted by the individual's department or service head, a senior medical manager, or a medical staff review body. Findings, conclusions, and any actions taken or recommended are recorded in the medical staff member's file. When the findings affect the appointment or privileges of the medical staff member, there is a process to take action on the findings. Such immediate "for cause" actions are documented in the practitioner's file and are reflected in the list of clinical privileges. Notification is sent to those sites in which the practitioner provides services.[17-25]

Medical Staff Reappointment and Renewal of Clinical Privileges: Hospital policy identifies the individual, such as the leader of a specialty service; or mechanism, such as a medical staff office when a department/service leader is not present or accountable for this review; any criteria used to make decisions; and how decisions will be documented. The credential file of a medical staff member should be a dynamic source of information and under constant review. For example, when a medical staff member presents a certificate of achievement related to an advanced degree or advanced specialty training, the new credential should be immediately verified from the issuing source. Similarly, when an outside agency investigates a sentinel event related to a medical staff member and issues sanctions, this information should be used promptly to reevaluate the clinical privileges of the medical staff member.

To ensure that medical staff files are complete and accurate, the files are reviewed at least every three years, and a note in the file indicates any actions taken or that no action is necessary and the appointment to the medical staff continues. Considerations for clinical privilege delineation at reappointment include:

(a) Medical staff members may be granted additional privileges based on advanced education and training. The education and training are verified from the source providing the education or training or issuing the credential. The full exercise of the added privilege may be delayed until the verification process is complete or when there is a required period of supervised practice prior to granting an unrestricted new privilege; for example, a required number of supervised cases of robotic surgery.

(b) Medical staff members may have their privileges continued, limited, reduced, or terminated based on the results of the ongoing professional practice review process; limitations placed on the individual's privileges by an outside professional, governmental, or regulatory agency; the hospital's findings from an evaluation of a sentinel or other event; the health of the practitioner; or the request of the practitioner.

Nursing Staff Credentials: The hospital needs to ensure that it has a qualified nursing staff that appropriately matches its mission, resources, and patient needs. The nursing staff is responsible for providing direct patient care. In addition, nursing care contributes to the overall patient outcomes. The hospital must ensure that nurses are qualified to provide nursing care and must specify the types of care they are permitted to provide if not identified in laws or regulations. The hospital ensures that each nurse is qualified to provide safe and effective care and treatment to patients by

(a) understanding the applicable laws and regulations that apply to nurses and nursing practice;

(b) gathering all available credentials on each nurse, including at least evidence of education/training; evidence of current licensure; evidence of current competence through information from other sources in which the nurse was employed; and letters of recommendation and/or other information the organization may require, such as health history, pictures, among others; and

(c) verification of the essential information, such as current registry or licensure, particularly when such documents are periodically renewed, and any certifications and evidence of completion of specialized or advanced education.

The hospital needs to make every effort to verify essential information, even when the education took place in another country and a significant time ago. Secure websites, documented phone confirmation from the source, written confirmation, and third parties, such as a designated, official governmental or nongovernmental agency, can be used. The situations described for medical staff are considered acceptable substitutes for an organization performing primary source verification of nurse credentials.[26-29]

Standards compliance requires that primary source verification is carried out for new nurse applicants beginning 12 months prior to initial accreditation survey; and current employed nurses during a period of 12 months following the initial survey. This is accomplished according to a plan that places priority on the verification of the credentials of nurses providing high-risk services, such as in the operating theatre, emergency department, or intensive care unit. When verification is not possible, such as with the loss of records in a disaster, this is documented. The hospital has a process that ensures that the credentials of each contract nurse have also been gathered, verified, and reviewed to ensure current clinical competence prior to assignment. The hospital gathers and maintains a file of each nurse's credentials. The files contain current licenses when regulations require periodic renewal. There is documentation of training related to any additional competencies.[29]

Review of the qualifications of the nursing staff member provides the basis for assigning job responsibilities and clinical work assignments. Work assignments may be described in more detail in a job description or described in other ways or documents that support how nurse staffing assignments are made, such as assignment to geriatric or pediatric units or to high-acuity units. Assignments made by the hospital are consistent with any applicable laws and regulations regarding nursing responsibilities and clinical care. The nursing staff's essential clinical role requires them to actively participate in the hospital's clinical quality improvement program. If at any point during clinical quality measurement, evaluation, and improvement, a nursing staff member's performance is in question, the hospital has a process to evaluate that individual's performance. The results of reviews, actions taken, and any impact on job responsibilities are documented in the nurse's credentials or other file.[28]

Other Health Care Practitioners: Hospitals may employor permit a variety of other health professionals to provide care and services to their patients or to participate in patient care processes. For example, these professionals include nurse midwives, surgical assistants, emergency medical care specialists, pharmacists, and pharmacy technicians. In some countries or cultures, this group also includes traditional healers or those who provide alternative services

or services that complement traditional medical practice (for example, acupuncture herbal medicine). Often, these individuals do not actually practice in the hospital; instead, they refer to the hospital or provide continuing or follow-up care for patients in the community.

Many of these professionals complete formal training programs and receive licenses or certificates or are registered with local or national authorities. Others may complete less-formal apprentice programs or other supervised experiences. For those other health professionals permitted to work or to practice in the hospital, the hospital is responsible for gathering and verifying their credentials. The hospital must ensure that other health professional staff are qualified to provide care and treatments and must specify the types of care and treatment they are permitted to provide if not identified in laws or regulations.[33-38]

When there is no required formal education process, licensure, or registry process or other credential or evidence of competency, this is documented in the individual's record. When verification is not possible, such as with the loss of records in a disaster, this is documented in the individual's record. The hospital gathers and maintains a file of each health professional's credentials. The files contain current licenses or registry when regulations require periodic renewal.[31-40]

Impact of accreditation on hospitals' performance :

General accreditation programs appear to improve the structure and process of care, with a good body of evidence showing that accreditation programs improve clinical outcomes. The best study that evaluated this area was the Quality Assurance Program (QAP) trial. Randomization of this important trial controlled for important factors known to affect a hospital's ability to comply with and achieve accreditation standards for indicators such as hospital size, staffing levels, staff qualifications and budget levels.[46]

The first quality-indicator survey occurred, on an average, 10 months after the COHSASA baseline survey in the intervention hospitals. It is possible that these hospitals had already made considerable progress that was not captured because the first round of the survey was too late to be a true baseline, which may explain the lack of effect of accreditation on the selected quality indicators.[48] Evidence is consistent from several studies to support a positive impact of general accreditation programs on different specific clinical outcomes, including the management of AMI, trauma, ambulatory surgical care, infection control and pain management.[48] Several studies have shown a significant positive impact of subspecialty accreditation programs in improving clinical outcomes in different subspecialties, including sleep medicine, chest pain management and trauma management.[50]

General accreditation programs of health organizations and accreditation of subspecialties should be encouraged and supported to improve the quality of healthcare services. One of the most important barriers to the implementation of accreditation programs is the skepticism of healthcare professionals in general and physicians in particular about the positive impact of accreditation programs on the quality of healthcare services.[49,50] There is a need to educate healthcare professionals about the potential benefits of accreditation to resolve any skeptical attitude of healthcare professionals towards accreditation.

The accreditation standards largely review processes of care and not clinical outcomes. A crucial issue with the choice of implementing an accreditation model is ultimately whether accreditation even ensures quality, or has positive effects on the quality of care delivered by the accredited organizations. Achieving accreditation is typically regarded as a predictor of clinical care and organizational effectiveness by funders, institutions, patients and the public. This is meant to create confidence in the quality of care provided by an organization. However, there is no real guarantee that an organization which is well assessed during the accreditation

process will always provide high quality care.[50] Accreditation only guarantees that the organization meets standards which are deemed necessary by the accreditation organization. Thus, although we are living in an increasingly evidence-based world, there has been little concrete evidence about the impact that individual accreditation programs have on the healthcare system, healthcare providers and other stakeholders.

Discussion

Referring a real situation where a patient wakes up in the hospital after undergoing brain surgery to discover that she can't feel or move her right foot. Going in, she knew surgery of this magnitude could possibly result in complications, but she finds this scenario particularly worrisome because she was scheduled to have the operation on the right side of her brain, not the left. To make matters worse, the surgeon who performed the ill-fated surgery is amazingly able to escape any disciplinary action because he simply surrendered his license in that particular state and moved his practice to another state. Incredibly, similar events happen again. It gets worse. The surgeon in question, now facing new malpractice lawsuits to which he moved, relocates yet again under the same circumstances and is now practicing (one could assume less than spectacularly) in a third geographic locale. While this (actual) case may be extreme, it is by no means isolated.[39]

Fig.3: X-ray showing scissor in the abdomen after surgery.

At leading hospitals all across the country, where quality patient care is of the utmost concern, administrators often struggle with the task of effectively credentialing prospective physicians. There are two main reasons for this: first, medical board rules and requirements vary from state to state, country to country; making it extremely difficult to hold physician applicants from different parts of the country to a single set of credentialing standards; second, appropriate credentialing and privileging training has been insufficient on the whole, due largely to a lack of appropriate hospital personnel and resources. There are logical steps hospitals can take, however, to prevent a potentially devastating scenario like the aforementioned from taking place. Following are five key considerations for physician credentialing and privileging success.

1. *It's all about process:* it should go without saying that no practitioner should be allowed to provide patient care until he or she has successfully satisfied the requirements of a stringent qualification, or disqualification, process. Begin by collecting the appropriate information i.e., formal education, training and certification. Then verify that information through primary sources to ensure that what the practitioner provided is valid.

2. *There's no place for complacency:* since the ultimate goal of any provider is to deliver the best patient care possible, healthcare organizations must take whatever steps necessary to develop a sound credentialing and privileging process and to revisit and reevaluate that process regularly to ensure optimal results. Screening incoming physicians and assigning appropriate privileges can be a time-consuming task even under the best circumstances. The more streamlined your processes are, the sooner you'll have the appropriate physicians caring for patients whose conditions fall within their specialties.

3. *Think, and look, outside the box:* when you're evaluating a credentials file, having all the appropriate documents is important, but it

doesn't necessarily give you the whole picture. Sometimes what isn't included in a physician's background document is as important as what is included, and it often takes a highly trained credentialing expert to pick up on what could be important degrees in an applicant's file.

4. *Appropriate, highly trained personnel are vital:* lack of credentialing and privileging success is almost always due to improper/ incomplete training or insufficient personnel and resources. Sadly, incomplete or erroneous processes or decisions based on incorrect information (and the resulting faulty certification of physicians) can easily compromise patient care. It's imperative that your organization takes the appropriate steps to avoid risk by having the right, most highly trained staff possible. When that proves difficult due to internal staffing limitations, it may be appropriate to seek outside help from a trusted organization with a long history of credentialing and privileging success.

5. *Get buy in at every level:* we're not just talking about properly training credentialing staff either. It's also hugely important that your physician leaders, committee members, senior management, board members, etc. all understand the complexities of credentialing and privileging and the importance of implementing the processes necessary to get it right. Obtaining their buy in at the beginning will kick off your process improvement initiative on the right foot and improve your chances of success.

For healthcare providers that do get it right, the results are substantial. In addition to avoiding the potential of the compliance risk situation cited in the brain surgery case; it eventually reduced costs and risks, to both patient and hospital, quicker performance, enhanced revenue and, most importantly of course, improved patient care.

The JCI standards under SQE are mentioning about 25 standards and 98 measurable elements (MEs) which are directing to prevent malpractice and ensure patient safety. Apollo Hospital Dhaka is the only hospital in Bangladesh which is accredited Since 28 April 2008. Generally, JCI surveyors whiling visiting hospital for accreditation survey will conduct several interviews and audits to make sure about the compliance of those 25 standards and 98 MEs related to hospital staff credentialing and privileging. Each survey should be conducted separately and in different locations. The physician surveyor(s) will conduct the medical staff interview, and the nurse and/or administrator surveyor(s) will conduct the interview for nursing staff and all other staff. The survey team may elect to conduct up to four separate interviews, depending on the size of the hospital and the types of staff present in the organization. Staffs who may be interviewed are as follows:

1. Medical Staff, Medical Students, and Trainees:
- Elected or appointed senior leader of the medical staff and/or the medical leader (if applicable)
- Representatives of the medical staff involved in credential collection and review
- Leader of medical education programs
- Representative of leadership responsible for management of medical education

2. Nursing Staff:
- Manager of the human resources department
- Chief nurse
- Other representatives of the nursing staff involved in the orientation, education, and training of nursing staff

3. Other Health Professional Staff:
- Manager of the human resources department
- Representatives of the group(s) involved in the orientation, education, and training of health professional staff

4. Other Hospital Staff:
- Manager of the human resources department
- Representatives of the group(s) involved in the orientation, education, and training of

hospital staff

The JCI surveyor(s) provides instructions on the first day of the survey, generally during the Document Review session, regarding this session and the preparation of the files for review. At that time, the survey team provides the leader of human resources with a list that identifies the type and number of staff files, including medical staff files, selected for review during this interview session. Sample preformatted worksheets are also supplied to HR team to provide information to the JCI surveyors. The survey team will provide copies of the current survey tool on the first day of the survey. The surveyors may ask the following documents/ materials that needed to review:

- Policies and procedures related to human resources/staff management, staff credentials, and staff orientation and education
- A sample of organization staff files and health care practitioner staff credential files
- A sample of medical staff files

It is important to know that the tools used by the surveyor(s) throughout the survey may change at any time to continually improve the survey team's abilities to score the organization's compliance with standards fairly and accurately. The tool merely reflects current JCI-312 standards and 1269 MEs (measurable elements).[47]

Conclusion

Accreditation system like JCI put a strengthen standards to meet the credentials and privileging of healthcare professionals to make sure the right profession is treating the right patient with right aptitude. Besides, JCI also concern about violence in the workplace which has become an increasingly common problem in healthcare organizations. Staff shortages, increased patient acuity, and the misconception that violence does not occur in healthcare organizations or if violence does occur, it is part of the job are just a few of the barriers to acknowledging that workplace violence exists and to developing violence prevention programs.[26–31]

The caregiving environment often presents emotional challenges that can be mentally and physically stressful.[25–29] Health care practitioners are often the second victims of errors and sentinel events. When patients and their family members are compromised by clinical errors, the remorse and anxiety felt by caregivers and their feelings of moral distress are frequently not acknowledged or addressed. Hospitals need to acknowledge that the emotional health and performance of health care practitioners involved in adverse and sentinel events can have an impact on the quality and safety of patient care.[30–33]

There is constant evidence showing that accreditation programs like JCI improves the process of care and increase patient and staff safety provided by healthcare organizations. Other considerable evidence is to demonstrate that accreditation programs improve clinical outcomes of a wide spectrum of clinical conditions and avoid malpractices. Usually, any accreditation program helps healthcare practitioners to work in a safe and secure environment to deliver best patient services and avoid misunderstanding. Even any healthcare organization only follows those SQE hospital standards can overall reduce medical malpractice by introducing 3R (rights) steps: Right practitioners in Right specialty with Right patient service.

Footnotes

The author's certify that they have no commercial associations (eg, consultancies, stock ownership, equity interest, patent/licensing arrangements, etc) that might pose a conflict of interest in connection with this article.

References

1. Powis Smith JM. Origin & History of Hebrew Law. Chicago, IL: University of Chicago Press; 1931.
2. Everad v. Hopkins, 80 English Reports 1164 (1615).
3. DeVille KA. Medical Malpractice in Nineteenth-Century America: Origins and Legacy. New York, NY: NYU Press; 1990.
4. TaposBandhu Das. Medical Negligence and Fraudulent Practice in Private Clinics: Legal Status and Bangladesh Perspective. April 2013. http://www.askbd.org/ask/wp-content/uploads/2014/02/Report-Medical-Negligence.pdf.
5. Upadhyay A, York S, Macaulay W, McGrory B, Robbennolt J, Bal BS. Medical malpractice in hip and knee arthroplasty. J Arthroplasty. 2007; 22(6 Suppl 2):2–7.
6. Sloan FA, Bovbjerg RR, Githens PB. Insuring Medical Malpractice. New York, NY: Oxford University Press; 1991.
7. Shaw CD. Toolkit for Accreditation Programs.The International Society for Quality In Health Care. Australia: 2004.
8. Montagu D. London: Department for international development health systems resource centre; [Last accessed on 2003]. Accreditation and other external quality assessment systems for healthcare: Review of experience and lessons learned. Available from: http://www.dfidhealthrc.org/publications/health_service_delivery/Accreditation.pdf
9. Shaw CD. External quality mechanisms for health care: Summary of the ExPeRT project on visitatie, accreditation, EFQM and ISO assessment in European Union countries. External peer review techniques. European foundation for quality management. International organization for standardization. Int J Qual Health Care. 2000;12:169–75.
10. Steege AL, Boiano JM, Sweeney MH. NIOSH health and safety practices survey of healthcare workers: Training and awareness of employer safety procedures. Am J Ind Med. 2014 Jun;57(6):640–652.
11. Connor TH, Lawson CC, Polovich M, McDiarmid MA. Reproductive health risks associated with occupational exposures to antineoplastic drugs in health care settings: A review of the evidence. J Occup Environ Med. 2014 Sep;56(9):901–910.
12. National Institute for Occupational Safety and Health. Workplace Solutions: Medical Surveillance for Healthcare Workers Exposed to Hazardous Drugs. NIOSH Publication No. 2013-103. Nov 2012. Accessed Dec 5, 2016. http://www.cdc.gov/niosh/docs/wp-solutions/2013-103/pdfs/2013-103.pdf.
13. Rim KT, Lim CH. Biologically hazardous agents at work and efforts to protect workers' health: A review of recent reports. Saf Health Work. 2014 Jun;5(2):43–52.
14. Centers for Disease Control and Prevention. Recommended vaccines for healthcare workers. (Updated: Apr 15, 2014.) Accessed Nov 15, 2016. http://www.cdc.gov/vaccines/adults/rec-vac/hcw.html
15. Shefer A, Atkinson W, Friedman C, Kuhar DT, Mootrey G, Bialek SR, Cohn A, Fiore A, Liang JL, Lorick SA, Marin M, Mintz E, Murphy TV, Newton A, Fiebelkorn AP, Seward J, Wallace G.. Immunization of health-care personnel: Recommendations of the Advisory Committee on immunization practices (ACIP). MMWR Recomm Rep. 2011 Nov 25;60 (RR-7):1–45.
16. Hallmark B, Mechan P, Shores L. Ergonomics: Safe patient handling and mobility. NursClin North Am. 2015 Mar;50(1):153–166.
17. Oermann MH. New standards for safe patient handling and mobility. J Nurs Care Qual. 2013 Oct–Dec; 28 (4): 289–291.
18. Campbell C, Burg MA, Gammonley D. Measures for incident reporting of patient violence and aggression towards healthcare providers: A systematic review. Aggression and Violent Behavior. 2015; 25:314–322.
19. Kaplan B; Pişkin R, Ayar B. Violence against health care workers. Medical Journal of Islamic World Academy of Sciences. 2013;21(1):4–10.
20. Zhao S, LiuH,Ma H, Jiao M, Li Y, Hao Y, Sun Y, Gao L, Hong S, Kang Z, Wu Q,Qiao H. Coping with workplace violence in healthcare settings: Social support and strategies. Int J Environ Res Public Health. 2015 Nov 13;12(11):14429–14444.
21. Mira JJ, Lorenzo S, Carrillo I, Ferrús L, Pérez-Pérez P, Iglesias F, Silvestre C, Olivera G, Elena Zavala, Nuño-Solinís R, Maderuelo-Fernández JA, Vitaller J, Astier P. Interventions in health organisations to reduce the impact of adverse events in second and third victims. BMC Health Serv Res. 2015 Aug 22; 15 (341).
22. Edrees H, Connors C, Paine L, Norvell M, Taylor H, Wu AW. Implementing the RISE second victim support programme at the Johns Hopkins Hospital: A case study. BMJ Open. 2016 Sep 30; 6 (9): e011708.
23. Tarigan LH, Cifuentes M, Quinn M, Kriebel D. Prevention of needle-stick injuries in healthcare

facilities: A meta-analysis. Infect Control Hosp Epidemiol. 2015 Jul; 36 (7): 823–829.
24. Choi J, Cramer E. Reports from RNs on safe patient handling and mobility programs in acute care hospital units. J Nurs Adm. 2016 Nov; 46 (11): 566–573.
25. Elnitsky CA, Lind JD, Rugs D, Powell-Cope G. Implications for patient safety in the use of safe patient handling equipment: A national survey. Int J Nurs Stud. 2014 Dec; 51 (12): 1624–1633.
26. Engel L, Love R. Safe patient handling education in Nepal: A Canadian perspective in creating and conducting training in a developing country. J Palliat Med. 2013 Mar; 16(3): 295–300.
27. Alkorashy HA, Al Moalad FB. Workplace violence against nursing staff in a Saudi university hospital. IntNurs Rev. 2016 Jun; 63(2): 226–232.
28. Chen KP, Ku YC, Yang HF. Violence in the nursing workplace—A descriptive correlational study in a public hospital. J ClinNurs. 2013 Mar; 22 (5–6): 798–805.
29. Najafi F, Fallahi-Khoshknab M, Ahmadi F, Dalvandi A, Rahgozar M. Human dignity and professional reputation under threat: Iranian nurses' experiences of workplace violence. Nurs Health Sci. Epub 2016 Jul 11.
30. Wu S,Lin S, Li H, ChaiW, ZhangQ, Wu Y, Zhu W. A study on workplace violence and its effect on quality of life among medical professionals in China. Arch Environ Occup Health. Epub 2013 Feb 28. Accessed Nov 15, 2016. http://www.tandfonline.com/doi/abs/10.1080/19338244.2012.732124#.Ua3qXUDVA1J
31. Hunsaker S, Chen HC, Maughan D, Heaston S. Factors that influence the development of compassion fatigue, burnout, and compassion satisfaction in emergency department nurses. J NursScholarsh. 2015 Mar; 47(2): 186–194.
32. Itzhaki, Michal, Treacy, Margaret, Phaladze, Nthabiseng, Rumeu, Carmen, Vernon, Rachael, Marshall, Bob, Seboni, Naomi M., Fealy, Gerard, Ehrenfeld, Mally, Larkin, Philip, McNamara, Martin, Dignam, Denise, Rollins Gantz, Nancy and Nelson. Caring international research collaborative: A five-country partnership to measure perception of nursing staffs' compassion fatigue, burnout, and caring for self. Interdisciplinary Journal of Partnership Studies. 2015; 2 (1): 1–22.
33. Jacobowitz W, Moran C, Best C, Mensah L. Post-traumatic stress, traumainformed care, and compassion fatigue in psychiatric hospital staff: A correlational study. Issues Ment Health Nurs. 2015; 36(11): 890–899.
34. Sorenson C, Bolick B, Wright K, Hamilton R. Understanding compassion fatigue in healthcare providers: A review of current literature. J Nurs Scholarsh. 2016 Sep; 48(5): 456–465.
35. West AL. Associations among attachment style, burnout, and compassion fatigue in health and human service workers: A systematic review. J Hum Behav Soc Environ. 2015; 25(6): 571–590.
36. Mira JJ, Carrillo I, Lorenzo S, Ferrús L, Silvestre C, Pérez-Pérez P, Olivera G, Iglesias F, Zavala E1, Maderuelo-Fernández JÁ, Vitaller J, Nuño-Solinís R, Astier P. The aftermath of adverse events in Spanish primary care and hospital health professionals. BMC Health Serv Res. 2015 Apr 9;15 (151):1–9.
37. Seys D, Wu AW, Van Gerven E, Vleugels A, Euwema M, Panella M, Scott SD, Conway J, Sermeus W, Vanhaecht K. Health care professionals as second victims after adverse events: A systematic review. Eval Health Prof. 2013 Jun;36(2):135–162.
38. Ullström S, Andreen Sachs M, Hansson J, Ovretveit J, Brommels M. Suffering in silence: A qualitative study of second victims of adverse events. BMJ QualSaf. 2014 Apr; 23(4): 325–331.
39. Wu AW, Steckelberg RC. Medical error, incident investigation and the second victim: Doing better but feeling worse? BMJ QualSaf. 2012 Apr; 21 (4): 267–270.
40. Baseline of Health Foundation. Mandatory Flu Vaccines for Health Care Workers. Cohen H. Jan 26, 2013. Accessed Dec 6, 2016. https://jonbarron.org/article/mandatory-flu-vaccines-health-care-workers.
41. Immunization Action Coalition. Influenza vaccination honor roll. (Updated: Oct 26, 2016.) Accessed Nov 15, 2016. http://www.immunize.org/honor-roll/influenza-mandates/.
42. Lin CJ, Nowalk MP, Zimmerman RK. Estimated costs associated with improving influenza vaccination for health care personnel in a multihospital health system. JtComm J Qual Patient Saf. 2012 Feb; 38(2): 67–72.
43. Perlin JB, Septimus EJ, Cormier SB, Moody JA, Hickok JD, Bracken RM. Developing a program to increase seasonal influenza vaccination of healthcare workers: Lessons from a system of community hospitals. J Healthc Qual. Epub 2013 Mar 7.
44. Vaccines Today. Should Flu Vaccine Be Mandatory for Hospital Staff? Dec 28, 2013. Accessed Nov 15, 2016. http://www.vaccinestoday.eu/vaccines/should-

flu-vaccine-be-mandatory-for-hospital-staff/.
45. Babcock HM, Gemeinhart N, Jones M, Dunagan WC, Woeltje KF. Mandatory influenza vaccination of health care workers: Translating policy to practice. Clin Infect Dis. 2010 Feb 15; 50(4): 459–464.
46. Centers for Disease Control and Prevention. Influenza Vaccination Information for Health Care Workers. (Updated: Nov 1, 2016.) Accessed Nov 15, 2016. http://www.cdc.gov/flu/healthcareworkers.htm.
47. Joint Commission International Accreditation Standards for Hospitals, 6th Edition. July, 2017. http://www.jointcommissioninternational.org.
48. Harris RP, Helfand M, Woolf SH, Lohr KN, Mulrow CD, Teutsch SM, et al. Current methods of the U.S. Preventive Services Task Force: A review of the process. Am J Prev Med. 2001; 20:21–35.
49. Stoel winder J. A study of doctors' views on how hospital accreditation can assist them provide quality and safe care to consumers: Department of epidemiology and preventive medicine. Australia: Monash University; 2004.
50. Pomey MP, Contandriopoulos AP, François P, Bertrand D. Accreditation as a tool for organisational change. Int J Health Care Qual Assur. 2004; 17: 113–24.

HEALTH CARE SEEKING BEHAVIOUR AND LIFESTYLE PATTERN OF ELDERLY PEOPLE IN DHAKA CITY

Toscano MM[1], Sultana P[2]

Abstract

Age-related illnesses affect the majority of the elderly and seriously impair the quality of life. Social and economic progress has brought an unprecedented rate of growth in the numbers of older people worldwide. The process of ageing, (i.e., a process of increase of the proportion of elderly) in the population has already started in Bangladesh. The aged (60 years and older) population of Bangladesh is expected to increase to 17.62 million in 2025.[1] In fact, by the beginning of this century, Bangladesh was projected to have one of the world's 15 largest elderly populations.[2] This large number of elderly will certainly have a significant impact on society, which has already been facing many problems including health service-related problems. Absence of health care facilities for the elders is another major factor that contributed to their suffering since aging invites new health problems. Elderly poor women face more problems due to aging. Poor households with scarce resources are helpless to care for their elderly members. The situation of care for the elderly poor in Bangladesh is complex. It is generally expected that an elderly person will live with her/his children and will be taken care of by them. Usually elderly people do not engage in any profession, but this does not mean that they do not work. The old people would no longer be the burden of the family they come from and they are honored as a result of becoming recipients of the Old Age Allowance. The Old Age Allowances recipient must have the age of 65 and above. Age limit is relaxable for the women. After attaining 62 years a woman is eligible for getting the same allowance. The Government is gradually increasing the number of beneficiaries along with gradual increment in the monthly allowances. But Government Servants and pension holders will not be eligible to get old-age allowance. In spite Government's effort in the form of old age allowances, the 67.5% old people still dependent on their children for financial support. The study also depicts that more than 96% of old people live either with children or with their relatives. However, 99% of the respondents perform active exercise.

Key Words : Health Care Seeking Behaviour, Lifestyle, Elderly.

Introduction

In the 21st century ageing population and their health has became a growing health and social care concern all over the world. This is because of an increase in the absolute and relative numbers of older people in both developed and developing countries. Age-related illnesses affect the majority of the elderly and seriously impair the quality of life. Social and economic progress has brought an unprecedented rate of growth in the numbers of older people worldwide. But in developing countries, where the ratio of older to younger people is increasing fastest, this triumph of development is marred by the deep poverty of many older women and men.

The process of ageing, (i.e., a process of increase of the proportion of elderly) in the population has already started in Bangladesh. This can be supported by the following statistics. In 1961, 5.2 percent of the total population of Bangladesh was 60 years and older. This proportion increased to 6.1 percent in 1995 and is expected to increase to 9.1 percent in 2010. In absolute numbers this means an increase from 2.9 million in 1961 to 7.3 million in 1995 and to 13.2 million in 2010. The aged (60 years and older) population of Bangladesh is expected to increase to 17.62 million in 2025. [3] In fact, by the beginning of this century, Bangladesh was projected to have one of the world's 15 largest elderly populations.

[1] Department of Nursing, State College of Health Sciences, Dhaka, Bangladesh
[2] Bureau of Health Education, DGHS, Ministry of Health & Family Welfare
* Corresponding author: Mala Maria Toscano, Lecturer, Department of Nursing, State College of Health Sciences, Dhaka, Bangladesh

This large number of elderly will certainly have a significant impact on society, which has already been facing many problems including health service-related problems. There was a paradigm shift in the health and population sectors in 90s of the last century in developing countries. Absence of health care facilities for the elders is another major factor that contributed to their suffering since aging invites new health problems. Elderly poor women face more problems due to aging.[4]

On November 17, 2013, the cabinet approved the National Policy on Older Persons recognizing the elderly people as senior citizens. President said it is in line with United Nation's policy. [5] The President of Bangladesh, Abdul Hamid, declares elderly people as 'senior citizens'. Now "Senior Citizens" is the official title at age 60 years in Bangladesh. The number of the country's total elderly people is 1.30 crore and this number will stand at 1.8 crore by 2025 and 4.0 crore by 2050. "It means the size of the elderly people will be around 20 percent of the total population, it would be the biggest challenge to the country's social, economic and healthcare in the future," he added. Laying emphasis on keeping the elderly people involved in the mainstream of the family, society as well as the state, he said it is the responsibility of the society to give these elderly people priority in getting all civic services, including hospitals, banks, offices and courts. The President Hamid continued, "All expect that the young will take the society forward through their work utilizing the experience of the older citizens." [6] He added that the government has taken a number of programs for the welfare of the elderly people. Old age allowance has been introduced from 1997-98 fiscal year and the number of people getting such allowance has increased to 2,722,000 from only 400,000. He expressed his happiness that a number of organizations such as Probin Hitoishi Sangha, Centre for Rehabilitation of Elderly People, Retired Government Employees Welfare Association and Resource Integration Centre have been working for the welfare of the elderly people. [7]

1999 was designated as the International Year of Older Persons by the United Nations. But many developing countries, including Bangladesh, seem still to be reluctant to recognise the problems of the elderly. [8] The country is now passing through the second phase of its demographic transition. The crude birth rate declined from 48 per 1000 in 1970 to 27 per thousand in 1995 and the crude death rate from 21 per 1000 in 1970 to 11 per thousand in 1995. [9] In the same period, the total fertility rate (TFR) declined from 7.0 in 1970 to 3.3 in 1995-96 and under-five mortality declined from about 250 in 1970 to 113 in 1995. All these changes have resulted in an increased number of elderly people in the country. Poverty and lack of access to services both make the situation of elderly poor more serious. Many elderly poor may not live in extended families, which make them more vulnerable. Very little research has been done on the problem of elderly care and on poor elderly in Bangladesh. Poor people are suffering from various problems. The care for the elderly poor is still a seriously neglected issue. In these circumstances, qualitative research is very much needed to explore and describe the various aspects of the problem of care for the elderly poor in Bangladesh. Information on the existing disease pattern and health seeking behavior is essential to provide need based health care delivery to any population. As for health care system, in almost all the developing countries, the public and the private health sector co exit, complementing with each other. [10]

The situation of care for the elderly poor in Bangladesh is complex. It is generally expected that an elderly person will live with her/his children and will be taken care of by them. Families are considered to be the primary place of care for the elderly in Bangladesh.[11] The

existing health care services in the country are generally deficient in geriatric care. The People's Republic of Bangladesh has introduced Old Age Allowances in 1998. This is an epoch-making Social Security programme in the history of Bangladesh as well as neighbouring countries. The Government has recently taken decision to involve the public representatives in the selection and distribution process of the allowance properly. Government allocated 891 crore Taka in this financial year 2011-2012. The total Beneficiary of this is 2.475 million. Beneficiaries are getting Tk. 300/- monthly per head which is payable in every 3 months. The old people would no longer be the burden of the family they come from and they are honoured as a result of becoming recipients of the Old Age Allowance. The Old Age Allowances recipient must have the age of 65 and above. Age limit is relaxable for the women. After attaining 62 years a woman is eligible for getting the same allowance. Income: Old Age Allowances recipient's average annual income must be below Tk.3ooo (three thousand). Priority was given to physically handicapped, mentally handicapped, physically ill and mentally handicapped, partial handicapped and freedom fighters. Divorcee, spouseless and deserted from family was given special consideration. The Government is gradually increasing the number of beneficiaries along with gradual increment in the monthly allowances. [12]

Methodology

Study Design:

This study was a cross sectional study.

Sampling Technique:

The sample was collected from Dhaka north city corporation area by simple random sampling. Three wards were selected from 36 wards randomly. These are: Tejgaon, ward number – 27, Mohakhali, ward number – 20, Mirpur, ward number – 13. The sample was collected by the help of various stakeholders, such as local community people, community leaders and health professionals.

Data Collection Method:

Questionnaire was developed according to the objectives of the study. A semi – structured questionnaire was developed for individual interview. The questionnaire was finalized after pre-testing.

Results

The study was conducted among the elderly people in Dhaka city from November 2014 to March 2015 to assess the status of health care seeking behavior and life style pattern. The study includes over sixty year's people as participant. A total 362 respondents were selected. Face to face interview was taken by using questionnaire. Findings revealed by the study presented in this chapter by different tables and graphs.

Table 1: Socio-demographic characteristics:

Distribution of the respondents by age group (n = 362)		
Age distribution	**Frequency**	**Percent**
60 – 69 years (young old)	134	36.0
70-79 years (middle old)	198	54.7
>80 years (very old)	30	9.3
Distribution of respondents according to living arrangement (n = 362)		
Living arrangement	**Frequency**	**Percent**
Living with children	201	55.5
Living with relatives	147	40.6
Old home/hostel/alone	14	3.9
Distribution of respondents according to perform physical exercise (n = 362)		
Perform any physical exercise	**Frequency**	**Percent**
Yes	360	99.4
No	2	.6
Distribution of respondents according to chief complaints (n = 362)		
	Responses	
Chief complaints	**N**	**Percent**
Nausea/vomiting	44	2.7
Loss of appetite	55	3.4
Indigestion	55	3.4
Weight loss	95	6.9
Forgetfulness	19	1.2
Chest pain	26	1.6
Joint pain	201	15.9
Headache	177	13.3
Weakness	236	17.6
Muscle pain	263	18.5
Less sleep	194	13.9
Others	26	1.6
Distribution of respondents according to disease pattern (n = 362)		
What kind of disease	**Frequency**	**Percent**
Diabetes	38	10.5

Regarding distribution of elderly people by age – the above table shows that among the respondents the vast majority 54.7% were in 70 – 79 years (middle old) , 36.0% were in 60 – 69 years (young old) and 9.3% were in > 80 years (very old), 55 .5% respondents were living with their children, 40.6% were living with other relatives and 3.9 % were living with their wife (children were living in separately), alone or in hostel. 99 .4% respondents perform physical exercise daily. Multiple responses shows in case of chief complaints that among the respondents 18.5% Muscle pain, 17.6% Weakness, 15.9% Joint pain, 13.9% Less sleep, 13.3% Headache, 6.9% Weight loss, 3.4% Loss of appetite, 3.4% Indigestion/ abdominal pain, 2.7% Nausea/vomiting, 1.6% Chest pain , 1.2% Forgetfulness and 1.6% others complaints. The respondents were suffering from 18.5% hypertension, 10.5% diabetes , 5.2% asthma, .2% cancer and 54.3% others diseases. It was also observed that 11.3% did not suffer from any disease. In case of health care, treatment place 87.6% were take treatment from private hospital, 11.9 % were take treatment from private chamber and 6% were take treatment from Government hospital.

Table 2: Distribution of respondents by the level of education (n = 362)

Level of Education	Frequency	Percent
Graduate and above	67	18.5
HSC	188	51.9
SSC	100	27.6
Primary	6	1.7
Illiterate	1	.3
Total	**362**	**100.0**

By the level of education the table shows that 51.9% respondents were HSC level of education, 27.6% respondents were SSC level of education, 18.5% respondents were graduate and above level of education, 1.7% respondents were Primary level of education and .3% respondents were illiterate.

Table 3: Distribution of respondents by the retirement status (n = 362)

Retirement status	Frequency	Percent
Yes	232	56.1
No	130	43.9
Total	**362**	**100.0**

The above table shows that among 56.1 % respondents were retired.

Table 4: Distribution of respondents by the level of present occupation (n = 362)

Present occupation	Frequency	Percent
Part time job	9	2.5
Business	36	9.9
Others	155	42.8
No occupation at all	162	44.8
Total	**362**	**100.0**

The above table shows that among the respondents 42.8% were involved with others occupation, 9.9 % were involved with business, 2.5% were involved with part time job and 44.8% were unemployment.

Table 5: Distribution of respondents by the financial support (n = 362)

Financial support	Frequency	Percent
Yes	349	96.4
No	13	3.6
Total	**362**	**100.0**

The above table shows that among the respondents 96.4% got financial support.

Table 6: Distribution of respondents by the sources financial support (n = 362)

Source of financial support	Frequency	Percent
Government	72	20.2
Children	245	67.4
Others	45	12.4
Total	**362**	**100.0**

The above table shows that in case of the sources of financial support among the respondents 67.4% from their children, 20.2% were got financial support from Government and 12.4% were got financial support from others sources.

Discussion and Conclusion

Among the respondents minimum age group were 61 years and maximum 86 years in total respondents. The vast majority of the respondents by age group show that 54.7% respondents were in 70 – 79 years, 36.0% respondents were in 60 – 69 years. The health responsibilities of elderly people 85.4% were taking by their sons. By the similar study was found as the category of age in elderly people, the title was "Ageing population of Bangladesh; An Emerging challenge."People above 60 years of age are considered as 'old' and taken to be the 'elderly' segment of a country's population. [13] Elderly informants think that as they have become older, their children, especially sons, do not give them importance. [14]

This study was conducted among the elderly people in who are living Dhaka city. The objective of this study was to assess the status of health care and lifestyle pattern of elderly people in Dhaka city. This cross sectional study was carried out from November 2014 to March 2015, among the elderly people in Dhaka city to assess the status of health care seeking behaviour and life style pattern. The study includes over sixty year's people as participant. A total 362 respondents were selected purposively.

Face to face interview was taken by using questionnaire and data was collected with a semi structured questionnaire. Among the respondents minimum age group were 61 years and maximum age group were 86 years in total respondents. The study revealed that in our country majority of elderly people were living with their children after retirement and their health responsibilities were taking by their children mostly by sons. In Bangladesh our elderly people enjoy their leisure with family members especially with grand child.

The majority of recreational activities were involving with religious activities. They face some common health problems and suffering from various diseases and were taking treatment from private hospital. In this study, majority of the elderly people are educated and involving with various activities after their retirement. The findings of the study may also help the health service providers in formulating future plans and strategies planning to solve the health related problems of the elderly people

The vast majority of the respondents by age group show that 54.7% respondents were in 70 – 79 years. The total respondents of these study 54.7% respondents are female. In case of religion distribution the vast majority of the respondents 50.83% respondents are Islam, 48.34% are Christian. By the level of education 51.9% respondents were HSC level of education, 27.6% respondents were SSC level of education, 18.5% respondents were graduate and above level of education.

Recommendation

The quality of health care and the perception of this care should be improved. This includes the provision and availability of number and quality of the staff and facilities. More infrastructure

investment including - old age home, hospital, special public transport for the elderly people to improve to accessibility of health care.

References

1. Arber, S. 1999 Gender roles. In: Birren, J.E. (eds) Encyclopedia of Gerontology: age, aging and the aged volume I, A-K. Sandiago: Academic Press.
2. 1996 Family structure and change in Bangladesh .Population Council Research Division working paper No. 87. New York: Population Council. PP. 39. Amin,S.
3. "Ageing Population in Bangladesh: Some Projections and Indices: A case study " Nasrin, S.H. 2010: "Demografic Profile of the aged in Bangladesh" in the Elderly: Contemporary Issues. Kabir, H. 2003.
4. 1996 Family structure and change in Bangladesh. Population Council.
5. Senior Journal: Today's News and Information for senior citizens & baby boomers.
6. Senior Journal: Today's News and Information for senior citizens & baby boomers.
7. Senior citizen news and information source – senior journal.com.
8. Last modified: 01:53 AM, March 08, 2015 >> National News Service of Bangladesh " senior Citizen Politics," senior journal.com.
9. Arber, S. 1999 Gender roles. In: Birren, J.E. (eds) Encyclopedia of Gerontology: age, aging and the aged volume I, A-K. Sandiago: Academic Press.
10. "Demographic and Economic Consequences of Ageing in Bangladesh". Kabir, M. 1998.
11. National News Service of Bangladesh " Senior Citizen Politics," senior journal.com.
12. Bangladesh Association of Gerontology, Dhaka. Edited by M. Kabir.
13. "Demographic and Economic Consequences of Ageing in Bangladesh". Kabir, M. 1998.
14. M. Rahman, M. Tareq, M.I. Rahman, K.M.M. & Islam, T.M.2007: "Dimension of Population Ageing in Bangladesh", Middle East Journal of Age & Ageing, October. Vol. 4, Issue 5. Saleheen, M.

JOB SATISFACTION AMONG PHYSICIANS WORKING IN PRIVATE TEACHING HOSPITALS IN DHAKA CITY

Zahid IA[1], Shahjahan M[2]

Abstract

Job satisfaction is currently one of the most widely researched subject in organizational psychology. Satisfaction in job is related to multiple variables like achievement, advancement, recognition, work nature, growth, company policy, supervisor-peer relationships, working condition, monetary rewards and security. The study was a cross sectional descriptive study, conducted in 7 private medical college hospitals selected by simple random sampling out of 22 private medical college hospitals. The respondents were 282 physicians selected by purposive sampling. Pretested, self-administered and semi-structured questionnaires with five point Likert scale was used for data collection. The level of significance was 0.05 and the confidence interval was 95%.The mean age of respondents was 32.18 years and 63.8% of respondents were male. 24.5% of respondents were satisfied with motivator factors and 16.3% of respondents were satisfied with hygiene factors. Regarding motivator and hygiene factors only 16.67% of respondents were satisfied. Female physicians were more satisfied than male physicians. After assessing this study and comparing its result with other studies, it has been revealed that the satisfaction percentages of Bangladeshi physicians and those of the developed countries are almost the same. Ten determinants, identified in this study can be used safely to assess any professional`s satisfaction.

Key words : Job Satisfaction, Physicians, Teaching Hospitals

Introduction

According to Locke (1976), job satisfaction is "a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences". Job satisfaction is one of the most important determinants of quality health care and concern for both the service providers and consumers (patients) [1]. Job satisfaction theories such as Maslow's (1943) Hierarchy of Needs, Hertzberg's (1968) Two-Factor (Motivator-Hygiene) Theory and Edwin A. Locke's Range of Affect Theory (1976) have tried to explain job satisfaction and its influence. Job satisfaction is related to productivity, motivation, absenteeism, accidents, mental and physical health, and general life satisfaction [2]. Spector (1997) listed 14 common facets which influence job satisfaction - appreciation, communication, coworkers, fringe benefits, and job conditions, nature of the work, organization, personal growth, policies, procedures, promotion opportunities, recognition, security and supervision [3].

Fredrick Herzberg's two factor theory (also known as Motivator Hygiene Theory) attempts to explain satisfaction and motivation in the workplace. This theory states that satisfaction and dissatisfaction are driven by different motivation and hygiene factors (Fredrick Herzberg, 1957). Organizational environment factor is the most influential factor for the job satisfaction and in need fulfilment theory it is argued that a person is satisfied when he gets what he wants and he is dissatisfied when he does not[4].

In most countries, physician work conditionsundergo frequent mutations, some of which can be favorable, others unfavorable. In recent years, physicians have seen their autonomy reduced by new policies of payers, have been subjected to increased administrative burden and time pressure, and have been held responsible for the increase in health care costs. All these trends would decrease work satisfaction. Knowing what

[1] Spreeha Bangladesh Foundation
[2] Department of Public Health, State University of Bangladesh
*Corresponding author: Dr. Ishtique Ahamed Zahid, Head of Programs, Spreeha Bangladesh Foundation, Dhaka. email: zahid@spreehabd.org

job characteristics are associated with work satisfaction among physicians is important not only for physicians themselves and for medical associations, but also for the general public because physician satisfaction is associated not only with the physician's health and well-being, but also with prescribing behaviour, patient adherence to medications andpatient satisfaction [5].

Job satisfaction is not only important for employees but also for the organizations to compete in hiring good employees and deliver quality service. Work satisfaction among physicians is also associated with several important aspects of care, such as the continuity of care and health care costs. Work place satisfaction is a multifactorial and multidimensional psychological response. The major challenge regarding job satisfaction is to find the factors influencing satisfaction level in organizations.

Methodology

A cross-sectional survey was conducted in seven private teaching hospitals (randomly selected out of 22 private teaching hospitals) in Dhaka, Bangladesh using a comprehensive customized questionnaire (Appendix). Sample size was calculated by the formula, $\mathbf{n = z^2 (p*q) / d^2}$ (n - sample size, z - 95% confidence level, p - the prevalence rate, q - proportion of population not positive (1 – p), d - standard error = 05%). A total of 470 self-administered, semi-structured questionnaire was distributed in selected hospitals and 282 questionnaires were returned (60% return rate).

The questionnaire included information about socio-demographic profiles, job description and specification. The job satisfaction component of the questionnaire consisted of 28 questions in a close ended questionnaire. The response was coded as per the five point Likert Scale, strongly disagree 1, disagree 2, uncertain 3, agree 4 and strongly agree 5.

Data analysis was done by SPSS and the level of satisfaction was categorized according to the following score –

Satisfaction Level	Score
High Dissatisfaction (HD)	28-56
Dissatisfaction (D)	57-87
Uncertain (U)	88-108
Satisfaction (S)	109-129
High Satisfaction (HS)	130-140

For motivator and hygiene factors the level of satisfaction was categorized as per the following score –

	HD	D	U	S	HS
Achievement	3-6	7-9	10-11	12-13	14-15
Advancement	2-3	4-5	6-7	8-9	10
Recognition	3-6	7-9	10-11	12-13	14-15
Work itself	3-6	7-9	10-11	12-13	14-15
Growth	3-6	7-9	10-11	12-13	14-15
Company policy	3-6	7-9	10-11	12-13	14-15
Supervision and peer	4-8	9-12	13-15	16-18	19-20
Working condition	2-3	4-5	6-7	8-9	10
Monetary rewards	2-3	4-5	6-7	8-9	10
Security	3-6	7-9	10-11	12-13	14-15

Findings

Among 282 physicians, 63.8% (180) were male and 36.2% (102) were female. The mean age was 32.18 years where minimum age was 26 years and maximum age was 47 years. 75.3% (212) of physicians were married and 24.7% (70) were unmarried. Most of the physician's 91.5% (258) were medical officer and the rest 8.5% (24) were assistant register.

Table-1 shows the relationship between age and level of satisfaction. Among 126 respondents within 26-30 years of age, 27.8% (n=35) were satisfied followed by 95 respondents within 31-35 years of age, among 10.5% (n=10) were satisfied and among 55 respondents within 36-40 years only 5.5% (n=3) of respondents were satisfied. Above 40 years among 6 respondents there wasno satisfaction.

Table-2 shows the relationship between income and level of satisfaction. Among 121 respondents within 15,000-25,000 taka, 24.8% (n=30) were satisfied followed by 130 respondents within 25,001-35,000 taka of which 11.6% (n=15) were satisfied and among 31.respondents above

35,001 taka, 9.7% (n=3) were satisfied.

Table-3 shows the relationship between sex and level of satisfaction. Among 180 respondents 13.9% (n=25) of male were satisfied and among 102 respondents 22.5% (n=23) of female were satisfied.

Table-4 shows the relationship between designation and level of satisfaction. Among 258 medical officer respondents 17.5% (n=45) were satisfied and among 24 assistant register respondents 12.5% (n=3) were satisfied.

Table-5 shows the level of satisfaction regarding Motivator factors.

Table-6 shows the level of satisfaction regarding Hygiene factors.

Figure-1 shows the overall level of job satisfaction. Among 282 respondents, maximum respondents 52.84% (n=149) were dissatisfied, 26.95% (n=76) were uncertain (neither satisfied nor dissatisfied) and 3.19% (n=9) were highly dissatisfied, while 16.67% (n=47) of respondents were satisfied and 0.35% (n=1) of respondents were highly satisfied.

Age in Group	High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
26-30 years	1 (0.8%)	63 (50.0%)	27 (21.4%)	34 (27.0%)	1 (0.8%)	**126 (100%)**
31-35 years	3 (3.2%)	47 (49.5%)	35 (36.8%)	10 (10.5%)	0 (.0%)	**95 (100%)**
36-40 years	4 (7.3%)	35 (63.6%)	13 (23.6%)	3 (5.5%)	0 (.0%)	**55 (100%)**
more than 40 years	1 (16.7%)	4 (66.7%)	1 (16.7%)	0 (.0%)	0 (.0%)	**6 (100%)**

Table – 1: Relationship between age group and level of satisfaction. (n=282)

Income in BDT	High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
15,000-25,000	3 2.5%	60 49.6%	28 23.1%	30 24.8%	0 .0%	**121 100%**
25,001-35,000	3 2.3%	72 55.4%	40 30.8%	14 10.8%	1 .8%	**130 100%**
Above 35,001	3 9.7%	17 54.8%	8 25.8%	3 9.7%	0 .0%	**31 100%**

Table – 2: Relationship between income and level of satisfaction. (n=282)

Sex	High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
Male	5 (2.8%)	100 (55.6%)	50 (27.8%)	24 (13.3%)	1 (0.6%)	**180 (100%)**
Female	4 (3.9%)	49 (48.0%)	26 (25.5%)	23 (22.5%)	0 (.0%)	**102 (100%)**

Table – 3: Relationship between sex and level of satisfaction. (n=282)

Designation	High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
Medical Officer	6 2.3%	136 52.7%	71 27.5%	44 17.1%	1 .4%	**258** **100%**
Assistant Register	3 12.5%	13 54.2%	5 20.8%	3 12.5%	0 .0%	**24** **100%**

Table – 4: Relationship between designation and level of satisfaction. (n=282)

Motivator factors		High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
Achievement	N	25	63	43	116	35	282
	%	8.9%	22.3%	15.2%	41.2%	12.4%	100
Advancement	N	6	86	72	108	10	282
	%	2.1%	30.5%	25.5%	38.4%	3.5%	100
Work itself	N	2	40	91	130	19	282
	%	0.7%	14.2%	32.3%	46.1%	6.7%	100
Recognition	N	16	135	48	66	17	282
	%	5.7%	47.9%	17%	23.4%	6%	100
Growth	N	14	117	35	87	29	282
	%	5%	41.5%	12.3%	30.9%	10.3%	100

Table-5: Distribution of respondents according to their level of satisfaction regarding Motivator factors

Hygiene factors		High Dissatisfaction	Dissatisfaction	Uncertain	Satisfaction	High Satisfaction	Total
Hospital policy	N	37	115	46	68	16	282
	%	13.1%	40.8%	16.3%	24.1%	5.7%	100
Supervisor and peer relationship	N	9	62	87	97	27	282
	%	3.2%	22%	30.9%	34.4%	9.5%	100
Work security	N	18	132	54	62	16	282
	%	6.4%	46.8%	19.1%	22%	5.7%	100
Monetary reward	N	32	170	58	19	3	282
	%	11.3%	60.3%	20.6%	6.7%	1.1%	100
Working condition	N	28	66	66	118	4	282
	%	10%	23.4%	23.4%	41.8%	1.4%	100

Table-6: Distribution of respondents according to their level of satisfaction regarding Hygiene factors

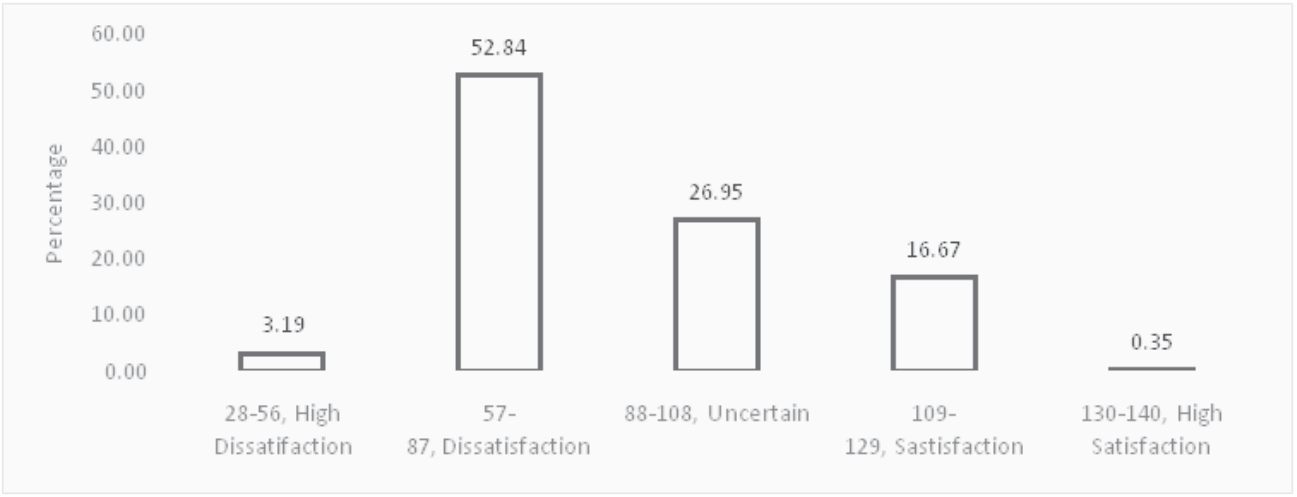


Figure – 1: Distribution of respondents according to their level of job satisfaction. (n=282)

Discussion

A cross sectional study revealed that most of the physician were dissatisfied with their jobs. 60% of the physicians were dissatisfied with their current salary. In terms of appraisal system, 57.9% of physicians were dissatisfied and only 11.4% were satisfied. 53.6% physicians were dissatisfied with their current promotional policy. The salary, financial benefit and appraisal system of hospital and healthcare system are significantly associated with dissatisfaction[1]. Another study with 308 medical officers shows that a majority of 212 (68.8%) doctors were dissatisfied with their jobs while a high level of satisfaction was seen only regarding timeliness of pay (92.9%) and job safety (98%). On comparing characteristics of doctors with job satisfaction, it was seen that age, gender, marital status, number of family members, total family income, work experience and nature of job were not significantly related with satisfaction while doctors working in private hospital were more satisfied with their jobs compared to doctors working in government hospital and this result was statistically significant (P = 0.000). Satisfaction level of doctors especially working in public hospitals was low compared to doctors working in the private sector. There is a need to address the reasons of dissatisfaction and formulate strategies to eliminate these issues [6].

The present study shows that most respondents were within 26-30 years and the mean age was 32.18 years. Majority of respondents were male. Most of the respondents were Muslim. 46.1% respondents had income within 25,001-35,000 taka. The study also shows that most of the respondents had a service length of 1-5 years. Most of the physician (66.03%) were overall dissatisfied, only 17.02% were satisfied and the rest of the physicians were uncertain with their jobs. Total of 53.5% physicians were satisfied with their achievement and 41.8% physicians were satisfied with their advancement in job. Regarding work itself 52.8% of physicians were satisfied and 29.4% of physicians were satisfied with recognition in work. Maximum physicians (71.6%) were dissatisfied with their monetary rewards. Regarding motivator factors, 40.4% were dissatisfied, 34.4% were uncertain and 25.2% were satisfied. In hygiene factors 54.6% were dissatisfied, 28.7% were uncertain and 16.7% were satisfied.

Conclusion & Recommendations

After comparing this study result with other studies that have been revealed that the satisfaction percentage of Bangladeshi physicians and those of the developed countries were almost the same. Ten determinants, identified in this study, can be used safely to assess any professionals' satisfaction.

Recommendation

- Hygiene factors had lower satisfaction level. Therefore in-depth study and factor influencing hygiene factors should be considered in further study.

Reference

1. Dr. Begum. A. Job satisfaction of physician working in tertiary care hospitals in Dhaka. 2009; ii.
2. Landy. F. J. An opponent process theory of job satisfaction. Journal of Applied Psychology. 1978; 63(5): 533-547.
3. Spector. P.E. Job satisfaction: Application, assessment, causes and consequences. Thousand Oaks, CA: SAGE; 1997:
4. Hertzberg, F. (1968). One More Time: How Do You Motivate Employees. Harvard Business Review, 46, 53-62.6.
5. Bovier. P. A. &Perneger. V. T. Predictors of work satisfaction among physician. European journal of public health. 2003; 13: 299
6. Dr. Deeba. F., Dr. Usmani. R. A., Dr. Akhtar. M., Dr. Zahra. T. & Dr. Rasool. H. Job satisfaction among doctors working in public and private tertiary care hospitals of Lahore. The professional medical journal. 2015; 22(10): 1373.
7. Judge. T. A. & Church. A. H. Job satisfaction: Research and practice in Industrial and organizational psychology: Linking theory with practice. Oxford, UK: Blackwell; 2000: page-166-198.
8. Bernstein, D. A. & Nash. P. W. Essentials of psychology (4th ed.). Boston: Cengage Learning. Retrieved from; 1997.
9. Dr. Ibnian. S. SK. The level of Job Satisfaction among EFL Teachers in Jordan. International Journal of Humanities and Social Science. 2016; Vol. 6, No. 1: 42.
10. Ahmed. S. M., Alam. B. B., Anwar. I., Begum. T., Huque. R., Khan. J. AM., Nababan. H., Osman. F. A., Health Systems in Transition. Vol. 5 No. 3. World Health Organization; 2015: xvii.
11. Cockcroft et al.: Health services reform in Bangladesh: hearing the views of health workers and their professional bodies. BMC Health Services Research 2011; 11(2): S8.
12. Sharma. M., Goel. S., Singh. S. K., Sharma. R., & Gupta. PK. Determinants of Indian physicians` satisfaction & dissatisfaction from their job. Indian J med Res. 2014; 139: 409-417.
13. Sharma. K. A., mittal. A., monga. A. A., Gupta. A. K. &Gadpayle. A. Job satisfaction and its socio demographic correlation among institutionally employeed professionals. Indian j. Prev. Soc. Med. 2013; 44 1-2: 6.
14. Sultana. A., Riaz. R., Hayat. M. &sabir. A. S. Level of job satisfaction in doctors. Journal of Rawalpindi medical college. 2009; 13(2): 95.
15. Emmanuel AjuluchukwuUgwa, Liman M Muhammad, Charity C Ugwa. Job Satisfaction among Nurses and Doctors in a Tertiary Hospital in North-West Nigeria: A Cross-Sectional Study. International Journal of Hospital Research 2014, 3(1):11-18.
16. Taha N. Sadeq. & Amal S. Khudair. Job Satisfaction among Al-Kadhimiya Teaching Hospital's Medical Doctors. Iraqi JMS. 2013; 11(4): 353.
17. Hackman, J. R., & Oldham, G. R. (1976). Motivation through the design of work: Test of a theory. Organizational Behavior and Human Performance, 16, 250-279.
18. Sackett, Paul R.; Laczo, Roxanne M. "Job and Work Analysis". 2003;
19. Brannick, M.T., Levine, E.L., &Morgeson, F.P. Job and work analysis: methods, research and applications for human resource management. 2007; 2:
20. Hulin, C. L., & Judge, T. A. (2003). Job attitudes. In W. C. Borman, D. R. ligen, & R. J. Klimoski (Eds.), Handbook of psychology: Industrial and organizational psychology (pp. 255-276). Hoboken, NJ: Wiley.
21. Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. Psychological Bulletin, 127, 376-407.

22. Khanam. R. A., Talukder. H. K., Nargis. T. & Rubaiyat. A. Job satisfaction of medical teacher in Bangladesh: who are more satisfied? Bangladesh journal of medical education. 2011; 02: 12.
23. Locke, E. A. (1976). The nature and causes of job satisfaction. In M. D. Dunnette (Ed.), Handbook of industrial andorganizational psychology (pp. 1297-1349). Chicago, IL: Rand McNally.
24. Elit L, Trim K, Mand-Bains IH, Sussman J, Grunfeld E; 8. Society of Gynecologic Oncology Canada. Job satisfaction, stress, and burnout among Canadian gynecologic oncologists. GynecolOncol2004; 94: 134-9.
25. Madaan N. Job satisfaction among doctors in a tertiary care 10. Teaching hospital. JK Sci2008; 10: 81-3.
26. Steele. J., Bourke. L., Luloff. A.E., Liao. P., Theodori. G. T., and Krannich. R. S. The Drop-Off/Pick-Up Method for Household Survey research. Journal of the Community Development Society 2001; 32(2): 245.
27. Teck-Hong. T. and Waheed. A. Herzberg's Motivation-Hygiene and Job Satisfaction in the Malaysian Retail Sector: Mediating Effect of Love of Money. Asian Academy of Management Journal 2011; 16-1: 73-94.
28. Di1. Matteo MR, Sherbourne CD, Hays RH, Ordway L, Kravitz RL, and McGlynn EA, et al. Physicians 'characteristics influence patients' adherence to medical treatment: results from the medical outcomes study. Health Psychol 1993; 12: 93-102.
29. Haas JS, Cook EF, 2. Puopolo AL, Burstin HR, Cleary PD, Brennan TA. Is the professional satisfaction of general intern associated with patient satisfaction? J Gen Intern Med 2000; 15: 122-8.
30. Keeton K, 3. Fenner DE, Johnson TR, Hayward RA. Predictors of physician career satisfaction, work-life balance, and burnout. ObstetGynecol 2007; 109: 949-55.
31. Janus K, Amelung VE, Gaitanides M, Schwartz FW. German 4. Physicians "on strike"-shedding light on the roots of physician dissatisfaction. Health Policy 2007; 82: 357-65.
32. Shakir S, Ghazali A, Shah IA, Zaidi SA, Tahir MH. Job satisfaction among doctors working at teaching hospital of Bahawalpur, Pakistan. J Ayub Med Coll Abbottabad. 2007; 19 (3): 42-45.
33. Hills D, Joyce C, Humphreys J. Validation of a job satisfaction scale in the Australian clinical medical workforce. Eval Health Prof. 2012; 35(1): 47-76.
34. Berry LL. The Employee as a customer. The J Retail Bank 1981; 3(1): 33-40. & Foreman S, Money AH: Internal marketing: concepts, measurement and application. J. Market Manag. 1995; 11(8): 755-768.
35. Hendrix W. Job and personal factors related to job stress and risk of coronary artery disease. Psychol Reports. 1989; 65: 1136-8.
36. Mann E, Jefferson K. Retaining staff: using turnover indices and surveys. J Nurs Admin. 1988; 18: 17-23.
37. Powell L. Conducting employee satisfaction surveys hospital. Idaho: Mountain States Group, Inc. 2001;
38. Ofili AN, Asuzu MC, Isah EC, Ogbeide O. Job satisfaction and psychological health of doctors at the University of Benin Teaching Hospital. Occup Med (Lond) 2004, 54(6):400-3.
39. Saheeb B, Mafeni J. Job Satisfaction Among Nigerian Dental Practitioners. Nigerian Quarterly Journal of Hospital Medicine 1999, 9(1):42-46.
40. Ofili A. A comparative study of job dissatisfaction among doctors and nurses at the University of Benin Teaching Hospital, Benin City, Edo-state, Nigeria. Project report, Faculty of Community Health, West African Postgraduate Medical College 1998, 90.
41. Gupta R, Vohra AK, Gupta A Singla SL. A Study of Hostility, Career choice and Job satisfaction among surgeons, MJAFI. 2002; 58: 210-13.
42. Nylenna M, Gulbrandsen P, Forde R, Aasland OG. Job satisfaction among Norwegian general practitioners, Scandinavian Journal

of Primary Health Care. 2005; 23: 198-202.
43. Abd Patah, M. O. R., Radzi., S. M., Abdullah, R., Adzmy, A., Adli.Zain, R., & Derani, N. (2009). The influence of psychological empowerment on overall job satisfaction of front office receptionists. International Journal of Business and Management, 4 (11), 167 – 176.
44. ACNielsen (2006). Asia Pacific retail and shopper trends. Consumer Report. Retrieved from http://www.au.nielsen.com.
45. Adams, J. S. (1965). Inequity of social exchanges, advances in experimental social psychology. New York: Academic Press.
46. Breed, M., & Breda, V. (1997). The relationship between employee motivation and job satisfaction. Management, 34 (1), 54-63.
47. Carr. G. (2005). Investigating the motivation of retail managers at a retail organization in the Western Cape (Unpublished mini-thesis). University of the Western Cape, South Africa.
48. Dunnette, M. D., Campbell, J. P., & Hakel, M.D. (1967). Factors contributing to job satisfaction and job dissatisfaction in six occupational groups. Organizational Behavior and Human Performance, 2, 143-174.
49. Ewen, R. B., Smith, P. C., & Hulin, C. L. (1966). An empirical test of the Herzberg two-factor theory. Journal of Applied Psychology, 50 (6), 544 – 550.
50. Furnham, A. (1994). National attitudes to competitiveness, money and work among young people: first, second and third world differences. Human Relations, 47,119-32

Knowledge, Attitude and Practice Regarding Consumption of Organic Food among the Individuals in Selected Areas of Dhaka City

Ahmed MF[1], Yasmin N[2], Seoty NR[2]

Abstract

The awareness on the harmful effects of chemicals present in food is increasing among the consumers. The trend towards purchasing organic food is growing among people. This study focused the level of knowledge, attitude and practice regarding the consumption of organic food among the individuals in selected areas of Dhaka City. A semi structured interviewer administered questionnaire was used to collect data from 238 respondents from different super shops of Dhaka City. Only about one-fourth of respondents were acquainted with organic food. Close to half respondents had poor knowledge on organic food and about thirty six percent of them had very poor knowledge on organic food, although approximately half of them had completed their post graduation. Two-third of the respondents agreed that organic food is not easily available. Those who purchased organic food, about half of the respondents had good attitude towards organic food. Despite of being poor knowledge on organic food, three fourth of the respondents had good attitude on organic food. About eighty percent of them appeal for more organic food. So the retailer should increase the availability of organic food through the country.

Keywords: Organic food, Organic farming, Super shop.

Introduction

Agriculture is the integral culture of Bangladesh. Agriculture has a great contribution to the Gross Domestic Product (GDP) of the country. Earlier more than 50% of GDP came from this sector.[1] A large amount of people live on agriculture. The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security.

Balanced diet is human need and right because it provides elements for better health. But in Bangladesh, food is very much biased to cereals resulting imbalanced diet. Moreover, the produced food is contaminated with various chemicals. As a consequence, malnutrition, which is the manifestation of under nutrition, is wide spread with different disorders like diabetics, heart diseases, blindness, beriberi, anemia etc. Food is usually derived from animal and plant resources. Because of the rising awareness and consciousness on environmental, ethical and welfare issues, consumers now expect their food to be produced and processed with greater respect for the environmental safety and the consumers are increasingly looking for quality in food products. Organic practices are the right option to fulfill the demand of the consumers. Organic foods are foods that are produced using methods of organic farming – that do not involve modern synthetic inputs such as synthetic pesticides and chemical fertilizers. Organic foods are also not processed using irradiation, industrial solvents, or chemical food additives. Organic food production is a heavily regulated industry, distinct from private gardening. The aim of food consumption is not only body nourishment but also heath improvement. If the food available is not safe or its consumption does not enhance health, it does not contribute to food security. Organic food has been analyzed from many perspectives and in

[1] Care Medical College Hospital
[2] Department of Public Health, State University of Bangladesh
*Corresponding author : Dr. Md. Faysal Ahmed, Emergency Medical Officer, Care Medical College Hospital, Dhaka. email: drfaysal2016@gmail.com

many countries. It contributes to an emerging example for food production which relies on biology, ecology and sociology rather than more one-dimensional chemical and physical management approaches.[2]

For the vast majority of its history, agriculture can be described as having been organic, only during the 20th century was a large supply of new chemicals introduced to the food supply.[3]

The organic farming movement arose in the 1940s in response to the industrialization of agriculture.[4] Early soil scientists also described the differences in soil composition when animal manures were used as "organic", because they contain carbon compounds where superphos- phates and Haber process nitrogen do not. Their respective use effects humus content of soil.[5]

Organic food is becoming popular among the consumers of city area. For this reason some shop initiate selling organic food. Such Probortana, PROSHIKA, Meena Bazar and others sales these food products at a higher price which sometimes goes beyond the capacity of general people. Opposite situation is found in rural areas. Farmers in general grow vegetable and other consumable foods without pesticide and fertilizer for their own household consumption and these are not sold in the markets. Recently different private companies/ chain shops (like Agora, Meena bazar, Nandan etc.) are selling organic vegetables – these are for higher income people. Kazi farm is already exporting 100% of their products in the USA and EU countries.[6] Proshika and BARI farmers and Dhamrai dairy need to improve animal husbandry and fertilizer management to reach at international level. Production and marketing system of organic agricultural products mainly are done by contract farming for private organizations/companies / chain shops and does not ensure fair price for the producing farmers. At present, government also started to think about sustainability in agriculture.[7] There is a large scope to grow vegetables organically as the consumers desire to buy organic food are increasing as well as quality of vegetable can be assured through technological encroachment. Organically produced safe vegetable consumption will decrease the incidence of mal-nutritional disorders, reduce the ingestion of cereals and generate more income to the farmers and vegetable traders. Moreover, vegetable export volume will be increased. Effective collaboration, capacity building, formulations of regulations can help to increase the organic production. Thus the safe vegetables can play vital role for nutritional, financial and food security of the peoples of Bangladesh.[8]

Methodology

A questionnaire was designed to gather exploratory data on knowledge, attitude and practice of the individuals on organic food. The questionnaire was developed in English, and then translated into Bengali to ensure that the questions had retained their original meaning. The questionnaire was divided into two parts. In the first part of the questionnaire, basic demographic data were collected. Also respondents were asked whether they heard about organic food. In the last part of the questionnaire, respondents who have indicated that they had heard about 'organic food' were presented with statements regarding organic agriculture and food, and asked whether they agree with these statements. Also, reasons to purchase or not to purchase organic products were assessed. Data were collected in four months starting from December, 2015 to April, 2016.

Super shops of Dhanmondi, Mohammadpur and Gulshan area in Dhaka City carrying organic foods as well as a range of fruits and vegetables displaying 'Organic' were selected for the interviews. Super shops of these areas were selected to ensure that a range of customer types are included in the study. The information of the respondents was collected by interviewer

administered semi-structured questionnaire after taking verbal informed consent from the respondents. The questionnaire was developed with 50 questions that covered knowledge, attitude and practice related information of the respondents. There were five level of knowledge applied in this study where the value obtained in percentage. Respondents with ≥ 80% of correct answer were assigned excellent knowledge, those with 60-70% of correct answers were assigned good knowledge, 40-59% were assigned average knowledge, 20-39% were assigned poor knowledge and those with less than 20% were assigned to have very poor knowledge. Knowledge scale which is used in this study was developed by researcher herself. Statistical analysis was performed by using window based computer software devised with Statistical Packages for Social Sciences and Microsoft Office Excel 2007. Data were presented by tables and graph.

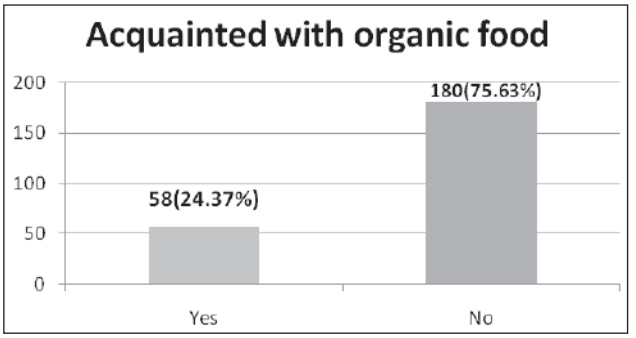
Findings

Table 1: Distribution of respondents by age & socio-demographic characteristics (n= 238)

Socio-demographic characteristics	Frequency (n)	Percentage (%)
Age		
Up to 30	88	37
More than 30	150	63
Sex		
Male	115	48.3
Female	123	51.7
Marital status		
Married	180	75.6
Unmarried	58	24.4
Religion		
Islam	229	96.2
Hindu, Buddhism	9	3.8
Education		
Up to HSC	29	12.2
BSC or equivalent and above	209	87.8
Occupation		
Service	93	39.1
Business	33	13.9
Housewife	73	30.7
Retired & Student	39	16.4
Monthly Family income (BD)		
Less than 50000	107	45
More than 50000	131	55
Family type		
Nuclear	59	24.8
Joint	179	75.2

Table 1 shows the socio-demographic characteristics of the respondents. Mean age of the respondents was 38 years. 63% respondents were up to 30 years age group and 37% respondents were more than 30 years age group. 51.7% were female and 75.6% were married. Most of the respondents (96.2%) were Muslim, 87.8% were BSC or equivalent and above, 39.1% were Service holder and 75.2% of respondents lived in a joint family.

Figure 1. Distribution of respondent according to whether they acquainted with organic food (n=238)



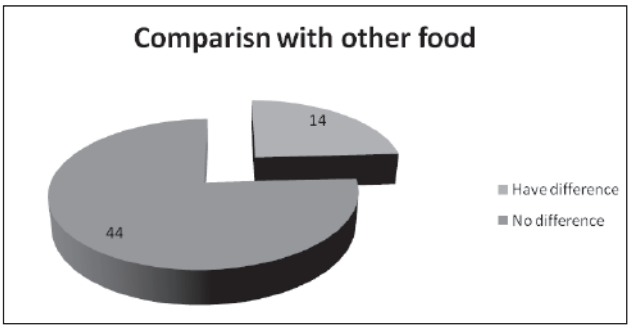
This figure illustrates that 75.63% (n=180) of respondents acquainted with organic food and 24.37% (n=58) did not acquainted with organic food.

Table 2. Distribution of respondents by knowledge related characteristics (n=58)

Knowledge related characteristics of organic food	Frequency (n)	Percentage (%)
Production cost		
Costly	6	10.3
Not costly	3	5.2
Same cost as other food	2	3.4
Don't know	47	81.0
Pattern of differences with other food		
Safe	9	69.2%
Tasty	5	38.5%
Less contamination	2	15.4%
Other difference (Better smell)	5	38.5%
Physical difference with other food		
Looks fresh	2	3.45
Does not look fresh	19	32.76
Tortures	37	63.79
Side effect on health		
Have side effect	2	3.4
No side effect	56	96.6

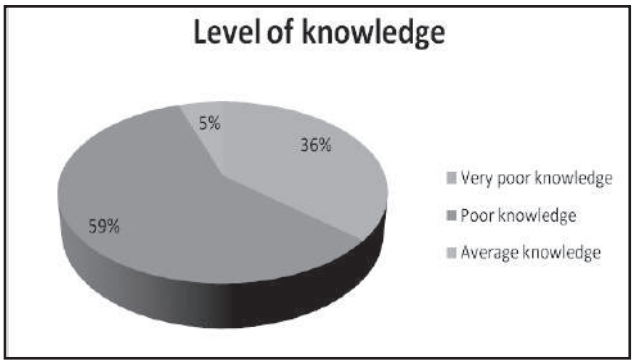
Table 2 shows that 81% respondents did not know about the production cost of organic food, 69% indicated that organic food is safe, 64% mentioned that it looks tortures, about 97% of them implied that is has no side effect and according to 95% of the respondents there is no law on organic food.

Figure 2. Distribution of respondent according to knowledge of organic food. (n=58)



The pie chart shows that among 58 respondents who heard about organic food 75.9% (n=44) knew there is no difference of organic food with other food and 24.1% (n=14) knew there were difference of organic food with other food.

Figure 3: Distribution of respondent according to the level of knowledge on organic food (n=58)



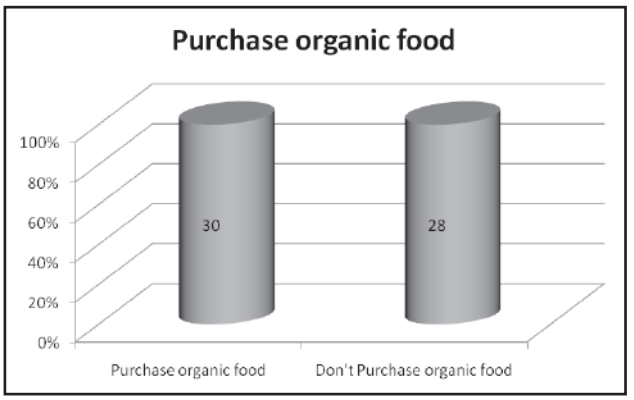
The previous figure illustrates the level of knowledge of the respondents towards organic food. It shows that among 58 respondents who have heard about organic food 58.6% (n=34) had poor knowledge on organic food, whereas 36.2% (n=21) had very poor knowledge on organic food and 5.2% (n=3) had average knowledge on organic food.

Table 3: Distribution of respondents according to level of attitude towards consumption of organic food. (n=58)

Attitude score	Frequency (n)	Percentage (%)
Good attitude	43	74.1
Excellent attitude	15	25.9
Total	58	100.0

The above table illustrates the level of attitude of the respondents towards organic food. It shows among 58 respondents, 74.1% (n=43) had good attitude towards organic food and 25.9% (n=15) respondents had excellent attitude.

Figure 4: Distribution of respondent according to whether they purchase organic food (Among those who are acquainted) (n=58)



The above chart shows that among 58 respondents who heard about organic food 51.7% (n=30) purchase organic food and 48.3% (n=28) did not purchase organic food.

Table 4: Relationship between attitude of the respondent and purchase of organic food (n=58)

Purchase of organic food	Attitude of the respondent		Total
	Good attitude	Excellent attitude	
Yes	22(51.16%)	8(53.33%)	30(51.72%)
No	21(48.83%)	7(46.67%)	28(48.28%)
Total	43(100%)	15(100%)	58(100%)

This table illustrates the relationship between attitude of the respondents and purchase of organic food. It shows that respondents purchased organic food 51.16% had good attitude and 53.33% had excellent attitude. And respondents those did not purchase organic food 46.67% had excellent attitude, though 48.83% had good attitude of organic food.

Table 5. Relationship between education of the respondents and acquainted with organic food (n=238)

Acquainted with organic food	Education of the respondent				Total
	SSC	HSC	BSC or equivalent	Masters or above	
Yes	0(0%)	1(5%)	26(25%)	31(29.52%)	58(24.37%)
No	9(100%)	19(95%)	78(75%)	74(70.48%)	180(75.63%)
Total	9(100%)	20(100%)	104(100%)	105(100%)	238(100%)

This table shows relationship between education of respondents and whether they acquainted with organic food. Among 238 respondents those who were masters or above degree holder 29.52% heard about organic food and 70.48% did not hear about organic food. Among BSC or equivalent degree holder 25% respondents heard about organic food and 75% did not hear about organic food.

Discussion

This descriptive type of cross sectional study was conducted among 238 respondents of selected super shops in Dhaka City to find out the level of knowledge, attitude and practice regarding consumption of organic food.

Majority of the respondents were Muslim (96.2%) and about three-fourth of them were married. Around forty four percentage of respondents completed master's degree and around thirty nine percent of them were service holder. Around forty eight percent of them had a monthly personal income less than 100000 BDT. A large percentage of respondents (75.2%) were lived in nuclear family and around fifty percent of them had family member between two to four. The result from this study indicates that, around seventy five percent of respondents did not hear anything about organic food. Twenty eight percent married respondents acquainted with organic food and only twelve percent unmarried respondents did not acquaint with organic food. About seventy one percent of married were not acquainted with organic food but about eighty seven of unmarried respondents were not acquainted with organic food.

A large number of respondents had completed their master's degree (44.1%) and highest percentage of respondents (48.7%) had a monthly family income ranging from twenty thousand to fifty thousand taka. Despite of being highly educated and earned study results shows that, 24.37% respondents heard about organic food, only about twenty percentage of respondents knew the meaning of organic food, twenty four percent respondents knew the differences of organic food with other food, about twelve percent of respondents knew the process of organic farming, only about five percent of the respondents had average knowledge on organic food and other had poor or very poor knowledge on organic food.

Despite of having poor knowledge on organic food about seventy four percent of the respondents had good attitude on organic food and about twenty five percent of the respondents had excellent attitude on organic food. The respondents those purchased organic food, about twenty two percent had good attitude on organic food.

Knowledge level of the respondents regarding organic food was poor among the respondents. A little less than sixty percent (58.6%) of the respondents had poor knowledge and about thirty six percent of the respondents had very poor knowledge. Though there was poor knowledge level of the respondents regarding organic food,

about ninety four percent of the respondents agreed that organic food is good for health. Majority of them (96.7%) knew it is available in super shops. Although there are a number of organic food found in the market, but most of the respondents (71.9%) knew only vegetables as organic food and most of them (83.3%) purchase organic food once in a month.

Approximately seventy one percent of the respondents purchased vegetables as organic food and only thirty four percent of them purchased fruits as organic food. Majority of them (83.3%) purchased organic food in a frequency of once in a month and around ninety six percent of them purchased it from super shops. Forty two percent of the respondents having Graduate degree purchase organic food, where sixty one percent of the respondents having Master degree purchased organic food. Although the knowledge level of the respondents was poor, majority of them (81%) appeal for more organic food and ninety four percent of the respondents agreed that organic food is nutritious than other foods.

Due to time and other constraint, this study was conducted only on two hundred and thirty eight respondents which might reflect the actual result representing the status of knowledge, attitude and practice of the population all over the country.

REFERENCES

1. Hasan M. Statistical Pocket of Bangladesh & Bangladesh Economic survey report,2004. http://www.bbs.gov.bd/. December 2006.
2. Maria K. Magnussona. Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. Appetite. 2003; 40: 109–117. http://ucanr.edu/datastoreFiles/608-789.pdf.Published date 19 December 2002. Accessed date: 15 November 2015
3. Pimentel D. Soil erosion: a food and environmental threat. Environment, Development and Sustainability. 2006; 8(1): 119-137
4. Laurie E.Ecological knowledge: Foundation for sustainable organic Agriculture.Organic Farming: Ecological system.USA;2009:19
5. P.John. the Farm as Organism: The Foundational Idea of Organic Agriculture. Organic eprint. 2010; 97: 14-18. http://orgprints.org/view/projects/au.refereed.html. Published date December 2010. Accessed date: 15 November 2015
6. *Myung S. Efficacy of vitamin and antioxidant supplements in prevention of cardiovascular disease: systematic review and meta-analysis of randomised controlled trials". BMJ. October 2013*
7. Sarker A. ORGANIC FARMING AND POVERTY ELIMINATION: A SUGGESTED MODEL FOR BANGLADESH. The new nation. 2006; 3(1): http://www.organic-systems.org/journal/Vol_3(1)/pdf/68-80%20Sarker.pdf.2008. Published date December 2010. Accessed date: 15 November 2015
8. MukulA. Factors Affecting Consumers' Perceptions about Organic Food and Their Prevalence in Bangladeshi Organic Preference. Journal of Business and Management Sciences. 2013; 1(5): 112-118. http://pubs.sciepub.com/jbms/1/5/5/. Published date 18 November 2013. Accessed date: 15 November 2015

Prevalence of Depression among Diabetic Patients Attending Tertiary Level Hospitals in Dhaka City

Rahman MK[1] , Shahjahan M[2], Seoty NR[2]

Abstract

Depression is common among diabetic patients, and associated with poor outcomes. However, the data on this important relationship are limited. This cross-sectional study was conducted among 234 type Diabetic patients of both sexes above 20 years of age, attending outpatient department of a tertiary level hospital of Dhaka city. Socio -demographic and life style related data were collected by interviewer administered, semi structured questionnaire Depression was assessed using the patient health questionairre-9 (PHQ-9). Height, weight, blood sugar, HbA_{1c} of the respondents were taken from personal record book. Blood sugar and HbA1c level were categorized according to IDF guide line 2016. BMI (Body Mass Index) was categorized by following WHO criteria The mean age ± SD of the patients was 49.47 ± 11.17 yrs and 56.4%)of them were female. The prevalence depression of this study was 56.4%. Among the respondents 43.6%, 38.9%, 15.8% and 1.7 % had no depression, mild depression, moderate depression and severe depression respectivly. Sex, educational status, occupation, monthly family income, betel nut chewing, blood sugar 2 hours after breakfast and HbA1c had significant relationship with depression but no significant relationship was found among age, marital status, smoking habit, BMI, fasting blood sugar and family history of Diabetes mellitus with depression. The present study found a high prevalence of depression among patients with diabetes. Universal screening for depression should be done in patients with diabetes.

Key words: Depression, Diabetes mellitus, Prevalence.

Introduction

Diabetes mellitus (DM) and depression are two major non–communicable diseases which have become global epidemics and cause significant mortality and morbidity[1-3]. The global burden of disease study predicted that by 2030, depression is set to become the leading disease with 6.3% of the overall disease burden, and diabetes will be in 10th place with 2.3% of the overall disease burden as a percentage of the overall disability adjusted life years [4]

Worldwide, the prevalence of mood and anxiety disorders is higher among persons living with diabetes compared to those without diabetes [3-5]. The bidirectional relationship of diabetes with depression is presented by many studies [6-8]. Depression can be viewed as a modifiable independent risk factor for the development of diabetes mellitus (DM) and for progression of complications from either Type-I or Type-II diabetes.2 Co-morbid depression among persons living with diabetes is associated with poor markers of diabetes control, such as glycemic control, retinopathy, nephropathy, neuropathy, micro- vascular complications and sexual dysfunction.

Eighty percent of people with diabetes mellitus reside in low-and middle-income countries. Yet much of the research about depression among people with diabetes has been conducted in high-income countries[3].

Despite a very important public health issue, the prevalence of depression in diabetic people of Bangladesh and the impact of depression over their diabetes status were not yet studied with much more emphasis. This study was conducted among the patients with diabetes at a large outpatient treatment facility in the Bangladeshi capital city to find out the prevalence of depression and associated factors with it among diabetic patients.

[1] BIRDEM General Hospital, Shahbag, Dhaka
[2] Department of Public Health, State University of Bangladesh

*Corresponding author: Dr. Md Khalidur Rahman, Deputy Chief Medical Officer, BIRDEM General Hospital, Shahbag, Dhaka. email: drkhalidur@gmail.com

The recognition and addressing of this association can have profound implications for prevention and treatment of these disorders.

Methodology

This cross-sectional study was conducted among 234 type Diabetic patients of both sexes above 20 years of age, attending outpatient department of a purposively selected tertiary level hospital of Dhaka city from 8th August to 7th December, 2017. Socio-demographic and life style related data were collected by interviewer administered, semi structured questionnaire. Level of depression was assessed using the patient health questionairre-9 (PHQ-9). The PHQ-9 is the 9-question depression scale is based on diagnostic criteria of depression from DSM-IV and asks about the patient's experience in the last 2 weeks. Responses range from "0" (Not at all) to "3" (nearly every day). Scores range from 0 to 27. The total sum of the responses suggests varying levels of depression. The levels of depression according to PHQ-9 scores- no depression (0-4), mild (5-9), Moderate (10-19) and severe depression (≥20). Height, weight, blood sugar, HbA_{1c} of the respondents were taken from personal record book. Blood sugar and HbA1c level were categorized according to IDF guide line 2016[9]. BMI (Body Mass Index) was categorized by following WHO criteria[10]. Before initiation of the interview a brief introduction on the aims and objectives of the study was presented to the respondents. They were informed about their full right to participate or refuse to participate in the study. The researcher also assured the respondents that there was no invasive procedure included in the study and all the findings of the study would be used for research purpose. A complete assurance was given to them that all information provided by them would be kept confidential and their names or anything which can identify them would not be published or exposed anywhere. Their participation and contribution was acknowledged with due respect. After completion of these procedures the interview was started with their due consent. Each day on an average 8 patients were interviewed, after selecting 1st patient, every 5th one was interviewed until the required number of sample were fulfilled. After collection of data, all responses were checked for their completeness and correctness in order to exclude missing or inconsistent data and analyzed by using SPSS (Statistical Package for Social Sciences) version 16. Descriptive statistics were generated along with frequency distribution, mean, and standard deviation. Chi-square test were used to find out the relationship between depression and other variable . After analysis data were presented with graphs and tables.

Findings

Table 1: Distribution of the respondents by socio-demographic criteria (n=234)

Socio-demographic criteria	Frequency	Percentage (%)
Age (years)		
< 40	55	23.5
41 to 60	141	60.3
>60	38	16.2
Mean age ± SD= 49.47±11.173		
Sex		
Male	102	43.6
Female	132	56.4
Marital status		
Married	205	87.6
Unmarried	5	2.1
Widow/widower	22	9.4
Divorced	2	0.9
Education		
Illiterate	47	20.1
Primary	91	38.9
Secondary	58	24.8
Graduation& Post graduation	38	16.2
Occupation		
Service	40	17.1
Business	36	15.4
House maker	105	44.9
Others	53	22.6
Monthly family income		
<10,000	54	23.1
10,000 to 25,000	72	30.8
26,000 to 50,000	76	32.5
>50,000	32	13.7

Table 1 shows that majority of the respondents (60.3%) were between the age group of 41-60 years. The age range was 26-80 years. The mean ± SD age of the respondents were 49.47 ± 11.17 years. Among the respondents, 56.4% were female and majority (87.6%) of them was married. This table shows that 38.9% respondents received primary education, 24.8% had secondary level of education and 16.2% obtained graduation & above degree. But One fifth (20.1%) of the respondents were illiterate. Most of the respondents were house maker (44.9%). About 17% were Service holders, 15.4% were businessman and rest 22.6% was involved in different types of job. About one-third (32.5%), the majority group had monthly family income between Tk. 26,000/ to 50,000/. Near about one fourth respondent's income was below Tk. 10,000/.

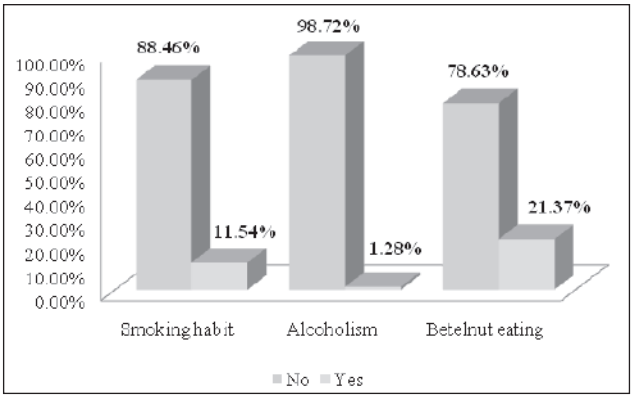


Figure-1: Distribution of the respondents by habit of smoking, alcohol consumption and betel nut chewing (n=234)

Figure-1 shows that 21.37% respondents reported betel nut chewing, 11.54% respondents mentioned their smoking habit and only 1.28% consume alcohol.

Table 2: Distribution of the respondents by Diabetes mellitus, HbA1c level and BMI related information (n=234)

Diabetes Mellitus and HbA1c level & BMI related information	Frequency	Percentage (%)
Family history of Diabetes Mellitus		
Present	142	60.7%
Absent	92	39.3%
Fasting blood glucose		
Up to 8.0 mmol/l (Well controlled)	110	47.0
8.1-10 mmol/l (Reasonable controlled)	54	23.1
>10 mmol/l (Uncontrolled)	70	29.9
Blood sugar 2 hours after breakfast		
< 10.0 (Well controlled)	58	24.8
10-12 (Reasonable controlled)	41	17.5
>12 (Uncontrolled)	135	57.7
HbA1c level (n=124)		
< 7.5 (Well controlled)	37	29.84
7.6-8.5(Reasonable controlled)	23	18.55
≥ 8.5 (Uncontrolled)	64	51.61

All respondents were suffering from Type-II diabetes mellitus. Among them 60.7% had the family history of diabetes mellitus. Majority (47.0%) of the respondents' fasting blood glucose level was well controlled. Uncontrolled level of fasting blood glucose was found among 29.9% respondents. Majority of the respondents (57.7%) had uncontrolled blood sugar level 2 hours after breakfast that was > 12 mg/dl. Near about one fourth (24.8%) had well controlled. HbA1c was done by 124 respondents, among them more than half (51.61%) was considered uncontrolled (≥ 8.5) whereas 29.84% had controlled (< 7.5) HbA1c.

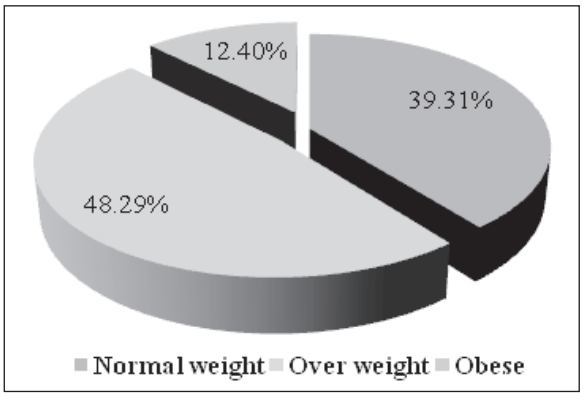


Figure-2: Distribution of the respondents by BMI

Nearly half (48.29%) of the respondents were overweight. A good proportion (12.40%) was obese and 39.31% respondents were in normal weight.

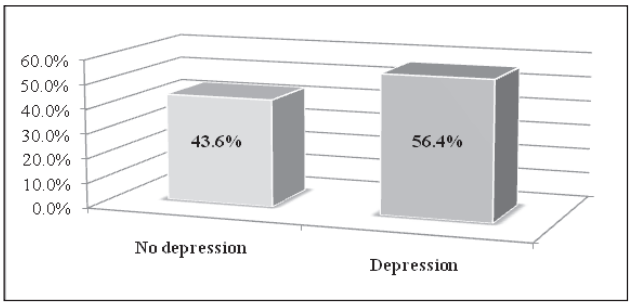


Figure-3: Distribution of the respondents by prevalence of Depression

In this study prevalence of depression was 56.4%.

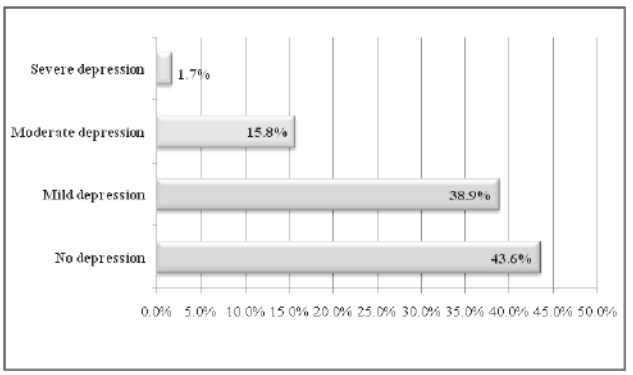


Figure-4: Distribution of respondents by Level of depression (n = 234)

Among 234 respondents 102 (43.6%) had no depression, 38.9% had mild depression, 15.8% had moderate depression and 1.7 % of the respondents had Severe depression.

Table 3: Relationship between Depression and Socio-demographic variables of the respondents

Variables	Depression	
	No depression	Depression
Age (years)		
< 40	19 (34.5%)	36 (65.3%)
41 to 60	65 (46.1%)	76 (53.9%)
>60	18 (47.4%)	20 (52.6%)
Sex		
Male	64 (62.7%)	38 (37.3%)
Female	38 (28.8%)	94 (71.2%)
Marital status		
Married	2 (40.0%)	3(60.0%)
Unmarried	94 (45.9%)	111 (54.1%)
Widow/widower	6 (25.0%)	18 (75.0%)
Divorced	2 (40.0%)	3 (60.0%)
Educational status		
Illiterate	13 (27.7%)	34 (72.3%)
Primary	36 (39.6%)	55(60.4%)
SSC / HSC	26 (44.8%)	32 (55.2%)
Graduation and above	27 (71.1%)	11 (28.9%)
Occupation		
Service	31 (77.5%)	9 (22.5%)
Business	19 (52.8%)	17 (47.2%)
House maker	27 (25.7%)	78 (74.3%)
Others	25 (47.2%)	28 (52.8%)
Monthly family income		
<10,000	13 (24.1%)	41 (75.9%)
10,000 to 25,000	33 (45.8%)	39 (54.2%)
26,000 to 50,000	37 (48.7%)	39 (51.3%)
>50,000	19(59.4%)	13 (40.6%)

Table 3 shows that sex, educational status, occupation and monthly family income had significant relationship with depression but no significant relationship was found with age and marital status.

Table 4: Relationship between Depression and habit of smoking, alcohol consumption and betel nut chewing

Smoking habit			
No	89 (43.0%)	118 (57.0%)	0.379
Yes	13 (48.1%)	14 (51.9%)	
Betel nut chewing			
No	86 (46.7%)	98 (53.3%)	0.043
Yes	16 (32.0%)	34 (68.0%)	
Alcohol consumption			
No	101 (43.7)	130 (56.3)	0.596
Yes	1 (33.3)	2 (66.7)	

Table 4 shows that betel nut chewing was significantly related with depression. But no significant relationship was found smoking habit and alcohol consumption with depression.

Table 5: Relationship between Depression, and Diabetes mellitus, $HbA1_c$ level and BMI

BMI			
Normal	40 (42.1%)	55 (57.9%)	0.787
Overweight	53 (44.4%)	63 (55.6%)	
Obese	9 (39.1%)	14 (60.9%)	
Fasting blood sugar			
Up to 8.0 mmol/L	54 (49.1%)	56 (50.9%)	0.147
8.1-10 mmol/L	24 (44.4%)	30 (55.6%)	
>10 mmol/L	24 (34.3%)	46 (65.7%)	
Blood sugar 2 hours after breakfast			
< 10.0 mmol/L	36 (62.1%)	22 (37.9%)	0.005
10- 12 mmol/L	15 (36.6%)	26 (63.4%)	
>12 mmol/L	51 (37.8%)	84 (62.2%)	
HbA_{1c}			
< 7.5	20 (54.1%)	17 (45.9%)	0.017
7.6-8.5	13 (56.5%)	10 (43.5%)	
≥ 8.5	19 (29.7%)	45 (70.3%)	
Family history of DM			
No	35 (38.0%)	57(62.0%)	0.107
Yes	67 (47.2%)	75 (52.8%)	

Table 5 shows that blood sugar 2 hours after breakfast and HbA1c had significant relationship with depression but no significant relationship was found among BMI, fasting blood sugar and family history of DM with depression.

Discussion:

Diabetes mellitus and depression, the duo of chronic disorders are interlinked with one another where depression may contribute to the poor Diabetes control and decreased outcomes. Diabetes and its complication may also contribute to the poor management of depression.

The depression in this study was found in 56.4% of the patients. High prevalence of depression has been reported from other studies also[11-13]. The eight studies in India from both urban and rural populations were recently summarized in a systematic review. Of the six urban clinic-based studies, between ¼ and ⅓ of the participants with diabetes were depressed. In four studies used (PHQ-9) questionnaire for the assessment of depression among diabetics in India. The prevalence of depression (56.4%) in diabetes mellitus patients in this study was nearly similar to other studies (35-50%). Of the patients assessed, 1.7% patients fulfilled the criteria for severe depression, 15.8% for moderate depression, 38.9% for mild depression and 43.6% patients had no clinically significant depression.[14] Studies from USA and UK reported the prevalence of depression in patients with Type-II diabetes mellitus varying from 30 to 83 per cent [15]. A small study from Iran reported 55 per cent prevalence of depression in patients with Type-II diabetes mellitus [16]. Similarly, a meta-analysis by Anderson et. al.[17] identified the prevalence of depression in diabetes ranging from 8 to 61 per cent.

In this study a statistically significant association was found between sex and depression status. (p=0.000). The data regarding the predilection of gender with depression are conflicting [18.] Studies from the West have suggested the higher prevalence of depression in women as compared to men[19.] The higher prevalence of depression in women is influenced by adverse experiences, sociocultural roles, psychological attributes, and biological factors including hormones and poor social support as these are the major determinants for higher prevalence of depression in women. Similar findings have not been reported by Raval et al. from Chandigarh. There was no sex predilection for depression in that study. Better social fabric and support may be the reasons for that[13].

No association was seen between marital status and depression in the present study which is similar to the observations made in a study done in Bahrain.[20] However, single respondents have shown higher depression score than their married counterparts in several other studies.[21,22]. Educational status was found to be associated with depression in the present study which is not

consistent with the findings of few other studies.[23,24] But many other studies found significant association between the two[25,26].

In a study done in Bangladesh, housewives were found to suffer the most from severe depression, whereas retired persons were found to suffer the most from mild to moderate depression ($P < 0.05$). However another study done in US reported no significant association between depression and the respondents' employment status ($P= 0.84$).[27] Depression was found to be more among patients who were doing unskilled worker (house maker). This could be probably due to financial burden imposed by the disease on these groups

In some studies, higher prevalence of depression was found in rural population, when compared to urban ones and the difference was statistically significant. It may be related to socioeconomic status. The diagnosis of Diabetes Mellitus and its poor understanding in rural areas may be an additional stress causing depression in these people. But in this study majority of the respondents (46.2%) were living in urban area followed by rural area (38.0%) and also 15.8% were living in suburban area. No statistically significant association was found between depression and place of residence (not mentioned in table). In a study the interesting finding being higher prevalence of depression in a rural population, when compared to urban ones, and the difference was statistically significant [14].

Nearly half (48.29%) of the respondents were overweight. A good proportion (12.40%) was obese and 39.31% respondents were in normal weight. A number of other studies also found statistically significant association between obesity (BMI ≥30 kg/m2) and depression among Type-II diabetes mellitus patients.[28,29]. Probable reason for this could be that obesity is often associated with a reduction in self-esteem and social and psychological problems. In few other studies however no association was established.[21,26],. between BMI and diabetes.
There are conflicting reports regarding the association between glycaemic control and depression[13]. Poor glycaemic control may result in depression and vice versa depression may result in poor glycaemic control. However, in some study there was no difference in HbA1c level in patients with and without depression[13]. But in this study significant association was found between blood sugar 2 hours after breakfast and depression ($p=0.005$) and HbA1c and depression ($p=0.017$). In this study, uncontrolled level of fasting blood glucose (>10mg/dl) was found in 70 respondents (29.9%). HbA1c was done by 124 respondents, among them more than half (51.61%) level was > 8.5 that was considered uncontrolled.

A meta-analysis (16 studies), concluded that depression increases all-cause mortality, with the relative risk of dying being 2.5 times higher in depressed compared to non-depressed people. The mortality risk remained high even after additional adjustment for diabetes complications (hazard ratio = 1.76). The information presented, thus far, underscores the extensive adverse effects of untreated depression, including decreased capacity and functioning, increased risk of suicide, and increased medical morbidity and mortality from all causes[30]. However, much of the evidence for depression and Type-II diabetes mellitus came from HICs, and few studies have systematically evaluated depression in diabetes in LMICs, which includes India.3 The present study will add to the limited literature available in Bangladesh on relationship between diabetes and depression.

This study has some limitations. One of the limitations of this study is the small sample size. This study was cross-sectional, so inference about causality between depression and diabetes cannot be made. The study was conducted in tertiary care hospital, so a possible selection bias cannot be excluded, as more depressed/complicated patients might be seeking specialized diabetes

care. A large sample from the community could throw more light on this relationship.

Conclusion and Recommendations

This study found a high prevalence of depression (56.4%) among diabetic patients. Mild depression was 38.9%, moderate depression 15.8, and 1.7 % of the respondents had severe depression.

The study found significant relationship between depression in diabetic patients with sex, education, occupation, family income, blood sugar 2 hours after breakfast and HbA1c. But no relation was found with age, marital status, BMI, family history and smoking habits with depression.

This study found the link between Diabetes and depression like many other previous studies in different countries. Therefore, detection and management of depression in Diabetes can improve the patient's health and decrease the economic burden on the patient and the country.

The present study found a high prevalence of depression among patients with diabetes. Universal screening for depression should be done in patients with diabetes.

References:

1. Tabak AG, Akbaraly TN, Batty GD, Kivimaki M. Depression and type 2 diabetes: A causal association? Lancet Diabetes Endocrinol 2014; 2: 236-45.
2. Williams MM, Clouse RE, Lustman PJ. Treating depression to prevent diabetes and its complications: Understanding depression as a medical risk factor. Clin Diabetes 2006; 24: 79-86.
3. Mendenhall E, Norris SA, Shidhaye R, Prabhakaran D. Depression and type 2 diabetes in low- and middle-income countries: A systematic review. Diabetes Res Clin Pract 2014; 103:276-85.
4. Ramachandran A, Snehalatha C, Ma RC. Diabetes in South-East Asia: An update. Diabetes Res ClinPract 2014; 103:231-7.
5. http://www.diabetes.co.uk/diabetes-and-depression.html, Access date 14.06.2017 time 9.20 pm
6. Wittkampf KA, Naeije L, Schene AH, Huyser J, van Weert HC. Diagnostic accuracy of the mood module of the Patient Health Questionnaire: A systematic review. Gen Hosp Psychiatry 2007; 29:388-95.
7. Reddy P, Philpot B, Ford D, Dunbar JA. Identification of depression in diabetes: The efficacy of PHQ-9 and HADS-D. Br J Gen Pract 2010; 60:e239-45.
8. International Diabetes Federation. IDF Diabetes Atlas, 6th ed. Brussels: International Diabetes Federation, 2013.
9. IDF clinical practice recommendations for managing type 2 diabetes in primary care. International Diabetes Federation—2017
10. WHO expert consultation. Appropriate body-mass index for Asian populations and its implications for policy and intervention strategies. Lancet 2004; 363: 157–63
11. Roy T, Lloyd CE, Parvin M, Mohiuddin KG, Rahman M. Prevalence of co-morbid depression in out-patients with type 2 diabetes mellitus in Bangladesh. BMC Psychiatry 2012; 12:123.
12. Madhu M, Abish A, Anu K, Jophin RI, Kiran AM, Vijayakumar K. Predictors of depression among patients with diabetes mellitus in Southern India. Asian J Psychiatr 2013; 6: 313-7.
13. Raval A, Dhanaraj E, Bhansali A, Grover S, Tiwari P. Prevalence and determinants of depression in type 2 diabetes patients in a tertiary care centre. Indian J Med Res 2010; 132: 195-200.
14. Thour A, Das S2, Sehrawat T, Gupta Y. Depression among patients with diabetes mellitus in North India evaluated using patient health questionnaire-9. 2015; 9(2): 252-254.
15. Li C, Ford ES, Strine TW, Mokdad AH. Prevalence of depression among U.S. adults

with diabetes: findings from the 2006 behavioral risk factor surveillance system. Diabetes Care 2008; 31 : 105-7.
16. Kendrick T, Dowrick C, McBride A, Howe A, Clarke P, Maisey S, et al. Management of depression in UK general practice in relation to scores on depression severity questionnaires: analysis of medical record data. Br Med J 2009; 338 : 750.
17. Khamseh ME, Baradaran HR, Rajabali H. Depression and diabetes in Iranian patients: a comparative study. Int JPsychiatry Med 2007; 37: 81-6.
18. Collins MM, Corcoran P, Perry IJ. Anxiety and depression symptoms in patients with diabetes. Diabet Med 2009; 26 : 153-61.
19. Culbertson FM. Depression and gender. An international review. Am Psychol 1997; 52 : 25-31.
20. Nasser J, Habib F, Hasan M, Khalil N. Prevalence of depression among people with diabetes attending diabetes clinics at primary health settings. Bahrain Med Bull. 2009; 31: 1–7
21. Rahman M, Rahman MA, Flora MS, Rakibuz-Zaman M. Depression and associated factors in diabetic patients attending an urban hospital of Bangladesh. Int J Collaborat Res Intern Med Public Health. 2011;3:65–76.
22. Larijani B, Bayat MK, Gorgani MK, Bandarian F, Akhondzadeh S, Sadjadi SA. Association between depression and diabetes. German J Psychiatry. 2004; 7: 62–5.
23. Miyaoka Y, Miyaoka H, Motomiya T, Kitamura S, Asai M. Impact of sociodemographic and diabetes related characteristics on depressive state among non-insulin-dependent diabetic patients. Psychiatry Clin Neurosci. 1997; 51: 203–6.
24. Agbir TM, Audu MD, Adebowale TO, Goar SG. Depression among medical outpatients with diabetes: A cross-sectional study at Jos University Teaching Hospital, Jos, Nigeria. Ann Afr Med. 2010;9:5–10.
25. Al-Amer RM, Sobeh MM, Zayed AA, Al-Domi HA. Depression among adults with diabetes in Jordan: Risk factors and relationship to blood sugar control. J Diabetes Complications. 2011; 25: 247–52
26. Fisher L, Chesla CA, Mullan JT, Skaff MM, Kanter RA. Contributors to depression in Latino and European-American patients with type 2 diabetes. Diabetes Care. 2001; 24: 1751–7.
27. Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: A meta-analysis. Diabetes Care. 2001; 24: 1068–78.
28. Gavard JA, Lustman PJ, Clouse RE. Prevalence of depression in adults with diabetes. An epidemiological evaluation. Diabetes Care. 1993; 16: 1167–78.
29. Sacco WP, Wells KJ, Friedman A, Matthew R, Perez S, Vaughan CA. Adherence, body mass index and depression in adults with type 2 diabetes: The mediational role of diabetes symptoms and self-efficacy. Health Psychol. 2007; 26: 693–700
30. Hofmann M, Köhler B, Leichsenring F, Kruse J. Depression as a risk factor for mortality in individuals with diabetes: A meta-analysis of prospective studies. PLoS One 2013; 8: e79809.

ROLE STRESS AMONG DOCTORS IN A TEACHING HOSPITAL OF DHAKA CITY

Paul S[1], Shahjahan M[2], Yasmin N[2]

Abstract

In order to determine the level of role stress and to find out possible role stressors among doctors, a cross-sectional study was conducted among 152 doctors of a teaching hospital of Dhaka, Bangladesh. Among the participants, about 52.6% were female doctors. Almost half (52.8%) of the respondents were from the age group less than 27 years and almost half of the participant doctors were married. Among them, 42.8% were honorary medical officers and 38.8% were interns. More than half (51.3%) were not engaged other than this job. Half of the doctor's monthly income was less than 10,000 BDT while 29.6% has earned 10,001 to 20,000 BDT and around 13% earned more than 10,000 BDT while 29.6% has earned 10,001 to 20,000 BDT and around 13% earned more than 40,001 BDT. One third doctors had experience of 1-3 years while a significant number had experience less than one year. A large number of the participants worked up to 8 hours in a day while 13% doctors worked 13-16 hours in day. The study results show that the mean value of total role stress was 79.44. Most of the participating doctors (92.1%) were in moderate level of role stress whereas around 6% were in high level of role stress and none was in very high level of role stress. Total scores of role stress for male and female was 7.72 and 8.13 respectively. The results showed that 93% of male and 91.3% of female was in moderate level of role stress. The mean values of total scores of role stress indicated that doctors in the older age group have the highest scores (8.24). It also showed that more experienced doctors had the lowest score of role stress. However, no significant relationship was observed between role stress and age, sex, income and marital status. Inter role distance (IRD) stressor had the highest level of total mean values of both male and female doctors. Further study could be done to explore the reason behind the role stress as well as of being IRD as the highest stressor.

Key words: Role stress, Role stressors, Doctors

Introduction

As the society has changed, stress becomes a very common phenomenon and consequences of daily life. According to Selye (1956), "Any external event or internal drive which threatens to upset the organism's equilibrium is stress".[1] He has defined stress as the non-specific response of the body to any demand made upon it. According to the Health and Safety Executive in 2005, it states that more than 500,000 people in the UK believed that they were experiencing work-related stress at a level that was making them ill.[2] The prevalence of stress among the general working population is around 18%, while among doctors it is 28%.[3] The British Medical Association's 1992 report on "Stress and the Medical Profession" expressed a concern that UK doctors have high stress levels.[4]

The medical workplace is a very stressful place as it has a complex environment in which doctors continually have to learn new skills. Various factors causing role or job stress among physicians are demands of work, excessive work load, long duty hours, in sufficient resources to carry out job, financial problems, conflict between professional and personal lives, problems with patients and those related to occurrence of death have been found. Role stress can create a number of physical and psychological disorders among doctors like sleeplessness, pains and anxiety, may become irritable with their patients and

[1] Shaheed M. Monsur Ali Medical College, Sirajgang, Bangladesh

[2] Department of Public Health, State University of Bangladesh

*Corresponding author: Dr. Sharmili Paul, Lecturer, Shaheed M. Monsur Ali Medical College, Sirajgang.
email: sharmilipaul@gmail.com

co-workers and responsible for frustration, job-dissatisfaction and high rates of marital problems. Job stress has been defined in terms of a misfit between person's skills & abilities and the demands of his/her job.[5] The concept of job stress falls under the umbrella of a broader concept i.e. role stress. According to Pareek (1993), role denotes the set of functions one performs in response to the expectations of the significant others and one's own expectations from that position or office. The organization and individual come together through role[6]. Pareek (1980) pioneered work on role by identifying as many as 10 different types of organizational role stressors.[7]

Identification of prominent role stressor at the organizational level is useful for identifying the most important problem to be solved for the organization and offers excellent opportunities for enhancing organizational performance and effectiveness. There is growing concern about stress among public hospital doctors that are government operated because such organizations are considered to focus primarily on the administration of essential services and the control and maintenance of a country's social and economic conditions.

As there was very little study on role stress among doctors in Bangladesh, the present study was undertaken to determine the level of role stress among doctors working in a govt. teaching hospital of Dhaka city and to find out the possible role stressors.

Methodology

A cross-sectional study was carried out for the duration of 5 months starting from December, 2014 to May, 2015 among 152 doctors of in Medicine, Surgery and Gynecology & Obstetrics departments of a teaching hospital of Dhaka, Bangladesh, which was selected purposively. There were 11 units in Medicine, 6 units in Surgery and 5 units in Gynecology & Obstetrics department in the study hospital. Simple random sampling was done to select 2 units from each department. Then all the doctors working as Intern, HMO, IMO and Assistant Registrar (A/R) for last 3 months in the selected units were included in the study. The doctors who had completed post graduate studies eg. MS, FCPS etc. and who were absent on the day of distribution of questionnaire were excluded from this study. Data were collected by self-administered semi structured questionnaire. Total 322 questionnaires were distributed within two weeks (including Friday). The respondents were given seven days to fill up the questionnaire. Those who could not finish filling up the questionnaire were given additional three days for completing their responses. Only 160 filled questionnaires were received. Among them 8 questionnaires didn't furnish the required information, so they were rejected and rest 152 questionnaires were considered for the study.

"Organizational Role Stress (ORS)" scale developed and standardized by Pareek in the year of 1981 was used to measure the role stress in this study. The ORS scale consists of 50 statements grouped into 10 role stressors and measured on a 5 point Likert scale (1= never, 2=occasionally, 3=sometimes, 4=frequently and 5= very frequently). There are 10 stressors included here these are inter-role distance (IRD), role stagnation (RS), role expectation conflict (REC), role erosion (RE), role overload (RO), role isolation (RI), personal inadequacy (PI), self-role distance (SRD), role ambiguity (RA), resource inadequacy (RD). Definitions of the role stressors were as -1) IRD: conflict between organizational and non-organizational roles; 2) RS: feeling of being stuck in the same role. It results in the perception that there is no opportunity for learning & growth in the role; 3) REC: conflicting demands made on the role by role senders; 4) RE: feeling of "Responsibility without power." It is a feeling that some important functions a role occupant would like to perform has been given to some other roles; 5) RO: a feeling that too much is expected from the role than what the occupant can cope with; 6) RI: lack of linkages of one's role with other roles in the organization; 7) PI: lack of knowledge, skills

or adequate preparation to be effective in a particular job; 8) SRD: conflicts of one's values and self-concepts with the requirements of the organizational role; 9) RA: lack of clarity about expectations of others from the role, or lack of feedback on how performance is regarded by others; 10) RIn: non-availability of resources needed for effective role performance. The scores for each role stress dimension ranged from a minimum of 0 to a maximum of 20 and total scores ranged from 0 to 200, as the scale has ten dimensions and each dimension has five items. Total scores for each response were again subdivided into 4 levels: low level (0-50); moderate level (51-100); high level (101-150) and very high (151-200).

After collection of data, all responses were checked for their completeness. Data were entered into SPSS version 16. Necessary ranges were built in the database and presented by frequency, percentage, table and figure. To identify the levels of role stress and differences within the dimensions of role stress among doctors, means and standard deviations were calculated for the total role stress and for each role stressor. Then, the results were ranked according to the highest to lowest mean values.

Findings

Total 322 questionnaires were distributed to the doctors. Only 160 filled questionnaires were received. So response rate was 49%. Among them 8 questionnaires didn't furnish the required information, so they were rejected and rest 152 questionnaires were considered for the study.

Table 1: Distribution of the respondents by socio-demographic criteria (n=152)

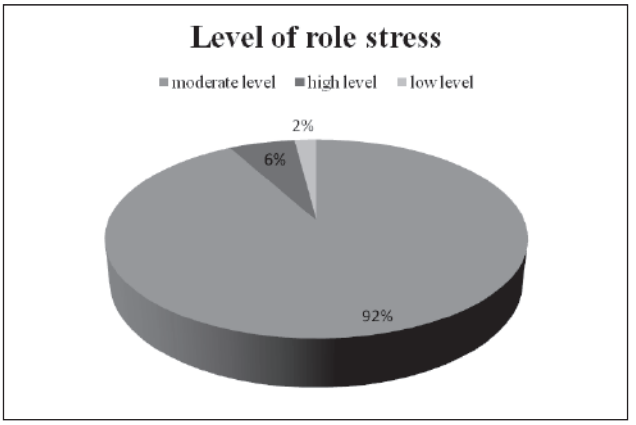
Criteria	n (%)
Age (years)	
≤27	77(50.7)
28 -33	64(42.1)
≥34	11(7.2)
Gender	
Male	72(47.4)
Female	80(52.6)
Marital status	
Married	77(50.7)
Unmarried	75(49.3)

Table 2: Distribution of the respondents according to the work situations (n=152)

Criteria	n (%)
Departments	
Medicine	47(30.9)
Surgery	54(35.5)
Gynecology& Obstetrics	51(33.6)
Designation	
Intern	59(38.8)
HMO*	65(42.8)
IMO*	16(10.5)
A/R*	12(7.9)
Other engagement	
No	78(51.3)
Chamber practice	26(17.1)
In clinics	48(31.6)
Monthly income(BDT)	
≤10,000	76(50.0)
10,001 -20,000	45(29.6)
20,001 -30,000	9(5.9)
30,001 -40,000	2(1.3)
≥40,001	20(13.2)
Experience (year)	
<1	59(38.8)
1-3	50(32.9)
4-6	26(17.1)
7-9	13(8.6)
>9	4(2.6)
Working hours (per day)	
Upto 8	106(69.7)
9-12	26(17.1)
13-16	20(13.2)

***HMO=honorary medical officer; IMO= indoor medical officer; A/R=assistant registrar**

Figure 1: Distribution of the respondents by the level of role stress (n=152)



This figure shows the distribution of the respondents by the level of role stress. Among them, 92% of doctors were in moderate level of stress, 6% of doctors were in high level of stress and 2% of them were in low level of stress. None was suffered from very high level of stress.

Table 3: Mean values of the role stressors and total organizational role stress (ORS)

Name of the stressors	Mean	Standard deviation	Rank
Inter Role Distance (IRD)	17.73	2.1	1
Personal Inadequacy (PI)	13.18	3.11	2
Role Stagnation (RS)	12.09	2.54	3
Role Overload (RO)	11.93	4.74	4
Ro le Erosion (RE)	7.06	4.17	5
Role Expectation Conflict (REC)	5.89	2.81	6
Role Isolation(RI)	3.79	1.86	7
Self- Role Distance(SRD)	2.96	1.90	8
Resource Inadequacy (RIN)	2.62	2.87	9
Role Ambiguity (RA)	2.19	2.37	10
Total (ORS)	**79.44**	**28.47**	

Findings of the table reveal that the mean value of total ORS was 79.44. Among the ten role stressors, the mean value of IRD was the highest (17.73) which was followed by PI (13.18).

Table 4: Mean values of the role stressors among the respondents according to age groups (n=152)

Age (in yrs)	Role Stressors											Rank
	IRD	RS	REC	RE	RO	RI	PI	SRD	RA	RIn	Total	
≤27 (n=77)	17.74	12.44	5.1	6.07	12.79	3.76	13.68	2.92	1.83	1.67	7.8	3
28-33 (n=64)	17.84	11.9	8.29	6.27	10.68	3.57	12.71	2.93	2.54	3.56	8.02	2
≥34 (n=11)	17	10.63	6.72	8.20	13.18	4.72	12.27	3.36	2.63	3.72	8.24	1

The table shows the mean values of role stressors among the respondents according to different age groups. It indicates that the doctors in the age group of ≥ 34 years had the highest score of ORS (8.24) and the age group of ≤ 27 years (7.8) was the lowest. Among the all role stressors, IRD had the highest mean value in all age groups.

Table 5: Mean values of the role stressors among the respondents according to gender (n=152)

Gender	Role Stressors											Rank
	IRD	RS	REC	RE	RO	RI	PI	SRD	RA	RIn	Total	
Male (n=72)	**17.65**	11.74	5.65	6.06	12.48	3.33	13.02	2.5	2.04	2.72	7.72	**2**
Female (n=80)	17.80	12.4	6.13	7.85	11.43	4.2	13.31	3.38	2.32	2.52	8.13	**1**

The table shows the mean values of different role stressors on the basis of gender. Here, total score of ORS for male doctors was 7.72 while it was 8.13 for the female doctors. IRD stressor had the highest level of mean value for both the male and female doctors.

Table 6: Mean values of the role stressors among the respondents according to work experience (n=152)

Experience in years (n)	Role Stressors											Rank
	IRD	RS	REC	RE	RO	RI	PI	SRD	RA	RIn	Total	
< 1 (59)	18	12.16	4.66	4.72	14.08	3.54	13.71	2.4	1.25	1.03	7.56	4
1-3(50)	17.3	12.32	6.8	9.7	8.36	3.94	12.76	3.7	2.76	3.08	8.07	3
4-6 (26)	18.42	12.69	6.92	7.61	12.84	3.92	13.6 1	2.57	3.26	3.53	8.54	1
7-9 (13)	17.76	11	6.15	6.23	14	3.38	12.69	3.07	2.23	4.69	8.12	2
>9 (4)	14.5	7.5	5.25	7.5	11.25	5.25	9.25	4	1.75	7.5	7.38	5

The table shows the mean values of the role stressors among the respondents according to work experience. It indicates that the level of role stress was the highest (8.54) among the doctors with the experience period of 4- 6 years followed by the doctors having experience of 7-9 years. Doctors having experience with more than 9 years had the lowest mean value (7.38).

Discussion

This cross sectional study was conducted among 152 doctors to see the level of role stress among doctors and to find out possible role stressors.

Among the respondents, majority (52.6%) were female doctors. Almost half (52.8%) of the respondents were from the age group less than 27 yrs as because intern doctors were included in this study (38.8%). More than half (51.3%) were not engaged to other than this job, while around thirty two percent were engaged in clinic and

around seventeen percent were engaged in chamber beside this. It may be due the reason that significant number of the respondents was female and intern. Intern doctors have to spend more time in hospital and female doctors might have responsibilities for their family. On the other hand, HMO doctors were not paid by the hospital that's why they were bound to do extra work for earning. Gender and designations of the doctors probably restricted the involvement in extra organizational job. The study results showed that one third doctors had experience of 1-3 years while a significant number had experience less than one year as because intern and HMO were included here. A large number of the participants worked up to 8 hrs in a day while around thirteen percent doctors worked thirteen to sixteen hours in a day.

Among the participants, most (92.1%) of the doctors were in moderate level of role stress while around 6% and 2% of them were in high level of stress and in low level of stress respectively. But a study in India by Irfana Baba stated that maximum number of doctors falls under high stress level category, followed by medium stress level category.[5] The mean value of total ORS was 79.44 which was quite high in comparison to 51 as reported by Pareek.[6]

In the present study, the mean values of total scores of ORS indicated that the doctors in the age group of more than 34 years had the highest score of ORS (8.24) and the age group of less than 27 years (7.8) was the lowest. The study depicts that doctors of all age groups were suffering from moderate level stress. All the three age groups of doctors scored higher on IRD. In this study, the mean values of total scores of ORS indicated that the doctors in the older age group had the highest score which was similar to the study by Irfana baba.[5]

In this study, total mean score of ORS for male doctors was 7.72 while it was 8.13 for female doctors. Among the male doctors, 93% of them were in moderate level of stress and 5.6% in high level of stress. On the other hand, 91.3% and 6.3% of female doctors were suffered from moderate and high level of role stress respectively.

Though a number of researchers had reported the influence of age and/or gender on role stress [8,9] but age and gender were not related with stress in this study. A study conducted in India shows that male doctors were more stressed than female doctors in that study hospital.[5]Another study in Malaysia showed that marital status did not make any difference in the stress scores among doctors [10] which was also similar to the result of present study. But several studies from western countries showed that marriage was a preventing factor for depression.[11,12,13]

Among the ten stressors, IRD had the highest mean value for both the male and female doctors (17.65 and 17.8 respectively). Female doctors scored higher than male in this study whereas in India it was showed that male doctors scored higher than female doctors.[5]

Doctors with work experience less than 1 year and more than 9 years suffered from moderate level of stress which was different from the result of Irfana Baba where it showed that the level of stress was the highest among the most experienced doctors.[5] The mean value indicated that the level of stress of the doctors with the experience of 4-6 years was the highest (8.54), followed by the doctors having experience of 7-9 years. Experience more than 9 year was the lowest mean value. It's probably due to that, during this period they had to do training as well as struggle for survival. A study in South Africa did not find a relationship between stress and long hours of work[14]. But Grobler et al. had found increased stress in doctors who work longer hours.[15]

Among the ten role stressors, the level of stress on IRD was the highest (17.73), followed by PI (13.18). Another three stressors i.e. RS, RO and RE had scored above 7 along with these two stressors which was similar with the result of the study by Ahmady in 2007. Here, IRD also was found at a high level.[16]

Conclusion and Recommendations

Most of the doctors were in moderate level of role stress. The mean value of total role stress was quite high among the participants. Female doctors scored higher than male doctors. Doctors having experience with 4-6 years had the highest score. Among the ten role stressors, IRD had the highest score followed by PI. Therefore, a further large scale study is recommended to explore the reasons behind the role stress as well as of being IRD as the highest stressor.

References

1. Selye H. 1956. The stress of life. New York: McGraw-Hill. pp 16-160.
2. HSE, A business case for the Management Standards for Stress, HSE Books, 2006
3. Olkinuora M, Asp S, Juntunen J, Kauttu K, Strid L, Aarimaa M. Stress symptoms, burnout and suicidal thoughts in Finnish physicians. *Soc Psychiatry Psychiatr Epidemiol.* 2004; 25(2): 81-6.
4. British Medical Association. Stress and the Medical Profession. London: British Medical Association, 1992.
5. Baba I. Workplace stress among doctors in government hospitals: an empirical study. *International Journal of Multidisciplinary Research*. 2012 May; 2(5): 208-20.
6. Pareek U. The Role. Training instruments in Human Resource Development and Organisational Development. 2005:475-567.
7. Pareek U. Organizational role stress scale. ORS Scale Booklet, Answer Sheet and Manual. Ahmedabad: Navin Publications. 1983.
8. Dasgupta H, Kumar S. Role stress among doctors working in a government hospital in Shimla (India). *Eur J Soc Psychol.* 2009; 9(3): 356-70.
9. Bhattacharya S, Basu J. Distress, wellness and organizational role stress among IT professionals: Role of life events and coping resources. *J Indian Acad Appl Psychol*. 2007 Jul; 33(2):169-78.
10. Hussein OM, Zainal NZ, Abdel-latif ME. Prevalance of Stress among International Post-graduate Doctors at the University Malaya Medical Centre (UMMC), Kuala Lumpur. *Journal of Clinical & Diagnostic Research*.2012 Jun 1; 6(5): 859-62.
11. Lloyd S, Streiner D, Shannon S. Burnout, depression, life and job satisfaction among Canadian emergency physicians. *J Emerg Med.* 1994 Jul ; 12(4): 559-65.
12. Linn LS, Yager J, Cope DW, Leake B. Factors associated with life satisfaction among practicing internists. *Med Care.* 1986 Sep; 24(9): 830-7.
13. Burbeck R, Coomber S, Robinson SM, Todd C. Occupational stress in consultants in accident and emergency medicine: a national survey of levels of stress at work. *Emerg Med J.* 2002 May; 19(3): 234–8.
14. Govender I, Mutunzi E, Okonta HI. Stress among medical doctors working in public hospitals of the Ngaka Modiri Molema district (Mafikeng health region), North West province, South Africa. *SAJP.* 2012 May; 18(2): 42-6.
15. Grobler C, Hiemstra LA. Stress in the workplace. *CME.* 1998; 16(1): 19-24.
16. Ahmady S, Changiz T, Masiello I, Brommels M. Organizational role stress among medical school faculty members in Iran: dealing with role conflict. BMC Medical education. 2007 Dec; 7(1):14.

Green Tea for Weight Loss in Overweight or Obese Adults: A Systematic Review

Sabbir Ahmed
Lecturer- Dept of Public Health, State University of Bangladesh (SUB)

Abstract

A Cochrane Systematic Review was published in 2012 that examined the efficacy of green tea for weight loss in overweight or obese adults. A systematic review was needed to evaluate evidence on effectiveness of weight loss for use of green tea. A comprehensive search strategy reviewed four electronic databases (Pub Med, Science Direct, SCOPUS and MEDLINE EBSCO). Systematic review was conducted onto articles chosen. Ten studies were included for systematic review. Only two out of the ten included studies showed statistically significant weight reduction for overweight or obese adults with the use of green tea preparation over 12 weeks. Higher dose of catechin did not produce significant difference in changes achieved in body weight, BMI, and waist circumference.

Key Words: Green Tea, Overweight, Obese adults, Systematic Review

INTRODUCTION

Overweight and obesity are growing public health problems that have become global epidemics.1 A number of reports have shown that various non-communicable diseases such as cardiovascular disease, type II diabetes mellitus, hypertension, dyslipidemia and certain types of cancer were related to overweight/obesity, which can further enhance the burden of diseases and the mortality rate. 1,2 Globally, the number of overweight and obese people increased almost three folds during the last three decades (from 857 million in 1980 to 2.1 billion in 2013), with proportion of females outweighing males.4 Overweight and obesity were once considered to only affect high-income countries, but they have increased tremendously in developing countries, predominantly among urban dwellers.5 The prevalence of obesity has reached epidemic levels in many developing countries, and Bangladesh is of no exception. According to the data of BDHS-2011 the prevalence of overweight and obese in Bangladesh were 18.9% and 4.6% respectively. 6 And were observed to be lower than that reported in Western countries, such as Australia (27.5% in males; 29.8% in females) and the United States (31.7% in males; 33.9% in females).4 Social, economic and nutritional transitions coupled with reduced physical activity following rapid urbanization and modernization in these countries has influenced the health of their populations and communities. While there is increasing awareness on the nutritional aspect of weight loss, there has also been increasing claims that green tea in particular, promotes weight loss.

Tea is consumed worldwide and currently represents the world's second most popular beverage after water. In addition to this, there is a growing adoption of the notion of green tea as a boost for beauty, weight loss and skin treatments; and this is estimated to fuel the growth of the market in the near future. Green tea is a herbal that contains two major active ingredients: catechin polyphenol, which inhibits the action of catechol-

SABBIR AHMED
MBBS, MPH (Malaysia), MPH (NIPSOM), Lecturer, Dept of Public Health, State University of Bangladesh (SUB).
77, Satmasjid Road, Dhanmondi, Dhaka-1205, Bangladesh, Email: sabbiroeh@gmail.com, dr.sabbir@sub.edu.bd

omethyl-transferase (COMT), resulting in a prolonged action of catecholamines and caffeine, which inhibits the phosphodiesterase-induced degradation of intracellular cyclic AMP (cAMP) leading to an increase in norepinephrine release; the net result, therefore, is an elevated cellular concentration of cAMP, a critical intracellular mediator for the action of catecholamines on thermogenesis. Furthermore, catecholamines in the brain may play a major role in satiety.10 However; the efficacy of green tea consumption in promoting weight loss still remains unclear. A Cochrane Systematic Review was published in 2012 that examined the efficacy of green tea for weight loss in overweight or obese adults and were searched to identify randomized controlled trials (RCTs) of at least 12 weeks' duration that compared green tea preparations (no combination products) to controls for their ability to aid in weight loss. Result showed that green tea group lost on average 0.2 to 3.5 kg more than those in the control group. This systematic review was a follow up of the previous study, involving 4 databases (PUBMED, SCIENCE DIRECT, MEDLINE EBSCO and SCOPUS) and looking at more recent studies to determine the efficacy of green tea in weight loss.

Objective

This systematic review attempted to assess the efficacy of green tea or green tea extract preparations for weight loss in overweight or obese adults and also to appreciate the research significance of obesity and overweight in adult population. More specifically this review concentrated on the following question:

"Is green tea beneficial for weight loss in overweight or obese adults?" This can be answered by study design of randomized controlled trials. The PICO framed by this systematic review was:

P (Patient group)	Overweight or obese adults including male and female
I (Intervention /Exposure)	Green tea or green tea extract preparation
C (Comparison)	Placebo
O (Outcome)	Weight loss

METHODOLOGY

Publications were searched via electronic databases. The databases: Pub Med, Science Direct, SCOPUS and MEDLINE EBSCO were used to search articles for studies investigating whether green tea is beneficial for weight loss in overweight or obese adult. From the databases and search engines, I aimed to search for the articles with the title of "Green tea for weight loss in overweight or obese adults". Thus, published articles were searched. The reference lists of articles were reviewed for the additional relevant studies. A Boolean search was performed in each data base using the search term: (("green tea") AND ("weight loss" OR "overweight" OR "obesity" OR "obese" OR weight)) AND (adult OR men OR women). The synonyms were derived from MeSH (Medical Subject Headings) databases. The reference lists of articles were reviewed for additional relevant studies. I aimed to examine only that RCT studies which involved in vivo studies to give the highest level of evidence. Then, all these citations from the four databases were compiled into Endnote software and duplicates were removed.

Inclusion criteria for studies were randomized controlled trials (RCTs) published in the English language and published in journal articles only. Overweight or obese adult human including male and female, as defined by accepted standards such as body mass index (BMI) or percentage excess weight compared with ideal weight tables. Change in body weight or mass measure (absolute or percentage change in body weight or reduction in BMI; reduction in waist circumference or waist-to-hip ratio). The selection was based on the mentioned inclusion criteria and articles were screened for selection. When the title did not appear to be clear, the abstract was retrieved and screened by the author. Full text was obtained of all potentially relevant records and assessed for relevance. Studies that fulfilled the selection criteria were extracted into a standard data extraction template. A narrative, sum-

mary technique was used to describe the findings.

Excluded studies include those conducted on animals, grey literatures, other study designs, letters and conference proceedings. Case series or reports were not included. Studies where data could not be accurately extracted were also excluded.

RESULT

The following number of articles was screened for selection:

1. PubMed: 74 articles were screened, 6 relevant with full text.

2. SCOPUS: 294 articles were screened; 0 relevant.

3. Science direct: 29 articles were screened; 4 relevant with full text.

4. Medline EBSCO: 103 articles were screened; 7 relevant with full text.

From the databases and search engines, a total of 500 articles were identified, including human studies. All these citations from the four databases were compiled into Endnote software. After irrelevant articles were removed, 17 articles remained. Filtering was done using the PICO through title and abstract. As a result, I identified 12 relevant articles of which, after removal of 2 duplicate articles leaving 10 relevant articles. The summary of the search process is depicted in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram (Figure: 1). Whereas the search keywords and total number of articles retrieved in each database is attached in Appendix.

Detailed study characteristics of the included studies were tabulated in Table 1. Overall, all ten studies were randomized controlled trials except there was one study carry out experimental sequential design 17 and one more study didn't mention about the randomization 20. Three of the ten studies took place in the Netherlands, and two were conducted in Japan and Taiwan, while the rest in US, Spain and China. The study participants are all above 18 years old of age except there is a study includes participants aged youngest 16 years old while oldest is 70 years old. Among the ten studies, five of the studies are carried out in men 11, 13. All studies used BMI as part of study inclusion criteria. In most cases, authors reported a BMI range that conformed to the WHO definition of overweight. The range of BMI values for participant inclusion was in the range of 18 - 40 kg/m2. There is only a study didn't state clearly the BMI value 20. Conformed to the WHO definition of overweight. The range of BMI values for participant inclusion was in the range of 18 - 40 kg/m2. There is only a study didn't state clearly the BMI value 20. The biggest sample size was observed in Nagao et. al. 14, which is 240 subjects carried out in Japan, while another Japan study contribute the smallest sample size which only 38 subjects recruited.

All 10 studies compared some form of green tea intervention to a control. All studies reported the doses given. All the studies had one intervention and one control group. For the intervention group, different types of green tea extracts (GTE) were used, which includes Catechins, epigallocatechin gallate (EGCG), Epicatechin gallate (ECG), epigallocatechin (EGC), Epicatechin (EC), Gallocatechin gallate (GCG) and Gallocatechin (GC).

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) Flow Diagram

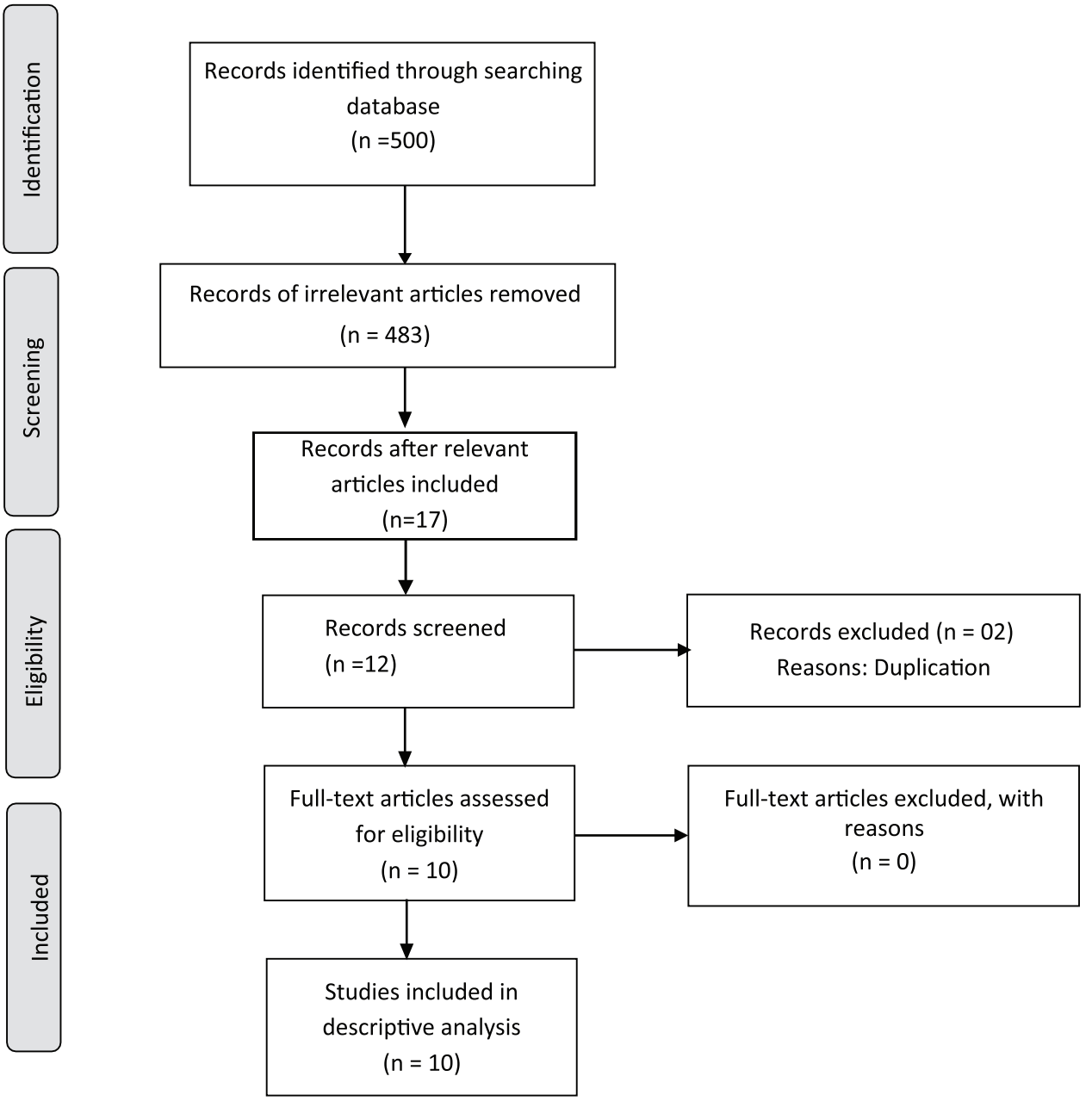


Table 1: Study characteristics of the 10 included studies.

Title	Study setting	Inclusion Criteria	Sample	Study Design	Intervention Group	Control Group	Results
1. A Green Tea Extract High in Catechins Reduces Body Fat and Cardiovascular Risks in Humans (Nagao et. al., 2007) [11]	Seven medical institutions in the Kanto District in Japan	Japanese women and men 25 to 55 years of age with a BMI of 24 to 30 kg/m^2 and/or a waist circumference of 80 to 94 cm who were considered to be visceral fat-type obese, but had not been treated at an outpatient department and had no serious liver or renal disease	240 subjects (catechin group, 51 women and 72 men; con-trol group, 49 women and 68 men). Averages of age and BMI of 240 subjects were 41.7 ± 9.9 years of age, and 26.8 ± 2.0 kg/m^2	Randomized double-blind, controlled parallel multicenter trial	Catechin group, n=123 Catechins group: 600 mg of catechins/340 mL and 70 mg of caffeine/340 mL, consumed every day for 12 weeks	Control group, n=117 Control group: 100 mg of catechins/340 mL and 70 mg of caffeine/340 mL, consumed every day for 12 weeks.	Decreases in body weight, BMI, waist circumference, hip circumference, were found to be greater in the catechin group than in the control group ($p < 0.05$).
2. Long-Term Supplementation of Green Tea Extract Does Not Modify Adiposity or Bone Mineral Density in a Randomized Trial of Overweight and Obese Postmenopausal Women (Dostal et. al., 2015) [12]	Clinical centers in the Minneapolis –St. Paul metropolitan area	Postmenopausal women aged 50 to 70 years old BMI (in kg/m^2) >25.0 or <40.0; not more than 4.6 kg weight change during the previous year	Randomly assigned (n=146) GTE (n=76) Placebo (n=70) Analyzed (n=121) Analyzed GTE (n=61) Analyzed Placebo (n=60)	Randomized, double-blind, placebo-controlled clinical trial	Green tea extract (GTE) group, n = 61 GTE capsule: catechin content:1315 ± 116 mg/d (843 ± 44 mg as ECGC), which is approximately equivalent to five 240-mL servings of brewed green tea	Placebo group, n = 60 Placebo capsules:816 mg maltodextrin, 808 mg cellulose, and 8 mg magnesium stearate (flow agent), ingested 2 capsules in the morning and 2 capsules in the evening	No differences in changes in BMI (−0.13 ± 0.11 compared with −0.05 ± 0.11; P = 0.61), total fat mass (−0.30 ± 0.16 compared with −0.12 ± 0.15 kg; P = 0.40), over 12 months between women taking GTE (n = 61) and those taking a placebo (n = 60)

3. Body Weight Loss and Weight Maintenance in Relation to Habitual Caffeine Intake and Green Tea Supplementation (Westerterp-Plantenga et. al. 2005)[13]	Hospital in Maastricht	Male and female overweight and moderately obese subjects, 18 to 60 years of age and with BMI between25 and 35 kg/m^2. Good health, a nonsmoker, not using medication, and, at most, a moderate alcohol user	Total N=76 Green tea (n=38) Placebo (n=38)	Randomized place-bo-controlled double blind parallel trial	Green tea-caffeine mixture [45 mg epigallocatechin gallate+25 mg caffeine + 380 mg placebo (vegetable oil)/capsule) 6 capsules/d; 2 capsules before each meal	450 mg placebo (vegetable oil)/capsule) 6 capsules/d; 2capsules before each meal.	Body weight loss did not differ between the two prospective treatment groups.
4. Therapeutic effect of high-dose green tea extract on weight reduction: A randomized, double-blind, placebo-controlled clinical trial (Chen et. al. 2015) [14]	Taipei City Hospital in Taiwan	Women between the age of 20 and 60 years-old, body mass index (BMI) ≥ 27 kg/m^2, waist circumference (WC) ≥ 80 cm, and willingness to fill out the questionnaires for this trial.	104 registered 10 refused 2 excluded 92 randomly assigned Green Tea (n=46) Placebo (n=46) Completed Green Tea (n=39) Completed placebo (n=38)	Single-center, placebo-controlled, double-blind study	Decaffeinated green tea extract (GTE) extracts capsule: EGCG 856.8mg, ECG 236.1 mg, EGC 115.5mg, EC 71.9mg, GCG 63.7mg)	Placebo capsule: 500 mg of pure microcrystalline cellulose , three times daily for 12 weeks with one capsule 30 min after meals	No significant differences were detected in body weight, BMI, or waist circumference between groups. Significant weight loss, from 76.8 ± 11.3 kg to 75.7 ± 11.5 kg ($p = 0.025$), as well as decreases in BMI ($p = 0.018$) and waist circumference ($p = 0.023$) were observed in the treatment group after 12 weeks of high-dose EGCG treatment.

5. Effect of green tea extract on obese women: A randomized, double-blind, placebo-controlled clinical trial (Hsu et. al. 2008) [15]	Taipei Hospital, Taiwan	Obese women aged between 16 and 60 years with BMI > 27 kg/m^2 and who had not received any other weight control maneuvers within the last 3 months	100 randomly assigned GTE (n=50) Placebo (n=50) GTE completed (n=41) Placebo completed (n=37) Total, N=78	Randomized, double-blind, placebo-controlled clinical trial	Green tea extract (GTE), n = 41 One capsule containing 400 mg of GTE three times each day for 12 weeks. The capsule was taken 30 min after meals.	Control, n = 37 One capsule of pure microcrystallin e Cellulose three times each day for 12 weeks. The capsule was taken 30 min after meal	There was no statistical difference in % reduction in body weight, BMI and wasit circumferen ce between the GTE and placebo groups. 0.3% reduction in BW (0.15 kg) after 12 weeks of treatment with GTE.
6. Effects of catechin-enriched green tea beverage on visceral fat loss in adults with a high proportion of visceral fat: A double-blind, placebo-controlled, randomized trial (Zhang et. al., 2012)[16]	Beijing, China	Obese subjects, aged 20–65 years, with waist circumferen ce ≥ 80 cm (women) or 90 cm (men), Exclusion criteria: (1) body mass index (BMI) <24 or BMI ≥ 40 kg/m^2, recent weight loss in 1 month >3 kg	118 recruited. 104 subjects, 65 females and 39 males, completed the trial. Demographi c characteristi cs were similar between groups	Randomize d, double-blind controlled trial	Catechin group, n = 51 350ml beverage containing 609.3 mg catechins and 68.7 mg caffeine to be consumed within 30 mins after lunch for 12 weeks	Control group, n = 53 350ml beverage containing 86.2mg catechins and 40.2mg caffeine to be consumed within 30 mins after lunch for 12 weeks	Body weight, and body fat were reduced significantly by catechin-enriched green tea treatment but these effects were not seen in the control group with per-protocol sets analysis. The value changes from week 0 to week 12 were not significantly different between the two groups.
7. Long-term green tea extract supplementatio n does not affect fat absorption, resting energy expenditure, and body composition in	Maastricht University, Netherlands	Caucasian men and women [BMI (in kg/m^2): 18–25 or >25; age: 18–50 years old]	65 recruited. 60 subjects (50 women, 10 men) completed the trial. Groups did not significantly	Randomized, placebo controlled, single-blind design with 2 randomly sequenced experimental groups (Green Tea and placebo).	Green tea group, n = 30 Green tea (>0.56 g/d epigallocatechi n gallate + 0.28–0.45 g/d caffeine) which they had to	Placebo group, n = 30 Placebo in capsule form (microcrystalli ne cellulose 0.38 g), which they had to consume daily in 3 divided	No significant differences between groups and no significant changes over time were observed for

adults (Janssens et. al., 2015)[17]			differ at baseline		consume daily in 3 divided doses, 2 hours after meals for a period of 6 weeks. Then, subjects received placebo capsules, which they had to consume daily for the last 6 weeks.	doses 2 hours after meal for a period of 6 weeks. Then, subjects received Green Tea capsules, which they had to consume daily for the last 6 weeks.	the measured variables (body weight, body fat percentage, and waist to hip ratio)
8. Effects of dietary supplementation with epigallocatechin-3-gallate on weight loss, energy homeostasis, cardiometabolic risk factors and liver function in obese women: randomised, double-blind, placebo-controlled clinical trial (Mielgo-Ayuso et. al., 2014) [18]	Clinical Trials Unit of TECNALIA (Txagorritxu Hospital, Vitoria-Gasteiz), Spain	88 pre-menopausal (age 19–49 years) obese women (BMI inclusion criteria 30·0–39·9 kg/ m^2 who had a stable weight (body-weight changes, 3 kg in the last 3 months)	88 recruited. 83 completed trial. Similar baseline characteristics between groups	Randomised, double-blind, placebo-controlled study	Epigallocatechin group, n = 40 EGCG (300 mg EGCG/d) consumed 3 times daily with breakfast, lunch and dinner for a period of 12 weeks	Placebo group, n = 43 Placebo (300 mg lactose/d) dietary supplement, consumed 3 times daily with breakfast, lunch and dinner for a period of 12 weeks	No significant difference in changes achieved in body weight, BMI, fat mass, lean mass and waist circumference between the EGCG and control group
9. Effect of green tea on resting energy expenditure and substrate oxidation during weight loss in overweight females (Diepvens et. al., 2005)[19]	Netherlands	46 overweight women, aged between 19 and 57 years and with a BMI of between 25 and 31 kg/m^2, All subjects were moderate caffeine-users (200–400 mg caffeine/d),	46 recruited. 46 completed the trial.	Doubled blind, placebo-controlled, parallel design	Green tea group, n = 23 Green tea (1125 mg tea catechins + 225 mg caffeine/d) in 3 divided dose during meal time.	Placebo group, n = 23 Placebo (maltodextrin) in 3 divided dose during meal time.	Reductions in weight BMI andwaist:hip ratio were not statistically different between treatments

10. Ingestion of a tea rich in catechins leads to a reduction in body fat and malondialdehyde-modified LDL in men (Nagao et. al., 2005) [20]	Kao corporation, Tokyo, Japan	38 male employees aged 24 – 46 years old, whose body weight was normal to overweight.	38 recruited. 35 analyzed	Double blind. Randomization not stated	Catechin group, n = 17 1 bottle oolong tea/d containing 690 mg catechins consumed for 12 weeks during supper, once daily	Control group; n = 18 1 bottle oolong tea/d containing 22 mg catechins, consumed for 12 weeks during supper, once daily	Body weight, BMI and waist circumference were significantly lower in the green tea extract group than in the control group.

There were four studies, which includes caffeine in the intervention group. Difference dose of GTE and caffeine are used in all studies. There were three studies using GTE together with caffeine as their control group, which are two studies from Japan 11,20 and another one from China. The rest seven studies used non active ingredients as their control group. Five studies administered the intervention and placebo in capsule formand the remaining 3 studies delivered the intervention and control as a beverage 16,20.

From the results, highest dose of GTE did not give any significant difference in changes achieved in body weight, BMI, fat mass, lean mass and waist circumference between the EGCG and control group, only both Japan studies show significant weight loss in Catechin groups compare to control group.

DISCUSSIONS

This review showed mixed results of weight loss from green tea preparation when used for 12 weeks by overweight or obese adults. Particularly, only studies from Japan produced significant and higher mean difference for body weight, BMI and waist circumference in the catechin group when compared to control 11. The finding was in accord with previous systematic reviews conducted whereby genetic variation in terms of ethnicity was suggested to play a role 22, 22. Since Japanese or Asians are suggested to have higher activity of catechol-omethyl-transferase (COMT) as compared to Caucasians, this would give rise to greater sensitivity towards green tea inhibition on COMT which leads to weight loss 23. Another possible explanation could be attributed to how BMI is defined for overweight and obese in different countries therefore affecting the outcome 22.

It is worth noting that studies with higher dosage of catechin did not exhibit any greater significant weight loss effect 12,14. This was similar to findings of Hursel and colleagues where the meta-analysis results showed that difference of catechin dosage did not affect effect size. Another systematic review byPhung and colleagues was unable to assess a dose-response relationship through meta-regression due to the small number of studies 24. Few explanations could be offered for our findings. Firstly, inaccuracy in reporting of catechin doses might occur as chemical analysis was not performed among certain studies, especially in quantifying the most active compound of green tea, epigallocatechin gallate

(EGCG). Differences in study design could also confound the outcome such as presence of lifestyle control to limit the intake of any daily tea product which can vary across cultures, and the inclusion of caffeine within the treatment and/or control group. For instance, the larger study in Japan did not have restriction on tea products 12 and both Japan studies included a minimal amount of caffeine for both treatment and control groups 11. Nevertheless, even studies which used caffeinated13, 17 and decaffeinated catechin 12, 14 versus non-active ingredient control did not show significant weight reduction. This was consistent with findings from Jurgens and colleagues in which subgroup analysis among small number of studies suggested that weight loss associated with green tea was independent of the content of caffeine 22. As the effect of caffeine on weight loss is still unclear, more studies are needed to examine the role of caffeine in green tea on weight loss.

Overall, the included studies showed wide variation in study characteristics which may explain the diversified results. Besides the aforementioned factors, varied doses of green tea extract were also used with different composition of catechin types. In this case, it was postulated that a combination of catechins were responsible for weight loss instead of a single catechin 24. There were also differences of administration time and frequency of the green tea extracts such as anytime of the day, before or after meals. Therefore the interaction of green tea and food could not be excluded. In addition, quality of trial could also be dubious where randomization was not stated hence the result of this review should be interpreted with caution. Limitations also arise as searches were confined to English language and 4 databases.

CONCLUSION

In conclusion, only two out of the ten included studies showed statistically significant weight reduction for overweight or obese adults with the use of green tea preparation over 12 weeks. Clinical significance is likely to be minimal owing to the modest effect demonstrated. Furthermore, higher dose of catechin did not produce significant difference in changes achieved in body weight, BMI, and waist circumference. Hence, future studies such as meta-analysis and meta-regression are warranted to further investigate the effect of different catechin doses on weight loss. The role of caffeine in green tea for weight reduction should also be explored to give a better conclusive outcome. Above all, studies should aim to improve in terms of study designs in order to enhance quality rating and reduce biases.

REFERENCES

1. World Health Organization. Obesity: Preventing and managing the global epidemic. Report of a WHO consultation on obesity, Geneva, 3–5 June, 1997. WHO Technical Report Series Number 894. Geneva: WHO; 2000.

2. Brown WV, Fujioka K, Wilson PW, Woodworth KA. Obesity: why be concerned? Am J Med. 2009;122:S4–S11.

3. Guh DP, Zhang W, Bansback N, Amarsi Z, Birmingham CL, Anis AH. The incidence of co-morbidities related to obesity and overweight: a systematic review and meta-analysis. BMC Public Health. 2009;9:88.

4. Ng M, Fleming T, Robinson M, Thomson B, Greetz N, Margono C, et al. Global, regional, and national prevalence of overweight and obesity in children and adults during 1980-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014;384(9945):766–81.

5. World Health Organization. Fact sheet: obesity and overweight. http://www. who.int/-mediacentre/factsheets/fs311/en/. Accessed 10 May 2016

6. Biswas T, Garnett SP, Pervin S, Rawal LB. The prevalence of underweight, overweight

and obesity in Bangladeshi adults: Data from a national survey. PloS one. 2017 May 16;12(5):e0177395.

7. Institute for Public Health (IPH). National Health and Morbidity Survey 2011 (NHMS 2011). Vol. II: Non-Communicable Diseases. Kuala Lumpur: Ministry of Health Malaysia; 2011. ISBN 978-967-3887-68-2

8. Institute for Public Health (IPH). National Health and Morbidity Survey 2015 (NHMS 2015). Vol. II: Non-Communicable Diseases, Risk Factors & Other Health Problems. Kuala Lumpur: Ministry of Health Malaysia; 2015. ISBN 978- 983-2387-23-7

9. Intergovernmental Group on Tea, Intersessional Meeting: Report of the Working Group on Global Tea Market Analysis and Promotion. 2016. IGG:TE ISM 17/3

10. Auvichayapat P, et al, Effectiveness of green tea on weight reduction in obese Thais: A randomized, controlled trial, PhysiolBehav (2007), doi:10.1016/j.physbeh.2007.10.009

11. Nagao T, Hase T, Tokimitsu I. A green tea extract high in catechins reduces body fat and cardiovascular risks in humans. Obesity. 2007 Jun 1;15(6):1473-83.

12. Janssens PL, Hursel R, Westerterp-Plantenga MS. Long-Term Green Tea Extract Supplementation Does Not Affect Fat Absorption, Resting Energy Expenditure, and Body Composition in Adults–3. The Journal of nutrition. 2015 Mar 4;145(5):864-70.

13. Westerterp-Plantenga MS, Lejeune MP, Kovacs EM. Body weight loss and weight maintenance in relation to habitual caffeine intake and green tea supplementation. Obesity. 2005 Jul 1;13(7):1195-204.

14. Chen IJ, Liu CY, Chiu JP, Hsu CH. Therapeutic effect of high-dose green tea extract on weight reduction: A randomized, double-blind, placebo-controlled clinical trial. Clinical Nutrition. 2016 Jun 1;35(3):592-9.

15. Hsu CH, Tsai TH, Kao YH, Hwang KC, Tseng TY, Chou P. Effect of green tea extract on obese women: a randomized, double-blind, placebo-controlled clinical trial. Clinical nutrition. 2008 Jun 1;27(3):363-70.

16. Effects of catechin-enriched green tea beverage on visceral fat loss in adults with a high proportion of visceral fat: A double-blind, placebo-controlled, randomized trial

17. Dostal AM, Arikawa A, Espejo L, Kurzer MS. Long-Term Supplementation of Green Tea Extract Does Not Modify Adiposity or Bone Mineral Density in a Randomized Trial of Overweight and Obese Postmenopausal Women–4. The Journal of nutrition. 2015 Dec 23;146(2):256-64.

18. Mielgo-Ayuso J, Barrenechea L, Alcorta P, Larrarte E, Margareto J, Labayen I. Effects of dietary supplementation with epigallocatechin-3-gallate on weight loss, energy homeostasis, cardiometabolic risk factors and liver function in obese women: randomised, double-blind, placebo-controlled clinical trial. British Journal of Nutrition. 2014 Apr;111(7):1263-71.

19. Diepvens K, Kovacs EM, Nijs IM, Vogels N, Westerterp-Plantenga MS. Effect of green tea on resting energy expenditure and substrate oxidation during weight loss in overweight females. British Journal of Nutrition. 2005 Dec;94(6):1026-34.

20. Nagao T, Komine Y, Soga S, Meguro S, Hase T, Tanaka Y, Tokimitsu I. Ingestion of a tea rich in catechins leads to a reduction in body fat and malondialdehyde-modified LDL in men–. The American journal of clinical nutrition. 2005 Jan 1;81(1):122-9.

21. Hursel R, Viechtbauer W, Westerterp-Plantenga MS. The effects of green tea on weight loss and weight maintenance: a meta-analysis. International journal of obesity. 2009 Sep;33(9):956.

22. Jurgens TM, Whelan AM, Killian L, Dou-

cette S, Kirk S, Foy E. Green tea for weight loss and weight maintenance in overweight or obese adults. The Cochrane database of systematic reviews. 2012;12.

23. Rains TM, Agarwal S, Maki KC. Antiobesity effects of green tea catechins: a mechanistic review. The Journal of nutritional biochemistry. 2011 Jan 1;22(1):1-7.

24. Phung OJ, Baker WL, Matthews LJ, Lanosa M, Thorne A, Coleman CI. Effect of green tea catechins with or without caffeine on anthropometric measures: a systematic review and meta-analysis–. The American journal of clinical nutrition. 2009 Nov 11;91(1):73-81.

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APPENDIX 1

Search keywords and total number of articles retrieved in each selected database

Database	Search limitation	No	Search term/strategy	Total Hits	Open Access	Relevant
PubMed	Journal Abstract/Title/Key Word/ Full text	#1	(("green tea"[Title/Abstract]) AND ("weight loss"[Title/Abstract] OR "overweight"[Title/Abstract] OR "obesity"[Title/Abstract] OR "obese"[Title/Abstract] OR weight[Title/Abstract])) AND (adult[Title/Abstract] OR men[Title/Abstract] OR women[Title/Abstract])	**74**	**24**	**3**
		#2				
		#3				
		#4				
			Total			**3**
Science Direct	Journal Abstract/Title/Key Word/ Full text	#1	(("green tea") AND ("weight loss" OR "overweight" OR "obesity" OR "obese" OR weight)) AND (adult OR men OR women)	**29**	**26**	**3**
		#2				
		#3				
		#4				
			Total			**3**
Scopus	Article/Review English/ Journal Abstract/Title/Key	#1	(("green tea") AND ("weight loss" OR "overweight" OR "obesity" OR "obese" OR weight)) AND (adult OR men OR women)	**294**	**6**	**0**
		#2				
		#3				
			Total			**0**
Medline EBSCO	Journal Abstract/Title/Key Word/ Full text	#1	(("green tea") AND ("weight loss" OR "overweight" OR "obesity" OR "obese" OR weight)) AND (adult OR men OR women))	**103**	**87**	**6**
		#2				
		#3				
			Total			**6**