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Articles

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The current issue is the second of the eighth volume of the *Athens Journal of Health and Medical Sciences* (AJHMS), published by the **Health & Medical Sciences Division of ATINER.**

Gregory T. Papanikos
President
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The Health Economics & Management Unit of ATINER will hold its **20th Annual International Conference on Health Economics, Management & Policy, 21-24 June 2020, Athens, Greece s**ponsored by the Athens Journal of Health and Medical Sciences. The aim of the conference is to bring together academics, researchers and professionals in health economics, management and policy. You may participate as stream leader, presenter of one paper, chair of a session or observer. Please submit a proposal using the form available (https://www.atiner.gr/2021/FORM-HEA.doc).

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- **Dr. Paul Contoyannis**, Head, Health Economics & Management Unit, ATINER & Associate Professor, McMaster University, Canada.
- **Dr. Vickie Hughes**, Director, Health & Medical Sciences Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.

Important Dates

- Abstract Submission: **22 February 2021**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **24 May 2021**

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3-6 May 2021, Athens, Greece

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Important Dates

- Abstract Submission: **22 March 2021**
- Acceptance of Abstract: 4 Weeks after Submission
- Submission of Paper: **5 April 2021**

Academic Member Responsible for the Conference

- **Dr. Vickie Hughes**, Director, Health & Medical Sciences Research Division, ATINER & Assistant Professor, School of Nursing, Johns Hopkins University, USA.
- **Dr. Carol Anne Chamley**, Head, Nursing Research Unit & Associate Professor, School of Health and Social Care, London South Bank University UK.
- **Dr. Andriana Margariti**, Head, Medicine Research Unit, ATINER & Lecturer, Centre for Experimental Medicine, Queen's University Belfast, U.K.

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Denique Onirocrites, sic erit Hippocrates: Dreams as a Diagnostic Tool in Early Modern British Medicine

By Steven Oberhelman[*]

On 7 July 1663, a young Edward Browne, who later will become a famous ethnographer and court physician, presented his two theses for a baccalaureate degree at Cambridge University. The title of the first thesis was entitled Judicium de somniis est medico utile (A Determination [of Illness] Based on Dreams Is Useful for the Physician). In a long series of Latin elegiac couplets infused with language and imagery drawn from classical Roman poets like Virgil, Ovid, and Persius, Browne argues that the contents of a dream directly relate to the conditions of a patient's humors and that a wise person can diagnose the current state of an ailment on the basis of the dream's imagery. Browne relies on three main classical and Hellenistic Greek sources: Aristotle's works on dreams, Hippocrates' Regimen 4 (On Dreams), and Galen's On Diagnosis from Dreams. In this paper I discuss how Browne's theories derive from these ancient sources, especially Galen's text, which had appeared only two centuries earlier in the West in a Latin translation. More importantly I demonstrate how Browne's views were consistent with current medical theory prevalent throughout England and across Europe among physicians, philosophers, and laypeople.

Keywords: *dreams, medicine in England, Galen, Edward Browne, Cambridge University, Artemidorus*

Introduction

Edward Browne (1644–1708) was a physician and a traveler who wrote important accounts of his trips throughout Europe. He was the eldest of the eleven children of Sir Thomas Browne (1605–1682) and his wife Dorothy Mileham (1621–1685) at Norwich, then the largest city in England outside of London.[1]

Sir Thomas was himself a famous physician.[2] He was educated at Pembroke College, and spent three years completing his medical education by studying at Montpelier, Rome, Padua, and Vienna with a final stay at Leyden, where he obtained a doctorate in medicine in 1633. On returning to England he wrote the first and most famous of his literary works, *Religio Medici* (*The Religion of a Doctor*), which was published in 1642.[3] Sir Thomas practiced medicine from his

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[1]Browne's life has rarely been treated by scholars and then only briefly. Short treatments are: Levental (1981) and Van Strien (2004).

[2]A brief introduction to Sir Thomas is Shaw (1978). Longer treatments are Huntley (1962), Nathanson (1967), Patrides (1982) and Post (1987).

[3]The book was a bestseller in its day and, as late as 1950, appeared on virtually every list of great books. This "religion of a doctor" has three themes. The first theme is tolerance. Sir Thomas believed that an individual's religious and philosophical beliefs ought to be respected, even if one disagreed with them, and, moreover, that the state should not impose, or interfere with, religious

home. There he had a large laboratory for chemical experiments and studying natural history; his laboratory contained a famous collection of bird eggs and maps. Sir Thomas was also a polyglot, knowing six languages, and had an extensive library of Greek, Latin, Hebrew, French, Italian, German, Flemish, Dutch, and English texts, about 2,000 in all. Sir Thomas's library and his love of Latin no doubt influenced Edward for the rest of his life.[4]

Edward Browne attended grammar school in Norwich and was then admitted to Trinity College, Cambridge. In 1663, at the age of 21, he applied for admission to baccalaureate degree in medicine, stating that he had studied medicine for six years, had attended the usual lectures, had observed two dissections, and had engaged in the necessary disputations (Robb-Smith 1974, pp. 347–349). After taking his degree Browne began his continental education: six months in Paris, visiting the hospitals and attending lectures; to Montpellier and then to Italy, where he spent a few weeks studying anatomy at Padua; then north again retracing his steps, attending further courses at Paris, where he caught smallpox; and finally in the late summer of 1665 was home again at Norwich.[5] Browne next enrolled at Merton College, Oxford, on 19 June 1666, and on 4 July 1667 received his doctorate in medicine. Since he had decided on a medical career in London, it was necessary for him to join the College of Physicians, and on 16 March 1668 he was accepted as a candidate.

However, Browne did not wish to begin a medical practice immediately, and persuaded his father to allow him to make another foreign journey. From August 1668 until Christmas 1669 he visited the Low Countries, Germany, Austria, Hungary, Serbia, Bulgaria, and northern Greece, where at Larissa he met the sultan of the Ottoman Empire. Upon his return, Browne published an account of the countries through which he had passed. He had earlier become a fellow of the Royal Society on 2 January 1668, and while abroad he sent to its secretary, Henry Oldenburg, information on the gold, silver, and copper mines in Hungary,

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practices. When *Religio Medici* appeared, it was one of the earliest Western statements of respect for religious beliefs that are different from one's own. The second theme is a close connection between religion, and science or medicine. Sir Thomas believed that by using reason and observation a physician could strengthen his faith in God. Rather than simply follow church authority or biblical teachings, Sir Thomas argued that scientific training and reason enabled one to find God. The third theme is the moral responsibility of the doctor. Sir Thomas believed that the practice of medicine should be the reflection of a moral life, not simply a profession or business. Thus, service to others is one of the highest purposes of a physician. One should not charge a fee when one is unable to help a patient, and the physician should remember that his patient's best interests always take priority over his own. This long note is not superfluous but is intended to point out the relevance of *Religio Medici* today: Sir Thomas argued for a tolerant world, a place where science, nature, and faith can be discussed with understanding and without patriotic chauvinism and cultural arrogance. His willingness to discuss religious and scientific matters rationally, and his tolerance of other cultures and religions, in a time when persecution and holy wars were all too common, is praiseworthy.

[4]Finch (1986, p. 93): Sir Thomas told Edward to read Latin poets for "their handsome expressions and sense," and also Aristotle (pp. 101, 104). Edward certainly knew his Aristotle as we will see later in this paper, although I would note that Aristotle was predominant in the university curriculum (Costello 1958, p. 9).

[5]For the reason why graduates went to the Continent for completing their medical training see Allen (1946, pp. 121, 130). Also, Allen (1946, pp. 130–131).

Transylvania, and Austria. But soon it was time for Browne to settle down to serious work. On 14 June 1675 he was chosen lecturer at Surgeons' Hall, and on 29 July 1675 he became a fellow of the College of Physicians, of which he eventually served as treasurer (1694–1704) and president (1704–1708). Browne had a large and lucrative medical practice, with many aristocratic patients, including King Charles II. On 7 September 1682 Browne became permanent physician to St Bartholomew's Hospital.

Browne produced two translations: *A History of the Cossacks*,[6] and the lives of Themistocles and Sertorius for inclusion in John Dryden's *Plutarch's Lives (*1683–1686). He is best known, though, for his travel books detailing trips to Hungary, Serbia, Bulgaria, Macedonia, Thessaly, and Austria.[7] An account of his journeys through the Low Countries and Germany appeared in 1677, an updated and heavily illustrated edition in 1685, and a reprint edition in 1687.[8]

Browne died, after a short illness, on 28 August 1708, in his country house at Northfleet in Kent. A Latin inscription on the memorial stone over his grave in the local church pays tribute to him as a famous doctor physician and the author of travel books.

Browne's Thesis on Dreams on Medicine

Of Browne's writings one is the focus of this article: his first thesis or proposition delivered on Commencement Day, 7 July 1663, to partially fulfill the requirements for the baccalaureate degree in medicine. To earn the degree in seventeenth-century England, a student was required to study six years, attend two dissections, pass an examination, and participate in two disputations.[9]

[6]A Discourse of the Original, Countrey, Manners, Government and Religion of the Cossacks, with another of the Precopian Tartars. And the History of the Wars of the Cossacks against Poland (London: T. N. for Hobart Kemp, 1672); this was a translation of Pierre Chevalier's Histoire de la guerre des Cosaques contre la Pologne (Paris: Thomas Iolly, 1668).

[7]A Brief Account of some Travels in Hungaria, Servia, Bulgaria, Macedonia, Thessaly, Austria, Styria, Carinthia, Carniola and Friuli. As also some observations on the gold, silver, copper, quick-silver, mines . . . in those parts, etc. (London: T. R. for Benj. Tooke, 1673).

[8]A Brief Account of some Travels in divers parts of Europe, viz. Hungaria, Servia, Bulgaria, Macedonia, Thessaly, Austria, Styria, Carinthia, Carniola, and Friuli. Through a great part of Germany, and the Low-Countries ... With some observations on the gold, silver, copper, quick-silver mines ... in those parts ... The second edition, with many additions (London: T. R. For Benj. Tooke, 1687).

[9]The Elizabethan Statue of 1570, *De legibus baccalaureis*, cap. xv, states: "Medicinae studiosus sex annos rem medicam discet ejus lectionis auditor assiduous: anatomias duas videat: bis respondeat, semel opponat antequam baccalaureus fiat" ("The one pursuing medicine will study medicine for six years and be an eager listener to what is being read; he should watch two dissections; he should serve as a respondent twice, at the same time as serving as an opponent twice; if so, he can receive his baccalaureate"). Allen (1946, p. 122) writes that the lecturer in medicine had to read Galen and Hippocrates and the Regius Professor lectured four days a week, with absences subject to fines (hence the "be an eager listener" above). All translations in this article are my own, unless otherwise noted.

Disputations were an elaborate affair and had set ceremonial rules (Costello 1958).[10] On Commencement Day (*in die comitiorum*), the baccalaureate candidate appeared before mentors and faculty to defend two propositions.[11] The propositions were written in Latin hexameters or elegiac distiches, printed on the same side of the broadside.[12] The writer was required to use Virgilian diction and to refer to Latin poets like Ovid and Persius (Costello 1958, pp. 17–19).[13] Three sophisters (advanced undergraduates) had previously been selected to act as opponents; their job was to refute the proposition with syllogisms and other arguments.[14] A moderator opened the event with an introductory speech, followed by words from the "Fathers" (that is, the responder's academic advisers). The broadside was distributed to everyone in attendance and then the candidate delivered in Latin the first proposition. The sophisters, each in succession, attempted to refute (also in Latin) the thesis; when each sophister had finished, the responder offered a rebuttal. A total of 30 minutes was allotted for the reading, oppositions, and defense. The second proposition was then presented and the same procedure as before was implemented. As stated above, a baccalaureate candidate, to be approved for graduation, not only had to act as responder for his own propositions, but to have served as sophister twice.[15] For the doctorate in medicine a student needed to study for five more years, attend three dissections, pass two more examinations, and undergo two more disputations. The actual license to practice was not granted until the student had successfully cured three patients.[16]

Browne first matriculated at Trinity College, Cambridge, in 1657, and in July of 1663 presented himself for the baccalaureate in medicine. Since he had attended Trinity College for six years, had observed two dissections, and had acted as sophister, all that remained were the defense of his responsions or propositions. On 7 July, Browne offered his first thesis: *Judicium de somniis est Medico utile* ("A Determination [of Illness] Based on Dreams Is Useful for a Physician"). The text, written in elegiac distiches and in good classical Latin diction, has been preserved. A copy resides in the British Library (shelfmark 11409.i.10.[6]).[17] The subscript

[10]Costello (1958, pp. 8–10) observes disputations had their origin in medieval scholasticism.

[11]For examples of the types of undergraduate disputation topics, see Allen (1946, p. 124).

[12]John Milton, the renowned poet, wrote in 1628 on *Naturam non pati senium* ("That nature is not subject to old age") and *De idea platonica quemadmodum Aristotelis intellexit* ("On the Platonic idea as Aristotle comprehended"). Milton, it should be noted, wrote Latin verses for other students (Costello 1958, pp. 17–18).

[13]Twigg (1990, p. 207 (bibliography in note 3)) observes that students knew Latin grammar even before entering the university and continued to study it and Greek as an undergraduate.

[14]As stated above, an undergraduate had to serve twice in this role to fulfill their baccalaureate requirements. For how the sophisters were selected see Evans (2009, pp. 249–250).

[15]The Elizabethan Statues of 1570 dictated the medical school at Cambridge. See the discussion in Anderson (2004, pp. 11–13).

[16]Elizabethan Statues, *De baccalaureis medicinae*, cap. xvii–xviii. Also, Robb-Smith (1974, pp. 328–329). Medical education remained stagnant for over three centuries and played a large role in the low number of doctors being produced annually by Cambridge and Oxford every year. It is estimated that between the years 1500 and 1856, only 3,000 physicians came from those two universities, that is, only eight or nine every year. See Rook (1963, pp. 639–643, esp. p. 643). Cf. Robb-Smith (1974, p. 359).

[17]The broadside is available at the General Reference Collection desk. My thanks of appreciation to the staff of the British Library for assistance.

reads: *Julii 7. 1663. In die Comitiorum, Reſpondente M^ro^ Brown, Bacc. Med. Coll. Trin.* ("July 7, 1663. On Commencement Day, Mr. Brown[e] acting as responder. For the baccalaureate in medicine, Trinity College").

For our purposes here I omit the opening remarks and move to the section in which Browne argues that dream imagery can portray disease in a dreamer's body. A literal translation follows.

Qui jacet, ille ſuum poterit ſentire dolorem,
Atque ſibi Hippocrates hactenus alter erit,
Ille ſuos Manes patitur per ſomnia, dum mens
Cogitur uſque ſuis invigilare malis.
Somnia quae versos aequant imitamine morbos
Sollicitum vexant nocte ruente caput:
Arida dum miſeros febris depaſcitur artus,
Et jecur, Aetnaeo non minor, ignis edit,
Somniat Empedoclem ſemet ductâſſe, videtur
Torridus Aetneas ire redire vias.
Aut Phaetontaeos credens ſe ſcandere currus,
Per calidum ignivomos aethera flectit equos:
Vitrea ſi calido tumeat ſub pectore bilis,
Fervidus & Cholerae bulliat igne ſinus,
Hoſtes, arma crepat, per Amica ſilentia noctis,
Atque ipſos ſomnos irrequietus agit:
Humorum vario cerebrum quàm fluctuat aeſtu?
Frigida cùm nimium viſcera Phlegma gelat,
Stagna, lacus, amnes, & latum proſpicit aequor
Anxius, inque vado naufragus horret aquas;
Quámque ſemel tantùm poterit tranare paludem,
Saepiùs horrendam ſe putat ire viam:
ERGO,
Artemidore tuas Medicus pervolvere chartas
Diſcat, & uſque tuum dextra fatiget opus;
Unus ſic meritò viciſſe Machaonas omnes,
Parcarum & poterit ſiſtere fila trium,
Flectere ſic ſolitum curſum irremeabilis undae;
Denique Onirocrites, ſic erit Hippocrates.

The sick person who lies ill will be able to sense his own affliction,
And in this way he will be a second Hippocrates unto himself:
He suffers his fate through dreams, while his mind
Is forced to stay wakeful incessantly because of ills.
Dreams which are comparable to actual illnesses by resemblance
Plague the disturbed mind when night falls:
While a dry fever wastes his ailing limbs,
And a fire no less than Etna itself consumes the liver,
One dreams that Empedocles has led him by the hand, and he seems,
All parched, to be traversing to and fro the pathways of Etna.
Or, believing he has climbed into the chariot of Phaethon,
He directs the fire-spewing horses across the hot air of heaven:
If vitreous bile swells beneath his feverish breast,

And his bosom boils fiery-hot with the fire of cholera,
Enemies and weapons resound throughout the benign stillness of the night,
And restlessness disturbs his sleep:
How in the heat of a fever the intellect is shaken by the undulating change of the humors!
When cold phlegm causes an excessive congealing of the internal organs,
Swamps, lakes, streams, and the broad sea are beheld by the distressed [mind],
And as a shipwrecked man one shudders at the waters on the shoals;
On one occasion he will be able to swim across a swamp,
But more often he imagines that he is travelling on a terror-filled journey.
Therefore,
May the physician, Artemidorus, learn to turn over your pages
And may his right hand ever wear out your work;
In this way he alone will deservedly have surpassed all the practitioners of the Machaonian craft,
And be able to arrest the threads of life spun by the three sisters
And thus turn the usual course of the stream from which one cannot return.
In a word, the dream interpreter will thus be Hippocrates.

Browne's Debt to Classical Greek and Latin Sources

This text is interesting. First, Browne has borrowed heavily from Golden Age and Silver Age Latin poets for phraseology and *exempla*. This is not unexpected, though, as any candidate would have been proficient in Latin and classical training since childhood. I will not delve into the literary aspects of Browne's thesis because of space considerations. But a few examples will suffice to illustrate Browne's mastery of Latin poets.

Browne, line 12: cogitur usque **suis invigilare malis**
Virgil, *Aeneid* 6.743: quisque **suos** patimur manis mens **invigilare malis**
Ovid, *Fasti* 4.530: capiat somnos **invigiletque malis**
Silius Italicus, *Punic Wars* 10.330–331: sed mens **invigilat curis**[18] noctisque quietem / ferre nequit

Browne, line 15: **arida** dum miseros **febris depascitur artus**
Virgil, *Georgics* 3.458: cum furit atque **artus depascitur arida febris**

Browne, line 28: anxius, inque vado **naufragus horret aquas**
Ovid, *Letters from the Black Sea* 2.7.8: tranquillas etiam **naufragus horret aquas**[19]

Browne's text is far more interesting for its clear discussion of how dreams can function as a diagnostic tool in medicine. For his ideas Browne has drawn from contemporary humoral theory (based on Greek and Roman medicine) and from ancient philosophers and medical writers. He also reflects the then current

[18]Here the word *curae* ("anxieties") is a synonym for Browne's *mala* ("evils").
[19]The words in both texts conclude the second of an elegiac couplet.

theories held by authors in England and on the European continent regarding the prognosticative and diagnostic ability of dreams.

The notion that a person's four humors— black bile, phlegm, yellow bile, and blood—determined the workings and wellbeing of a person's body was pervasive throughout early modern England. Literary writers like Shakespeare, philosophers like Thomas Hobbes (1588–1679), lay dream interpreters like Thomas Hill (1528–d. unknown), and popular writers like Richard Haydock (1569–1642), all commented how the humors can affect a person's moods, emotions, and actions, and how external factors like food, weather, and climate can upset the equilibrium of the humors.[20] Moreover, each humor had its own associations with times of year, emotions, the elements, and a person's lifetime: blood is characterized by spring, passion, air, and childhood; yellow bile, by summer, anger, fire, and youth; black bile, by autumn, introspection, earth, and adulthood; and phlegm, by winter, melancholy, water, and old age.[21] It was also thought that personality types and traits were based on one's humors. Galen, the second-century CE physician, wrote in his *De temperamentis* (*Concerning the temperaments*) that there are nine temperaments, when one takes into account the possible combinations of the four humors, the four elements (earth, air, fire, water), and the four qualities (wet, dry, hot, cold). The well-balanced person had the proper and equal proportions of humors and qualities.[22]

Four temperaments were singled out on the basis of the humors: sanguine, choleric, melancholic, and phlegmatic. But each temperament could become dominant from an excess of a specific humor, and so the resulting imbalance could cause a temporary or long-term change in personality. Let us take yellow bile as an example. Yellow bile, being dry and hot, is easily susceptible to heat. Thus, a fever, which is a hot and dry disease, is reflective of an excess of yellow bile, and steps need to be undertaken to restore the proper balance of yellow bile in the body.[23]

It had long been established in Greek and Roman medicine, philosophy, and science that dreams may contain images that indicate the lack or excess of humors in the dreamer's body.[24] Hippocrates[25] viewed medical dreams as non-divine dreams (as opposed to divine dreams that prognosticate future events). The medical dream, which describes both the physical state of the body and the regimen needed to restore health, occurs when the soul, while the body is asleep, performs through its own agency all the acts of the body, such as sight, touch, perception of pain, and reflection (Oberhelman 1993a). During the body's sleep, a displacement of perception takes place: the soul's cognitive and sensory processes

[20]See chap. 1 of Rivière (2013) and Rivière (2017), chap. 1: 'Seasons of Sleep': Natural Dreams, Health, and the Physiology of Sleep, pp. 17–49.
[21]This all goes back to the Hippocratic corpus. See Jouanna and Allies (2012).
[22]For Galen's theories and their impact on early modern European thought, see Stelmack and Stalikas (1991).
[23]This theory lasted from the Middle Ages through the eighteenth century (Siraisi 1990).
[24]See Hulskamp (2013), for a thorough review. Also, Oberhelman (1993), Teilband II, 37, 2, pp. 121–156.
[25]I use the term "Hippocrates" to denote the many writers who wrote the texts that make up the Hippocratic corpus.

shift inwardly, to the body, whereby the soul perceives the conditions of the body, including diseases. These perceptions constitute the dream's images and offer information on the dreamer's state of health.[26]

The author of the Hippocratic *Regimen* combined a physiological and a hermeneutic approach to the dream, seeing significance not only in the dream event but also in its contents; thus dreams can have a dual purpose, medical diagnosis (what is happening to the body) and medical prognosis (what is going to happen to the body) (see Hulskamp 2015, Van der Eijk 2004). A medical dream, for the Hippocratic author of *Regimen*, was analyzed according to a microcosm-macrocosm analogy. The human body is the microcosm of the universe (the macrocosm) and so the circulations in the outer, middle, and hollow parts of the body are analogous to the outer, middle, and hollow circuits (the stars, sun, and moon).[27] Thus, according to this model of analogy, if someone dreams of a star (outer circuit) disappearing or suffering some sort of harm, this means that a moist and phlegm-like secretion has fallen to the body's outer circulation; the dreamer must then undergo a medical regimen to remove the excess moisture from the body, for example, by inducing perspiration. Dream images involving terrestrial phenomena are analogous to parts of the human body. For example, the earth is analogous to the dreamer's skin; a tree, to the penis; cisterns, to the bladder; rivers, to the blood's circulation and quantity. Thus, a dream of seeing the earth flooded with water indicates that the body is excessively moist, and the patient must take steps to promote drying. The most common regimens to counter-act imbalances in the body were vapor baths, drying and cooling, alterations in a patient's food and drink, emetics, hellebore, and conducting exercises or avoiding them.

Aristotle believed that dreams are merely accidental products of the imagination which occur during sleep.[28] Dreams do not involve actually sensing a stimulus because during sleep the senses do not work as they normally do while one is awake. In sleep, sensation is still involved, but in a different way than during the waking-state. During the day, when a person perceives a stimulus and the stimulus is no longer the focus of his attention, it leaves behind an impression. When the body is awake, a person constantly encounters new stimuli that are sensed and so the impressions left from previously perceived stimuli are ignored. However, during sleep, the impressions created by stimuli throughout the day now become noticed because there are no new sensory experiences to distract the faculty of perception. Aristotle argues that in the center of the heart the impressions occur as images and these images constitute our dreams. But since the images portray only the impressions and not the actual stimuli, dreams only *resemble* the experience that occurred when awake.

Aristotle applies this theory of dreams to medicine (see Van der Eijk 1995). As I said, stimuli, especially those arising from the body, escape our attention during the waking-state because the waking movements and outside sense perceptions are too great. But in sleep, the opposite occurs: small movements from

[26]Full discussion in Hulskamp (2008).
[27]A fuller discussion on Hippocrates in this respect is Hulskamp (2013).
[28]For a discussion of Aristotle's views, see, *inter alios* (Segev 2012); text and commentary in Gallop (1990).

within the body are greater and therefore are perceived. Thus, diseases may be detected in dreams because their stimuli will dominate the weaker external perceptions. A dream therefore can be useful for a physician or any other wise person since it may come from internal sensations of disease.

The second-century CE Rufus insisted that a physician should take into account a patient's dreams: "And you should also ask . . . whether the patient has had any vision or dreams, since from these a doctor can also make his inferences" (see Rufus 2001, p. 398, Oberhelman 1993b, § II), The images of the dream are to be applied to the humors of the body on the basis of the microcosm-macrocosm analogy. Rufus gives three illustrative dreams, each of which he interprets along the methodology in the Hippocratic *Regimen.* A wrestler dreamt that he spent the night in a black marsh of fresh water; the dream indicated the need of a massive evacuation of blood. A feverish patient dreamt of violence and fighting; this meant that he needed to be bled. Another patient, who had excessive moisture in his body, dreamt of swimming in a river.

Dreams exerted considerable influence on the life of Galen (Holowchak 2001, chap. 3 (with Appendices B and C)). Galen's thoughts are outlined in his a short treatise entitled *On Diagnosis from Dreams*.[29] In the text Galen adduces four sources for dreams. Some images are daytime thoughts that reappear in a dream; this occurs most frequently when a person is overly concerned or anxious. Other images merely reproduce what one habitually does in the daytime; thus, a baker will dream of making bread, a sailor will dream of sailing, and an artist will have dreams pertaining to the arts. Dreams also arise when the soul, through its inherent power, foretells future events—a theory that the Stoics had developed. Finally, dreams can give a clue to the dreamer's medical condition by portraying in symbolic images the state of the humors in the body.

Galen's views on medical dreams derive from Aristotle and the Hippocratic *Regimen*. While the body is asleep, the soul sinks into the interior of the body and is there removed from outside sensory perceptions. The soul then forms images from residues of waking-state thoughts and through its own prognosticative ability; it also receives images from the various parts of the body. All these images are influenced by the dreamer's physical condition and the balances of the four bodily humors.

Galen used various methods of interpretation, but the one most preferred was the Hippocratic microcosm-macrocosm analogy.[30] Galen refined this system by also taking into account the symbolic similarity between dream images and the various mixtures of the humors and elements. Thus, if someone dreams of snow or ice, he is ill from an excess of phlegm, since this humor is cold and wet. A dream of deep darkness means disease from black bile, for this humor is dry and cold. A fire in a dream indicates yellow bile, as this humor is hot and dry like fire. As per the *Regimen*'s microcosm-macrocosm analogy, excess blood in the body will cause an image of standing in a cistern of blood; a fever on the verge of crisis, an image of swimming or bathing in hot water; too much sperm, an image of sexual intercourse; a large quantity of feces or foul humors, an image of sitting amidst

[29]Text is in Guidorizzi (1973).
[30]See Hulskamp (2013) for a thorough discussion.

filth and dung; a plethora of humors, the impression that one is carrying a heavy burden or is scarcely able to move.

Browne replicates these same ideas in his thesis.[31] In lines 13–14 he restates Hippocrates' and Aristotle's theories that at night the mind is besieged by images that reflect a person's illness and that these images *resemble* the diseases afflicting the body:

> Somnia quae versos aequant imitamine morbos
> Sollicitum vexant nocte ruente caput:
>
> Dreams which are comparable to actual illnesses by resemblance
> Plague the disturbed mind when night falls:

In other words, an illness is presented to the mind through imagery and resemblances, and by examining the images the astute person can understand the medical event underlying the image.[32] What Browne is doing here is to give us Aristotle's method of interpreting dream imagery. Aristotle wrote that the best interpreter of dreams was the one able to observe resemblances. Dream images are like reflections in water: the water's motion, to the degree that the water is rough, will distort the original. It is up to a skillful interpreter to recover the original from the reflection. Browne is arguing that dreams caused by an illness are not exactly replicated in the imagery. There is a dream language and it uses metaphors. The wise person can take the metaphorical image and translate it back into the real, original meaning. Dream content is not always literal; rather, it is represented through resemblances.

Browne spends much of his thesis dealing with the excess of yellow bile as manifested in images that reflect inflammation of the liver and a high fever. He begins with a long series of images of excessive fire and heat:

> Arida dum miſeros febris depaſcitur artus,
> Et jecur, Aetnaeo non minor, ignis edit,
> Somniat Empedoclem ſemet ductâſſe, videtur
> Torridus Aetneas ire redire vias.
> Aut Phaetontaeos credens ſe ſcandere currus,
> Per calidum ignivomos aethera flectit equos:
> While a dry fever wastes his ailing limbs,
> And a fire no less than Etna itself consumes the liver,

[31]Sir Thomas Browne in *Religio Medici* writes that young doctors should read Galen and Hippocrates and in the original; otherwise they could not be great physicians. Allen (1946, pp. 131, 124) observes that the curriculum at British medical schools was conservative at this time and stressed the writings of Galen and Hippocrates. For a thorough discussion of the theory of the humors and medical dreams during the time period of Browne, see Rivière (2017, chapter 1: 'Seasons of Sleep': Natural Dreams, Health, and the Physiology of Sleep, esp. pp. 17–49). Cf. Siraisi (2015), on the medical theory of dreams as they relate to the humors and temperaments; and Scott (2014, pp. 174–176).

[32]The phrase *somnia . . . imitamine* is in fact borrowed from Ovid's *Metamorphoses* 11.626: ***somnia**, quae veras aequent **imitamine** formas* ("Dreams which replicate appearances through imitation of the real"). I owe the translation of Ovid to Scioli (2015, p. 71).

One dreams that Empedocles has led him by the hand, and he seems,
All parched, to be traversing to and fro the pathways of Etna.
Or, believing he has climbed into the chariot of Phaethon,
He directs the fire-spewing horses across the hot air of heaven:

Browne's views reflect Hippocrates in *Regimen* 4.89: "If [heavenly bodies in a dream] appear to be fiery and hot, a secretion of bile is indicated." And Galen: "Someone dreaming of a conflagration is troubled by yellow bile" and "[S]ome who are about to sweat critically seem to be bathing and swimming in receptacles of hot water."[33]

Browne proceeds to describe combat against enemies as a sign of excessive bile (lines 23–24):

Hoſtes, arma crepat, per Amica ſilentia noctis,
Atque ipſos ſomnos irrequietus agit:
Enemies and weapons resound throughout the benign stillness of the night,
And restlessness disturbs his sleep:

Rufus of Ephesus also wrote that dreaming of violence and fighting symbolizes a fever that must be bled (Oberhelman 1993b, p. 138, with note 73, referencing Hippocrates, *Regimen* 4.88 and 4.93).

Browne switches humors in lines 26–30—from yellow bile to cold phlegm. Images of bodies of water, swimming in pools, being swept by ocean waves all reflect excessive moisture (lines 26–30):

Frigida cùm nimium viſcera Phlegma gelat,
Stagna, lacus, amnes, & latum proſpicit aequor
Anxius, inque vado naufragus horret aquas;
Quámque ſemel tantùm poterit tranare paludem,
Saepiùs horrendam ſe putat ire viam: 30

When cold phlegm causes an excessive congealing of the internal organs,
Swamps, lakes, streams, and the broad sea are beheld by the distressed [mind],
And as a shipwrecked man one shudders at the waters on the shoals;
On one occasion he will be able to swim across a swamp,
But more often he imagines that he is travelling on a terror-filled journey.

So too Hippocrates, *Regimen* 90:

> Springs and cisterns indicate some trouble of the bladder; it should be thoroughly purged by diuretics. A troubled sea indicates disease of the belly; it should be thoroughly purged by light, soft aperients. . . . To see the earth flooded by water or sea signifies a disease, as there is much moisture in the body. What is necessary is to take emetics, to avoid luncheon, to exercise and to adopt a dry diet. Then there should be a gradual increase of food, little by little, and little to begin with. . . . If the dreamer thinks that he is diving in a lake, in the sea, or in a river, it is not a good sign, for it

[33]It would have been easy for Browne to know the Hippocratic and Galenic treatises on dreams since they were published together starting c. 1500; see Siraisi (2015, p. 312, note 39).

> indicates excess of moisture. In this case also benefit comes from a drying regimen and increased exercises.

Rufus of Ephesus writes in a similar way: "A wrestler's dream of spending a night in a black marsh of fresh water indicates the need for a massive evacuation of blood . . . and a dream of swimming in rivers means excessive moisture in the body" (Oberhelman 1993b, p. 138). Galen agrees: "A rainstorm indicates that cold moisture abounds; snow, ice, and hail, indicate cold phlegm. . . . A wrestler who seemed to be standing in a receptacle of blood and to keep above it with difficulty had an abundance of blood and was in need of purging."[34]

Browne and Current English and Continental Theories

Browne's theories and examples may not necessarily be derived from Greek and Roman sources, for they were common at the time. Thomas Hill, whose *Moste Pleasaunted Arte of the Interpretation of Dreams* was published in 1576, distinguished dreams caused by excesses of the humors from other dreams. He writes (p. 38) that dreams "signifye euill, when the spirites and heate renewed in the sleepe transpose them vpon those euill humors, whiche before rested, for asmuch as then through these the lyke vapours be eleuated and stirred vppe, and these by their ill nature, cause men to feare" (see Hodgkin 2007, p. 112 with note 10). Levinus Lemnius (1505–1568), whose work in Dutch was translated into English by Thomas Newton (1542?–1607),[35] also wrote that the humors determine the health or sickness of the body and that dreams portray the dominant humor through certain images. Thus, a dream of "dvuinge ouer head and eares in Water, or to be in Bathes & Raynes" shows an excess of phlegm, as will "hayle. Snow, Yse, storme." David Person (exact dates unknown), in his *Varieties: Or, a Surveigh of Rare and Excellent matters* (1635), states that a dream's images reflect a person's dominant humor. So, the choleric person will dream of fire and wars, while the phlegmatic person will see such images as waters and drowning. Person writes (pp. 251–252): "As for Cholericke, who dreameth of fire, debates, skirmishes and the like . . . the flegmaticke dreameth of waters, seas, drowning, and the rest." Thomas Tryon in 1691 wrote: "Physitians generally agree, that the natural temperament or complexion, and consequently many times the secret Diseases of persons are as soon, or better found out by their Dreams, than by any outward signs" (Tyron 1691, pp. 5–6).[36]

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[34]Translations of Galen are drawn from Oberhelman (1983, pp. 36–47).

[35]The original work was in Latin and entitled *De habitu et constitutione corporis.* The translation is: *The touchstone of complexions generallye appliable, expedient and profitable for all such, as be desirous & carefull of their bodylye health: contayning most easie rules & ready tokens, whereby euery one may perfectly try, and throughly know, as well the exacte state, habite, disposition, and constitution, of his owne body outwardly: as also the inclinations, affections, motions, & desires of his mynd inwardly / first written in Latine, by Leuine Lemnie ; and now Englished by Thomas Newton* (London: Thomas Marsh, 1576).

[36]See Wiseman et al., pp. 3–4. See also the excellent discussion of Haydock (2008, pp. 24–26, 4)1; Levin (2008, pp. 42–45) also discusses, the humoral medical dreams by Thomas Nashe (1567–

Views on the imbalances in the humors as a cause of dreams were a mainstay of continental philosophy and medicine as well. Nearly a century before Browne, Gerolamo Cardano (1501–1576) published the most significant Renaissance discussion on dreams in his commentary, *Synesiorum Somniorum omnis generis insomnia explicantes, libri IV* (*Four Books in which every type of dream in Synesius' 'On dreams' is explained*) (Basel, 1562). Cardano argued that dreams may derive from the bodily humors and thus predict states of health. Like Hippocrates and Galen, Cardano points out that dream images should be interpreted through correspondences of the microcosm of the body and the macrocosm of the university (*Synesiorum Somniorum*, 1.1–15). The dream, when properly interpreted, may diagnose the body's condition. Cardano, although a physician, did not apparently interpret medical dreams except his own; he only records dreams that he had heard from other doctors (Siraisi 2015, chapter 5, especially pp. 181–182). Since Carlano had a great disdain for popular dream interpreters, this may explain his aversion to interpreting others' dreams and on his insistence on self-diagnosis.

Francisco Sanches (1550–1623), like Cardano a doctor and philosopher, in his commentary on Aristotle's *On divination* (*Commentarii de divination per somnum, ad Aristotelem*[37]) follows very closely Aristotle's and Hippocrates' views. Sanches writes that after the soul withdraws into the inner part, it becomes aware of both external and internal objects and sensations. In particular, the soul sees "every condition of the body" (*omnem corporis statum*). Any imbalance in the humors will then be manifested through relevant imagery:

> Denique omnem corporis ſtatum videt, aut ſimpliciter & explicitè, aut ſub variâ ſomniorum ſpecie. Ut cùm multa defluit pituita ſomniat ſe imbre largo perfundi, aut per fluvios & acquoſa loca ferè ſuffocari . . . Cùm dominator melancholicus humor, ſomniat cadaver, neces, vulnera, ſerpentes, cruces, luctus, & omnia maeſta. Cùm ſanguis, nuptias, choreas, convivial, riſus, & omnia laeta; cùm bvilis, rixas, ignes, incendia, coruſcationes (p. 288).

> Thus [the soul] sees every status of the body, either simply and easily, or through various sorts of dream images. And so when much *phlegm* flows down, one dreams that he is being *drenched by a huge amount of rain*, or is almost being *drowned in rivers and watery places*. . . . When the *black bile* humor becomes dominant, one dreams of *corpses, murders, woundings, snakes, tortures, afflictions, and every sorrowful thing*. When the *blood* [dominates, one dreams of] *weddings, dancing, banquets, laughter, and all happy things*; but when *yellow bile, quarrels, fires, conflagrations, flashes* [of lightning].

Auguer Ferrier (1513–1588) was a French physician and astrologer who in his *De diebus decretoriis secundum Pythagoricam doctrinam et astronomicam observationem* (*On critical days according to the teachings of Pythagoras and astronomical observation*) (Leyden, 1549) cites ancient Greek medical writers like

1601). Haydock writes that people with yellow bile are afflicted with dreams of fire while those with phlegm with visions of snow, waters, and rivers. See also Marr (2017, pp. 113–181).

[37]I see the Roterdam 1649 edition of *Tractus philosophici, quod nihil scitur*. Brief mention of Sanches's theories are given in Siraisi (2015, p. 190).

Galen to argue that some dreams are humorally based. Ferrier even discusses (pp. 134–136) reproduces the same dreams and their interpretations which Galen discusses in his treatise *On Medical Diagnosis through Dreams*.[38] Ferrier then describes Hippocrates' and Galen's use of dreams to explain excesses of humors in a patient's body; for example those who suffer from an abundance of phlegm will see images of snow, ice, and hail (see further De Smet 1999, pp. 351–376).

I am not claiming that Browne was aware of the works of Cardano, Sanches, Ferrier, and others, although he may have given the library that he inherited from his father.[39] What I am saying is that the idea that dreams can help to understand through dreams a person's bodily condition, state of humors, and type of illness was pervasive and generally accepted across Europe and England.[40] There were of course skeptics, just as there were in antiquity (Harris 2009, pp. 83–90), but the resistance was directed mainly toward the supernatural dream (epiphanies, demon-sent visions, etc.) and was due to the aversion to popular oneirology (Rivière 2003, 112–137). Natural dreams with a physiological basis were an accepted concept grounded in ancient medical and philosophical theory (Aristotle, Galen, Hippocrates) and were acknowledged as useful in diagnosing illness.[41]

Conclusion

My conclusion may strike the reader as unusual, for I intend to raise more questions than to answer them. First off, Browne was pursuing a degree in medicine and was defending his thesis before faculty and students of the medical school of Cambridge. And yet Browne disparages physicians who read Galen and Hippocrates. Browne begins this thesis with these words:

> Why do you wander through the writings of physicians with tired vision?
> Why do you study the doctrines of the old man of Cos [= Hippocrates]?
> What usefulness [is there] when the lamp, late at night,
> Watches you turning [the pages of] Galen of old?[42]

[38]Ferrier published in the same year *Liber de Somniis* (Lyon: Joannes Tornaesium, 1549), which contained Hippocrates' *De insomniis* translated by JC Scaliger; Galen's *De insomniis* translated by Joannes Guinterius Andernacus; and Synesius's *De somniis* translated by Marsilio Ficino.

[39] For sake of space I have limited this survey of dreams in continental European thought to these writers, as a fuller study would require a book-length treatment. Such a study would discuss René Descartes, for example; for an introduction to Cartesian dream thought, see Browne 1977, pp. 256–273, and Robert 2008, pp. 691–709; for application of Descartes' theories to explain psychological disorders, see López-Muñoz and Alamo 2011, pp. 449–451.

[40]This is a continuation of the medieval tradition (Fattori 1985, pp. 86–109).

[41]Ancient Greek dream theory is now used in modern psychotherapy. Edward Tick, for example, employs through organized pilgrimages to Greece dreams and dreaming for guidance and therapy; he connects ancient spiritual sites and mythology while focusing on dreams in order to effect physical, psychological, and spiritual healing among the participants. See Tick (2001); cf. Giannini 2004, pp. 75–91. A good review is Dubisch (2021).

[42]Note the epithet of "old" for both Hippocrates and Galen. The words *senex* and *antiquus* are ambivalent: in Latin, there is both a meaning of 'austere' and yet also 'old-fashioned.'

An ill person, Browne continues, is his own best doctor. If someone is lying ill in his bed, he need only to pay attention to the images of his dream in order to self-diagnose. No need to call a diplomate physician when the ill can determine that, for example, "vitreous bile" is in excess and thus racking him with fever and inflammation.[43] The next step for this person, armed with this knowledge, is not given in the text. Does he go to an apothecary or herbalist and ask for a drug on the basis of this self-diagnosis? Moreover, if a patient is a "second Hippocrates unto himself,"[44] does that mean that Hippocrates is needed as well, or that he will be his own Hippocrates and thus is free to self-diagnose and seek out a medical cure? Is Browne verifying the role of the credentialed doctor, or is he coyly undermining the very religious establishment to which he belonged?

An answer to these questions may be found in the wonderfully ambiguous final lines, in the "*ergo*" conclusion. Here are the lines again.

> Artemidore tuas Medicus pervolvere chartas
> Diſcat, & uſque tuum dextra fatiget opus;
> Unus ſic meritò viciſſe Machaonas omnes,
> Parcarum & poterit ſiſtere fila trium,
> Flectere ſic ſolitum curſum irremeabilis undae;
> Denique Onirocrites, ſic erit Hippocrates.
>
> May the physician, Artemidorus, learn to turn over your pages
> And may his right hand ever wear out your work;
> In this way he alone will deservedly have surpassed all the practitioners of the Machaonian craft,
> And be able to arrest the threads of life spun by the three sisters
> And thus turn the usual course of the stream from which one cannot return.
> In a word, the dream interpreter will thus be Hippocrates.

Why does Browne highlight Artemidorus, who was acknowledged as the most important popular dream interpreter of antiquity from the Middle Ages through Browne's lifetime?[45] Although dream interpreters were generally considered quacks and charlatans at this time, Artemidorus was deemed a learned

[43]This does sound like Cardano and his praxis. But a better parallel may be Synesius of Syrene, who wrote his *On Dreams* before his conversion to Christianity in the third century. Synesius argued that every dreamer has a unique and individual dream language, and so recommended that every person to keep a daily journal of all his dreams and how they turned out in order to gain an empirical understanding of his own particular dream language. See Monticini (2017). Could Browne be advocating that a person look to his own dreams for his peculiar dream language in order to learn how his body worked and how its afflictions could be treated?

[44]Line 15: "*ſibi Hippocrates . . . alter erit*."

[45]Artemidorus's Greek text was first known in England only in Latin but by 1606 it was translated into English and then reprinted numerous times throughout the seventeenth century; see Rivière (2001, p. 18). The dreambook became popular; even Browne's own father, Sir Thomas Browne, quoted from it in his treatise *On Dreams.* Sir Thomas divided dreams into divine (angelic) and animal dreams (dreams based on the thoughts and actions of the day). He believed that dreams were a means to self-knowledge, that is, what we dream is related to who we are. The treatise *On Dreams* (London: De La More Press, 1920) is only 14 pages in length. For brief discussion see, Fudge (2007, p. 38); fuller treatment in Levin (2008, pp. 47–50).

scholar.[46] But, why does Browne hold up Artemidorus here? Why not Galen? Hippocrates? Aristotle? These giants are apparently dismissed in favor of Artemidorus.[47]

I have no definitive answer for why Browne extols Artemidorus and his interpretative skills to the point that he is a better healer than trained medical practitioners. If we read the text literally, Browne is arguing that a diplomate doctor can benefit from Artemidorus in recognizing the value of learning a patient's dreams and examining the dream's images for possible hints to excess or lack of humors. Of course, this is not wholly problematical; since Artemidorus discussed medical dreams and advocated his own son to learn the medical art, he was deemed sympathetic to the healing profession.[48] But why could Browne not name, in his concluding statement, Hippocrates and Galen who actually wrote treatises on humors and medical dreams? Browne had borrowed from these revered physicians throughout his thesis, but in the end he holds up Artemidorus as the authoritative expert. We know this because *oneirokrites* is the Latin transliteration of the Greek word ὀνειροκρίτης ("interpreter of dreams") which Artemidorus applied to himself and was preserved in translations of Artemidorus's work.[49] The proposition for Browne's thesis was *Judicium de somniis est Medico utile* ("A determination [of illness] based on dreams is useful for a physician"). It was not "A determination [of illness] based on Artemidorus's dream interpretation is useful for a physician." And yet the text appears to say that someone armed with Artemidorus's book on dream interpretation can surpass a doctor (*Denique Onirocrites, ſic erit Hippocrates*).

There is, though, a way out of this. The Latin grammar, thanks to the copulative *est*, can give us a wholly different translation: "In a word, Hippocrates [that is, the doctor] will thus be a dream interpreter [Artemidorus]." What Browne is calling for is a holistic approach to the medical art. The physician must be like Machaon and be knowledgeable in surgery, formal medicine, pharmacology, and herbalism. But the physician must "surpass" (*viciſſe*) these skills and take into account the dream theories of someone like Artemidorus who had made his profession an empirical science. Browne is not advocating for the doctor to incorporate into his practice the works of popular dream interpreters like Thomas Hill (Hill 1567), but for the *principles* of the magisterial dreambook of

[46]Very useful discussion in Rivière (2013, pp. 1–5); a fuller and thorough treatment in her chapter 2 (2017, pp. 50–88). Crawford (2000, p. 132) writes that Artemidorus's book was reprinted in English 24 times before 1724. Siraisi (2015, pp. 177–178) discusses the place of Artemidorus among the humanists and early renaissance. Also Levin, pp. 34–35.

[47]Browne dismisses them with the statement that Artemidorus "will deservedly have surpassed all the practitioners of the Machaonian craft." Machaon was an ancient physician mentioned in Homer's *Iliad* and was famous for healing and cures. In *Iliad* 2.273 his skill is mentioned; his knowledge of herbs is referred to in *Iliad* 4.219. Machaon's brother was Asclepius, who later became the god in charge of healing sanctuaries throughout the Mediterranean. The phrase "Machaonian craft," I would argue, is inclusive of all modes of medicine: surgeon, herbalist, doctor, and religious medical practitioners.

[48]Artemidorus's discussion of medical dreams, I acknowledge, is very brief and is more concerned with healing dreams at religious sanctuaries and quacks; see Oberhelman (1981, pp. 416–424).

[49]The latest edition of Artemidorus is Harris-McCoy (2012). Other editions are mentioned in Oberhelman (2014, pp. 96–98).

Artemidorus. Granted, Artemidorus did not discuss dreams from a humoral perspective, but that is not the point. By referencing Artemidorus, Browne is telling the physician to examine dreams critically and to listen to his patient. Artemidorus argued that an interpreter of dreams had to rely on his powers of observation (*tērēsis*) and on his experiential knowledge (*peira*) of a sufficient number of dreams and their outcomes.[50] He stated clearly that absolutely crucial to any interpretation, is an interpreter's knowledge of a consultant's life and habits, since the images in a dream must be compared to the dreamer's biographical data: gender, number of children, marital status, social position, economic means, and so forth. And so, since a dream's meaning is dependent on the interpreter knowing the circumstances of each consultant, he must question the dreamer about his or her life and then decode the dream's significance based on those answers. This face-to-face session where a consultant tells the interpreter her or his life story, relates the concerns, anxieties, the hopes, and the fears in her or his life, is the precursor of a psychiatrist session. Even more, it is the precursor of today's discipline of narrative medicine, where the doctor learns to listen to the stories that a patient tells and learns how to draw out and understand those stories.[51] I would argue that Browne is telling the doctors and soon-to-be doctors in his audience to be a more holistic caregiver—to be like Artemidorus and listen to their patients' stories. Hear their dreams, care about what they are experiencing, and interpret and then act upon those stories.[52]

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[50]The interpreter's first task, Artemidorus wrote, is to analyze the dream through six *stoicheia* (elements of analysis): nature, convention, habit, occupation, name, and time; the interpreter must then determine whether the dream is *kata* ("in accordance with"), or *para* ("in opposition to"), each of those elements. The two principle *stoicheia*, however, are *phusis* ("nature") and *nomos* ("convention"), with the latter category subdivided into unwritten social rules (*ethē*) and written laws (*nomoi*). Thus, for example, a dream that is *kata phusin* ("in accordance with nature") foretells something good, while a dream *para phusin* ("contrary to nature") signifies something evil.

[51]Good starting points for narrative medicine are Charon et al. (2017), Charon (2015), Charon (2011) and Charon (2006).

[52]I would like to express my thanks of appreciation to the referees and the editors for improving this paper considerably. I am grateful to the librarian staff of the British Library and the American School of Classical Studies in Athens, where I researched and wrote this paper as a visiting senior scholar.

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Medication Adherence among Type 2 Diabetes Mellitus Patients: A Cross Sectional Study in Rural Karnataka (India)

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India currently represents 17% of the world's diabetes burden, with an estimated 77 million cases in 2019, a figure expected to almost double to 134 million by 2025. Currently, one in every four persons under 25 has adult-onset diabetes, a condition more usually seen in 40–50 year old people. A hospital-based cross-sectional study conducted among diabetes type 2 patients in a rural field practice area of the A.J. Institute of Medical Sciences & Research Centre, Mangalore, Karnataka. Medication adherence and factors associated with non-adherence to medication were determined using self-structured validated questionnaire. A total of 206 patients with type 2 diabetes were recruited. In the present study 49% of the patients were found to be having poor medication adherence, while 50.9% were found to be with good adherence. However, none of the patients showed perfect adherence. A significant association was observed between medication adherence and age of patients, their gender, information about the disease, family support, personal motivation, literacy status and cost of treatment.

Keywords: *medication adherence, type 2 diabetes mellitus, self-care practices, prevalence*

Introduction

Diabetes is a chronic, metabolic disorder characterized by elevated levels of blood glucose, which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. It is estimated that in 2019 approximately 9.3% (463 million adults) (20–79 years) were living with diabetes, 1 in 2 (232 million) people with diabetes were undiagnosed while there were 4.2 million deaths. The prevalence is higher in urban (10.8%) than rural (7.2%) areas, and in high-income (10.4%) than low-income countries (4.0%) and it is estimated to further increase to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. Further, the global prevalence of impaired glucose tolerance (IGT) is estimated to be 7.5% (374 million) in 2019 and projected to reach 8.6% (548 million) by 2045 (IDF 2019a). Annual global health expenditure on diabetes is estimated to be USD 760 billion. It is projected that expenditure will reach USD 825 billion by 2030 and USD 845 billion by 2045 (IDF 2019b).

Diabetes has become a huge public health problem in India, with over 77

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million individuals with diabetes already in 2019, while this number is predicted to further increase to 134 million by the year 2045. The numbers place India among the top 10 countries for people with diabetes, coming in at number two while China leads the list with over 116 million diabetics (Kannan 2019). According to a report by "National Diabetes and Diabetic Retinopathy Survey" released in October 2019, by the health and family welfare ministry the prevalence of diabetes in India has remained at 11.8% during last four years. The males showed a similar prevalence of diabetes (12%) as females (11.7%). Known diabetics comprised 67.3% participants, while 32.7% were new diabetics. Highest prevalence of diabetes was observed in 70–79 years age group at 13.2%. Prevalence of blindness among diabetic patients was 2.1% and visual impairment was 13.7%. The study evaluated that in the 15 to 49-year age-group, Goa had the highest prevalence of diabetes (8.6%), followed by Andaman & Nicobar Islands (8.3%) and Kerala (7.5%). Further, the southern states were found to be having higher prevalence- Andhra Pradesh (6.6%), Karnataka (4.6%), Tamil Nadu (6.8%) Telangana (4.8%); while northern states i.e., Uttar Pradesh (2.4%) Rajasthan (1.8%) and Bihar (3%) reported relatively lower prevalence (Joan et al. 2008).

Poor medication adherence in diabetes is a worldwide problem as nearly 50% of the patients are non-compliant to treatment while the situation in developing countries like India is even worse, and this can lead to a failure to reach the desired glycemic targets, resulting in vascular complications with an associated increase in morbidity, mortality, and health costs (Sharma et al. 2014, WHO 2003). According to World Health Organization, treatment adherence is a multidimensional phenomenon determined by the interplay of five sets of factors, termed as "dimensions", i.e., Social and economic factors, Health care team and system-related factors, Condition-related factors, Therapy-related factors and Patient-related factors. Out of these patient-related factors are just one determinant and the common belief that patients are solely responsible for taking their treatment is misleading and most often reflects a misunderstanding of how other factors affect people's behavior and capacity to adhere to their treatment (WHO 2003).

Research Objective of the study was to assess medication adherence among type 2 diabetes patients under study and identify factors associated with non-adherence.

Literature Review

Diabetes mellitus (DM) is a serious and a rapidly growing public health problem that affects millions of people. It usually co-exists with other medical conditions, and its prevalence is increasing year by year reaching epidemic proportions. Besides, leading to multiple long term complications, diabetes mellitus also leads to increased hospitalization rates causing huge financial burden on the families as well as on the state, while the cost of treatment many a times may push families from Above Poverty line (APL) to below poverty line (BPL) as brought out by some studies that due to increased health spending about 55 million Indians were pushed into poverty in a single year because of having to

fund their own healthcare and 38 million of them fell below the poverty line due to spending on medicines alone, a study by three experts from the Public Health Foundation of India has estimated (Nagarajan 2018).

In 2019, Switzerland spent some 12,000 U.S. dollars on each diabetic patient on treatment, making it the country with the highest average cost per person followed by United States and Norway who spent over nine thousand U.S. dollars per patient. Among the countries with lowest spending per patient on diabetes Bangladesh stood at the bottom, with average annual expenditures amounting to some 64 U.S. dollars, while India spent 91.6 U.S. dollars per patient (Elflein 2020).

The management of diabetes is multifaceted and includes lifestyle modifications, besides pharmacotherapy and strict "medication adherence" which is defined by the World Health Organization as "the degree to which the person's behavior corresponds with the agreed recommendations from a health care provider" (Cramer 2004). Needless to say that poor adherence to prescribed regimens can result in serious health consequences which include higher risk of hospitalization which can be more than double in patients with diabetes mellitus, hypercholesterolemia, hypertension, or congestive (De Geest 2003, Jimmy and Jose 2011). Further, poor adherence or non-adherence could occur at different stages of their treatment and these include not starting the treatment at all, decision not to fill their prescription in the pharmacy, taking the wrong dose, or discontinue the treatment earlier than the last date (Aminde et al. 2019). Effective diabetes management mandates good provider – patient relationship, and compliance to therapies is one of the significant aspects of the relation (Elsous et al. 2017).

Achieving glycemic control and preventing early complications are the ultimate targets of diabetes management which depends on patient's adherence to regimens. Poor medication adherence, especially when co-morbidities exist, can be influenced by several factors which are broadly divided into five categories i.e., (i) patient-centered factors: which include age and gender, ethnicity, educational level, marital status, psychological factors, (patient's beliefs – patient feels susceptible to the illness or its complication or feels disease could have severe consequences for his health), patient-prescriber relationship, health literacy and knowledge about the disease, smoking or alcohol intake, forgetfulness and negative attitude towards therapy (ii) therapy-related factors: which include route of administration, complexity of treatment, medication side effects, degree of behavioral change required, duration of the treatment period (iii) health care system factors: which include availability and accessibility of health care facility, long waiting time for clinic visits, difficulty in getting prescriptions and unhappy or unsatisfactory clinic visits – all contributed to poor compliance, (iv) Social and economic factors which include time commitment cost of therapy, income and social support and finally (v) disease-related factors which include disease severity based on clinical evaluation comply better with medications than healthier ones. Patients who are suffering from diseases with fluctuation or absence of symptoms (at least at the initial phase), such as asthma and hypertension, might have a poor compliance (Jin et al. 2008).

Newer treatment methods are constantly in the process of development to address many of the poor medication adherence factors. While drugs that are

administered daily or even weekly for type 2 diabetes have not shown substantial benefits with respect to improved adherence and persistence, new products are expected to become available in the market that are likely to be administered at monthly or even longer intervals which would address some of the important barriers to maintaining good medication adherence, though these newer sustained delivery agents are also required to be effective, safe, affordable and lead to sustained reduction in Glycated hemoglobin (HbA1c) levels. In addition, another approach which is also being tried in our various national programmes like National Tuberculosis Elimination Programme (NTEP) is fixed dose and drug combinations which in a retrospective analysis of patients with T2D has shown significantly ($P < 0.001$) greater adherence (57.0% vs 50.7%) and persistence (32% vs. 27%). It may be brought out here that, number of fixed-dose combinations of oral anti-diabetic agents and insulin formulations are now available and are being used (Polonsky et al. 2016, Lokhandwala et al. 2016, Buysman et al. 2015).

One of the biggest challenges for health care providers today is addressing the continued needs and demands of individuals with chronic illnesses like diabetes. Studies have reported that strict metabolic control can delay or prevent the progression of complications associated with diabetes. However, some of the Indian studies have revealed very poor adherence to treatment regimens due to poor attitude towards the disease and poor health literacy among the general public. Because the vast majority of day-to-day care in diabetes is handled by patients or families, there is a need for "self-care of diabetes", which is defined as, "an evolutionary process of development of knowledge or awareness by learning to survive with the complex nature of the diabetes in a social context" and includes seven essential self-care behaviors i.e., healthy eating, being physically active, monitoring of blood sugar, compliant with medications, good problem-solving skills, healthy coping skills and risk-reduction behaviors. Studies have brought out that majority of patients with diabetes can significantly reduce the chances of developing complications by improving self-care activities (Shrivastava et al. 2013, Cooper et al. 2003, Paterson and Thorne 2000, Johnson 1994, McNabb 1997).

As diabetes self-care activities can have a dramatic impact on achieving target glycemic goals, the healthcare providers and educators should educate patients about self-care behaviors. However, patients often look to healthcare providers for guidance, which more than often remains un-discussed. Further, multiple demographic and social support factors can be considered as positive contributors in facilitating self-care activities in diabetic patients, the role of clinicians in promoting self-care is crucial (Peel et al. 2007).

Methods

Conduct of Study

A cross sectional study was conducted among type 2 diabetes patients attending out-patient department (OPD) at AJIMS & RC Rural Health Training

Centre (RHTC) in Pane Mangalore, Karnataka (India). Written informed consent from the subject patients was taken before the conduct of the study. "STROBE" guidelines were used while making reports of present study.

Selection of Place of Study

Place of study was selected as it falls under the jurisdiction of our own institution and training of interns and post-graduates is done in the above cited centre only, while the patients are given free consultation, besides many routinely used drugs.

Calculation of Sample Size

Convenience sampling method was used. All laboratories confirmed cases of diabetes type 2, except pregnant women and un-willing patients; who attended the RHTC OPD during the period of study i.e., from 1 March 2019 to 30 May 2019 were included in the study. Further, patients who were on allopathic drugs only were included in the study and no patients on "AYUSH" drugs were part of study. A total of 237 patients were enrolled in the study initially, however, after excluding unwilling and pregnant patients a total of 206 patients were finally included in the study.

Scoring Criteria

Medication adherence was determined using a self-designed, validated, structured self-reported proforma with scores from 1–10. The scores of less than 5 were considered poor, while scores of 6–8 and of more than 8, were considered as good and excellent, respectively.

Ethical Clearance

Ethical clearance from the Institution was taken before the conduct of the study.

Operational Definition

Patients with pre-prandial plasma glucose value of 80–130 mg/dL. Post-prandial value of less than 180 mg/dL and HbA1c less than 7.0% were considered to be having satisfactory glycemic control (American Diabetes Association 2018).

Statistical Analysis

The data were analyzed using SPSS version 20. Level of significance less than 5% was considered as statistically significant. Descriptive statistics has been reported using frequencies and proportions. Pearson's Chi-square test has been used to find the association between the glycemic control and some selected

variable which had influence on medication adherence. P values of less than 0.05 were regarded as statistically significant.

Results

Demographic Characteristics of Study Subjects

A total of 206 patients were enrolled for the study. Out of these, 98 (47.5%) were males while the remaining 108 (52.4%) were females. The mean age of the study population was 51 ± 11.3 years. The majority of them, 135 (65.5%) belonged to upper lower class (Modified BG Prasad). Furthermore, the majority of the subjects (40.1%) had secondary level education while most of them (57.7%) were occupied in elementary and skilled work and sales (Table 1).

Table 1. *Demographic Characteristics of Study Subjects (n=206)*

Variable	Frequency	Percentage
Age (in years)		
< 35	16	7.7
36–50	73	35.4
>50	117	56.7
Mean age		= 51 ± 11.3 years
Gender		
Male	98	47.5
Female	108	52.4
Literacy Status of Mother		
Primary & below	68	33.0
Secondary level	91	44.1
Above Secondary	47	25.8
Occupation		
Professionals	11	5.3
Technicians & associate professionals	39	18.9
Skilled Workers and Sales Workers	58	28.1
Elementary Occupation	61	29.6
Unemployed	37	17.9
Socio-economic Status*		
I	22	10.6
II	37	17.9
III	69	33.4
IV	57	27.6
V	21	10.1

*Modified B.G. Prasad Classification used for SES classification.

Characteristics of Type 2 Diabetic Patients

Table 2 brings out that 57.7% of the diabetic subjects were diagnosed less than five years ago while the majority of them (60.1%) were taking two or more drugs. Fasting glucose levels of 68.9% of the subject patients were found to be more than 130mg /dL, while 65% of patients had random blood glucose levels,

more than 180 mg/dL. Furthermore, their Hb1c levels, brought out that 78.1% of the patients had poor glycemic controls (≥ HbA1c 7.0%).

Table 2. *Characteristics of Type 2 Diabetic Patients (n=206)*

S No.	Variable	Frequency	Percentage
1	**Duration of Treatment**		
	< 5 years	119	57.7
	> 5 years	87	42.2
2.	**Number of Anti-diabetic drug(s) prescribed**		
	Only one drug	82	39.8
	More than one drug	124	60.1
3.	**Blood glucose Pre-prandial**		
	< 130 mg /100 ml	64	31.0
	> 130 mg /100 ml	142	68.9
4.	**Blood glucose post-prandial**		
	< 180 mg/100ml	72	34.9
	> 180 mg/100ml	134	65.0
5.	**HbA1c Status**		
	Controlled **(< 7.0 %)**	45	21.8
	Uncontrolled (≥ **7.0 %)**	161	78.1

Medication Adherence

Figure 1 shows the level of medication adherence among study subjects. It was observed that nearly 105 (50.9%) had good adherence to medication, while the remaining 101 (49.0%) patients showed poor adherence. No patient was found to be having excellent adherence. Surprisingly none of the patients was found to be having perfect/"Excellent score".

Figure 1. *Level of Medication Adherence among Study Subjects (n=206)*

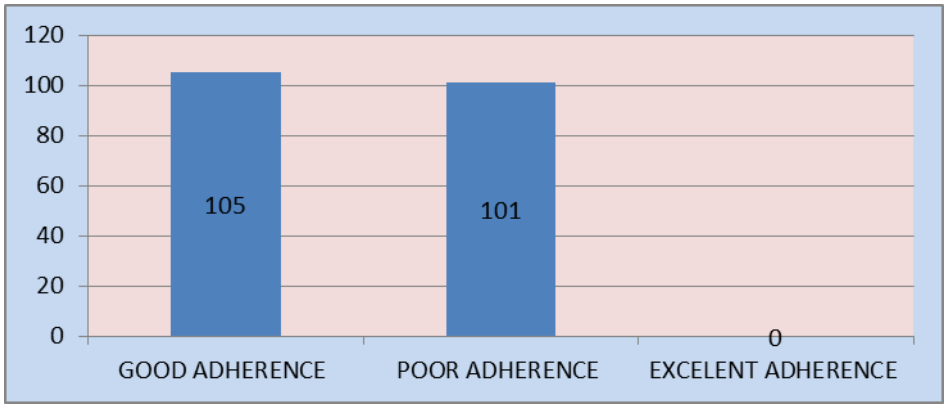

Table 3 shows that among the 101 patients who showed poor adherence to medication, 62 (61.3%) were males and 39 (38.6%) were females. This difference was also found to be statistically significant ($p < 0.000174$). Similarly, age, information about the disease, family support, personal motivation, literacy status and cost of treatment showed a direct association

between these variables and medication adherence and all of these associations were found to be statistically significant (p values = < 0.0300, < 0.00001, < 0.00001, < 0.00001, < 0.00553 and < 0.018621, respectively).

Table 3. *Factors Influencing Non Adherence to Self-Care Practices (n=206)*

Characteristics	Medication Adherence				Chi-square / P value
	Poor (n=101)		Good (n=105)		
	Frequency	Percentage	Frequency	Percentage	
Information about the disease					
Poor	87	86.1	21	20.0	87.6574
Good	14	13.8	84	80.0	< 0.00001
Age of the patients					
<35 Years	10	62.5	06	37.5	7.0093
36- 50 years	43	58.9	30	41.0	< 0.0300
>50 years	48	41.2	69	58.9	
Gender					
Male	62	61.3	36	34.2	14.0922
Female	39	38.6	69	65.7	< 0.000174
Family Support					
Present	22	21.7	93	88.5	90.4333
Restricted	79	78.2	12	11.4	< 0.00001
Personal Motivation					
High	07	6.9	99	94.2	153.793
Low	94	93.0	06	5.7	< 0.00001
literacy status					
Primary & below	33	32.6	16	15.2	7.6975
Secondary & above	68	65.3	89	84.7	< 0.00553
Cost of treatment					
Affected treatment	47	46.5	67	63.8	5.5367
No effect	54	53.4	38	36.1	0.018621

Discussion

India has the dubious distinction of being the world's diabetic capital, as every sixth diabetic patient is from India. In addition, India has a huge burden of undiagnosed cases as well as pre-diabetics. There are several challenges to effective diabetes management and these include both provider- and patient-related issues. Physician barriers include sub-optimal knowledge of guidelines, constraints of time and facilities, and attitudinal issues, while patient related issues include lack of knowledge about diabetes care and lack of ability to manage their disease and poor medication adherence which in turn may lead to increased morbidity and mortality; increased costs of care and hospitalization. Hence barriers to effective diabetes management and poor drug adherence in diabetes mellitus need to be identified to plan good policies and formulate effective strategies to improve overall care of diabetic patients at all levels (Puder and Keller 2003, Heisler et al. 2003).

In our study 49% of the patients were found to be having poor medication adherence, while 50.9% were having good adherence. None of the study subjects showed excellent adherence. Our study further found female gender with significantly higher compliance than their male counterparts, while awareness about the disease, support from the family, literacy status of the patients and cost of treatment were found to be significantly associated with improved treatment compliance. However, in a similar study in a neighboring district by Anurupa et al. (2019) 45% of the patients were found to be having high adherence, 37% with medium adherence while 18% patients showed poor adherence. In another study from Bangalore, Karnataka, Dasappa et al. (2017) found adherence to medication to be 60.73% while some of the socio-demographic factors were found to be associated with good self-care practices which included young age, gender, formal education, occupation, and religion. In a similar study in Ethiopia, by Bonger et al. (2018) it was reported that 83.5% of them did not adhere to self-monitoring of blood glucose level, while 4.3% of the respondents did not adhere to the prescribed medications. In another study in United Arab Emirates, Al-Haj Mohd et al. (2016) reported 64.6% patients to be non-adherent, while 26.5% and 9.0% had low adherence and medium adherence to their medication respectively (Anuruppa et al. 2019, Dasappa et al. 2017).

The present study showed a statistically significant association between medication adherence and certain demographic variables i.e., gender, information about the disease, family support, personal motivation, literacy status and cost of treatment. In a similar study in South India, Pattnaik et al. (2019) reported 90.3% patients to be compliant to the treatment while the treatment compliance was found to be significantly associated with duration of Diabetes and age, though gender, literacy status, occupation, and socioeconomic status were not found to be significantly associated with treatment compliance. Patnaik et al. (2019) further showed that the most common causes for non-adherence were the asymptomatic nature of the disease (60%), and high cost of treatment (33.3%). Medi et al. (2015) in another study, showed an overall medication adherence rate of 47.85% while the main factors for non-adherence were found to be lack of finance (55.84%), forgetfulness (46.75%), being busy (44.15%), and inaccessibility to medicines (19.48%). In a similar study by Aminde et al. (2019) in Cameroon, the prevalence of non-adherence to medication was found to be 54.4%, while alcohol consumption and insulin alone therapy were found to be associated with non-adherence and the patients attributed their non-adherence to forgetfulness (55.6%), lack of finances (38.2%) and disappearance of symptoms (14.2%). Godfrey, in a similar study in Tanzania brought out adherence rates to anti-diabetic drugs of 60.2% and 71.2% at one week and three months respectively and reported high cost of medication to be significantly associated with anti-diabetic non-adherence and found that adherence to anti-diabetic drugs also increased with an increase in number of non-diabetic medications (Bonger et al. 2018, Al-Haj Mohd et al. 2016, Pattnaik et al. 2019, Medi et al. 2015, Aminde et al. 2019, Rwegerera 2014).

Conclusion

The present study has brought out the gender of the patient, knowledge about the disease, family support, literacy status and cost of treatment as significant determinants of treatment adherence. As awareness about the disease has been observed to be an important predictor of medication adherence, there is a need to develop policies and strategies to educate the patients on self-care and medication adherence about diabetes and its benefits and to improve patient outcomes.

Limitations

The present study had the limitations which are inherent to cross sectional studies and are liable to biases such as recall bias, interviewer bias, respondent bias and social acceptability bias. Not ruling out information bias, the non-adherence was intentional or unintentional could also not be established in many cases. Furthermore, the study did not examine the prevalence of complications and their duration among the study subjects, due to diabetes mellitus. Keeping in view the limited sample size, hospital base of the study and regional variations in self-care practices, the results of the study may not be generalized.

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The Impact of Menstrual Disorder Towards Female University Students

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The purpose of this study is to study whether the menstrual disorder have impact on quality of life among female students which focus on physical and health education students from semester 1 until semester 8 in Uitm Puncak Alam, Selangor. The study was conducted to clarify the types of menstrual disorder among female students. The study also was aimed to identify the symptoms of menstrual disorder experience among female students before and during their menstruation and to determine the effect of menstrual disorder among female students towards their quality of life. Data from 74 respondents were used for the statistical analysis. The data were collected by using non purposive sampling. Questionnaires were used to obtain data for this study and the data for this study were analysed by using Microsoft Excel Software. Results showed that, menstrual disorder give impacts towards female quality of life. Future research should emphasize on other scope of study and more research about menstrual disorder may help organization to increase their performance and knowledge about female and their menstruation.

Keywords: *menstrual disorder, female students and effects, quality of life*

Introduction

The history reported contains a wide range of reproductive and menstrual myths in women. In ancient times, menstruating women are generally thought to have an evil spirit. Aristotle, which is the Greek philosopher, Plato student, he said that "menstrual women could dull a mirror with a glance, and that they would be enchanted by the next person to peer into it" (Fritz and Speroff 2011). *Historia Naturalis* in *Latin words* (natural history), a resource used throughout the Dark Ages, Pliny wrote extensively about menstruation, including:

> "Contact with it makes wine sour, the plants it hits are unfruitful, the grafts die, the seeds in the gardens are dried up, the fruit of the trees drop off, the steel edge and the ivory glow dull, bee hives die, both bronze and iron are seized with rust at once, and horrible smell fills the air, to taste it causes mad dogs to infect their bites with an incurable poison. If a woman strips herself naked while she's menstruating and walks around a wheat field, caterpillars, worms, beetles and other corn ears will fall off. All plants turn a yellow taint on a woman's approach who has her menstrual discharge. Bees are going to abandon their hives at her touch because they have a peculiar

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aversion to a thief and menstrual female, and a glimpse of her eyes is enough to kill a swarm of bees" (Elder 2009).

The fear of blood release many ancient taboos throughout early history. Menstruating women have been divided almost exclusively and prohibited from handling food. During menstruation, many primitive people found women to be unclean, subjecting them to segregation and special rituals. Therefore, it is not shocking that negative attitudes towards menstruation persisted in modern times, even with growing sophistication (Fritz and Speroff 2011). In 19th and early 20th century Europe, antisocial behaviour was commonly associated with menstruation. In 1845, a domestic servant who killed one of her employer's children was acquitted due to obstructed menstruation on grounds of insanity (Fritz and Speroff 2011).

Puberty is a time of intellectual, physical and emotional change for adolescents and their families. Menstruation occurs in under the influence of the hypothalamic-pituitary ovarian axis due to cyclical hormonal changes (Theophilus et al. 2010). Women's menstruation is one proof that women's reproductive potential is fully developed. These menstrual cycle and period are controlled by two hormones such as oestrogen and progesterone. Removal of oestrogen and progesterone is initiated by menstruation. The effect can be experimentally produced and female who accepts these hormones in the form of a contraceptive pill or hormone renewal therapy will experience a "withdrawal lose blood" at the end of the pack (Monga 2006). The onset of puberty and menarche takes place at a time when many children are still attending school and many women are unprepared for it. The knowledge they provide is often restricted and tabooed. The education sector also avoids the issue by treating it as a private matter or a family concern which needs to be addressed. The researchers also mentioned that, many young girls lack adequate and adequate menstrual hygiene information that can lead to menstrual behavior that is incorrect and unhealthy. For some girls, the transition to adulthood is often experienced with anxiety and fear due to lack of menstrual knowledge and lack of resources to manage their menstrual activities properly (WaterAid 2012). Nevertheless, through leaving schoolgirls unprepared for this crucial phase of life, girls get overwhelmed and ignored, which in effect affects the performance of their learning and in some cases it can lead directly to school absenteeism (UNESCO 2014).

Puberty in women is the period where the secondary sexual characters evolve and the capacity to reproduce sexually is achieved (Khosla 2003). Therefore, the pubertal development especially in girls requires 4–5 years. These include the breast development, pubic and Axillary hair growth, growth spurt and menarche or the menstruation started. There is a mechanism with a maturation of the hypothalamo-pituitary ovarian axis happens. The first one is the sensitivity of low estrogen levels to the negative or inhibitory effect decreases in early puberty. Second is, increased production of Gornadotropin Releasing Hormones (GnRH) pulses results in increased levels of Follicle Stimulating Hormone (FSH) and Lutein Hormone (LH) especially during the night (Khosla 2003). There are two conditions of the menarche which are, any menarche happen before 10 years of age is a premature menarche. Meanwhile, if the menarche is not happening by 16

years age it is called delayed menarche. The initiation of menstruation, known as menarche, usually happens between 12 and 15 years of age and continues to age between 45 and 50 when menopause occurs. Many women are afraid to discuss menstruation's existence and normality (Menstrual Cycle Physiology 2006). According to the researchers, the word "menstruation" was replaced by indirect expressions such as: "curse", "my time", "my monthly", "friend of mine", "red flag" or "grass". The beginning of menstruation is the most obvious external occurrence which signals the end of a cycle and the beginning of a new one that is widely accepted criteria for determining what is usual and unusual or normal or abnormal are generally based on what is considered the most and not necessarily typical for every woman (Durnell Schuiling and Likis 2016). Since the ancient past, the temporal relationship between the menstrual cycles and the lunar phases influenced menstrual names such as "period". The regularity of the menses was easily recognized by the ancients, even though they had no comprehension of their origin or intent.

The menstrual cycle is an excellent model for many researchers to affect the feeling, actions and cognition of ovarian steroids (Poroma and Gingnell 2014). Menstrual problems or also known as menstrual disorder in some women that may give impacts in personal relationship, physical and health activity, social activity and their daily routine. Menstrual cycle disorder is one of women's most common reasons for attending their doctor in general regarding their menstrual problems and then a gynecologist. Though life threatening rarely, menstrual disorder can lead to major cultural, occupational disruption and mental well-being as well (Mong 2006). Menstrual disorder can occur or take many forms, such as, abnormal or irregular bleeding, amenorrhea, dysmenorrhea, premenstrual syndrome, and premenstrual dysphoric disorder. Approximately 2–10% of women of child-bearing age have serious premenstrual symptoms and 2–5% meet menstrual dysphoric disorder (MDDD) requirements (O'Brien et al. 2011). The etiquette encourages management of blood and menstrual discomfort to be discreet and communicates to girls the importance of hiding their experiences of menstruation, and their status as a menstruating girl, from boys and men (Sommer et al. 2015).

Research conducted through numerous countries and contexts shows the paternal existence of many school settings, with menstruating girls unable to properly manage their monthly menses with protection, integrity and confidentiality (UNICEF 2015). According to Otwani and Juma (2017), approximately among 52% of the population of female of their age of reproductive, which means menstruation is part of the normal life of female. Therefore, menstrual cleanliness is the important part of the basic cleanliness practices. Big biological changes such as physical growth, sexual maturation and psycho-social development in adolescence define the changes from childhood to adulthood, an age group defined by the World Health Organization (WHO) as 10-19 years old (Tarhane and Kasulkar 2015). The researcher also states that, adolescence is defined by increased food requirements, increased metabolic and biochemical basal activities, endogenous processes such as hormonal secretions with their effect on the various organs, the most significant of which is menarche or known as the first of menstruation in adolescent girls.

This research will determine the types of menstrual disorder among female students, to identify the symptoms of menstrual disorder experience among female students and to determine the effect of the menstrual disorder towards quality of life.

Literature Review

Nowadays, some women often get upset when comes to menstrual problems. When women face this problem, some women get their solutions by take pills or herbal medicine. In fact, women need to know in advance why their menstrual cycle is problematic and then seek treatment instead of taking pill. This phenomenon might happen, because women lack basic knowledge about their types of menstrual disorder.

Past studies indicate that in several measures of quality of life, women with menstrual symptoms have lower scores, including general health and physical, mental, social and occupational functioning (Schoep et al. 2019a). The researchers also added that, symptoms include dysmenorrhea 45%–90%, heavy menstrual bleeding 14%–25% and premenstrual mood disturbances with reported prevalence 20%–29% respectively. These symptoms can give impacts towards female student's quality of life which is productivity lost could be the largest cost driver. Costs of productivity can be split into costs of absenteeism and presenteeism-related costs.

Menstrual signs have an important impact on quality of life, according to Schoep et al. (2019b). The result of the research was between 22.5% and 35% of women consider having the severe menstrual bleeding, 34%–94% experience pain during their menstrual period. In younger women, especially a student, the absence of menstrual signs from school or lower performance levels. A female student who is not attending school due to dysmenorrhea ranges from 7.7% to 57.8%, while 21.5% are lack social activities (Schoep et al. 2019b). A menstrual problem is a physical or emotional issue that interferes with the regular menstrual cycle, causing pain, excessively extreme or moderate bleeding, prolonged menarche (the first occurrence of menstruation) or missing periods (Gale 2015).

Besides that, based on previous research, the researcher found that women need to increase the awareness regarding menstrual problems. This statement was supported by Kansal et al. (2016). It was found from the Focus Group Discussion (FGDS) as well as from the quantitative survey that the knowledge of menarche was still low in rural areas before its establishment. The researcher found that, one of the ways to increase their awareness about menstrual is through education. Sex education Curriculum is important to give the basic knowledge towards the students. Therefore, there is also a need to provide parents with intensive family life education (Kansal et al. 2016).

According to Schoep et al. (2019b), from studies in patients with endometriotic and premenstrual disorder, it has shown that these symptoms can have a large impact on women's quality of life and account for substantial health care use. The researchers also mentioned that, the result of the symptoms of menstrual disorder

can cause the productivity loss among students such as absenteeism and low of concentration or focus in the class. In addition, the result also shows that, during menstrual disorder women reported doing fewer tasks or were unable to do anything during their periods. Most families reported at least one menstrual or premenstrual symptom, many of which were severe and caused about 20% of girls to frequently have problems at home or miss school (Kaskowitz et al. 2016).

According to Poroma and Gingnell (2014), research examining menstrual cycle effects on tasks that measure prefrontal cortex control, such as verbal or spatial working memory, in addition to sexually dimorphic cognitive skills. This may cause many women suffer from their emotion during menstrual cycle. Schoep et al. (2019a) stated that women with menstruation-related symptoms have lower scores in several areas of quality of life during their cycles, such as general health and physical, emotional, social and occupational function. In addition, these symptoms may result considerable financial burdens on patients and their families as well as on society. Also, De Sanctis et al. (2016) reviewed studies on dysmenorrhea in multiple countries, some of which included menstruation-related absenteeism data and they found that the prevalence of school absences in adolescents that was due to dysmenorrhea varied between 7.7% and 57.8%.

Menstrual problems in some adolescents may lead to disruptions in personal relationships and school activities and reduction in academic performance (Theophilus et al. 2010). The researchers also add that emotional anxiety due to academic or social demands may act as cofactors. While 89% of respondents perceived menstruation as a normal body function for women, 18% of respondents felt it was wrong to go to school while they were menstruating (Otwani and Juma 2017). In addition, 30% of them felt that it is wrong to play or doing some exercise and most of them spend their recreation time with sleeping under the trees.

There is proof that menstrual cycle-related symptoms lead to and disengage employment, social relationships and physical activity issues (Lerser et al. 2016). For example, research has shown it is often correlated with school absenteeism and decreased school performance the painful menstruation (dysmenorrhea) and other menstrual cycle-related physical symptoms (Steiner et al. 2011). The researchers also mentioned that girls of some adolescents with menstruation limit their contact with peers and have difficulties with social relationships. In particular, the current results indicate that physical symptoms decrease incentives for normal and significant developmental activities, including work, sports, and time spent with friends, which may result in repeated or persistent negative (Lerser et al. 2016).

The effects of the menstrual disorder were rated from mild to moderate to severe. The concept of mild symptoms did not limit daily activity. Symptoms are considered moderate if there were obvious regular limitations and extreme if the participants were unable to conduct the tasks without discomfort (Buddhabunyakan et al. 2017).

Methodology

This study is descriptive research which a type of quantitative research. About observed data by organizing, presenting and summarizing data. It is concerned with describing something that has already occurred (Singh et al. 2009). Meanwhile the questionnaire survey is used for acquiring data as a finding for this study. From the questionnaire that is distributed, all information that should be included in this research proposal will be obtained. In addition, the questionnaire that been distributed is closed questions where by the respondents may answer questions in which the answers given by them may be helpful in some way to provide researcher useful information to be inserted in the research proposal.

Research Design

This study is a descriptive research which this is a type of quantitative research. The quantitative research involves a bit of calculation in order to obtain results from the questionnaire that been distributed. In addition, from the answers obtained from the questionnaires that distributed will be measured or counted. The questionnaire will be distributed to the female students which from Physical and Heath education program, Faculty of Education University of Technology Mara (UITM) in semester September–January 2019.

Population and Sampling

The population and sampling design that used in this study as stated below.

Population

In this study, a set of target population for female students from Physical and Health education program. The female students in Physical and Health education include 90 students in semester September–January 2019.

Sampling

Based on Table 1, this study was use purposive sampling. Purposive sampling is used as the method because it is small group and can be easily measured. Purposive sampling is the process whereby a group of subjects is chosen as respondents because they have certain characteristic (Piaw 2016). From 90 students estimated population size, the sample at least 73 respondents.

Table 1. *Sampling*

Faculty of Education	**Estimated Population**	**Sample**
Female students in Physical and Health Education Program	90 Students	73 Respondents

Source: Krejcie and Morgan's sample size determination table 1970.

Instrumentation

To perform the survey, questionnaire will be distributed to students from Faculty of Education that study in UITM, at Puncak Alam. A set of 73 questionnaires will be distributed to the samples. Questionnaires is used as a data gathering method because it would be the best choice for the instrument of conducting survey as the result of the findings may be calculated with computing software and at the same time, it may reduce some biases.

Data Collection Method

This study used questionnaire-based survey for data collection method. Compared with other collection methods questionnaire is selected to be used as a data collection method because it is easier to reach many respondents. The questionnaire that distributed will use the close ended questions where by the respondents only answer the questions based on the answer that already been stated in the questionnaire sheets. The close ended questionnaires that will be distributed include checklist, rating scale, and agree-disagree answer.

Data Analysis Procedures

All data that been gathered will compute by using the Microsoft Excel software and it is a comprehensive and systematic data analysis and for data management system. The Microsoft Excel can calculate data from almost any type and it even can be used to tabulate reports, charts, and as well as it can conduct complex statistical analysis. The data then will be translated into useful means and modes for identifying certain stated hypotheses.

Results

Profile of Respondents

The first section in this questionnaire consists of four (4) questions about the respondents' demographic information to answer the question on their background information such as age, current semester, age of menarche (the first occurrence of Menstruation) and the duration of their menstrual cycle. Table 2 shows the respondents' demographic profile information:

Table 2. *Respondents' Demographic Profile Information*

Criteria	Frequency (n)	Percentage (%)
Age		
20–22 years	28	37.8
22–24 years	29	39.2
24–26 years	17	23.0
Total	74	100
Current Semester		
Semester 1	12	16.2
Semester 2	7	9.5
Semester 3	8	10.8
Semester 4	20	27.0
Semester 5	10	13.5
Semester 6	12	16.2
Semester 8	5	6.8
Total	74	
Age of menarche (first occurrence of menstruation)		
10–12 years	40	54.1
13–15 years	31	41.9
15–17 years	3	4.1
Total	74	
Duration of menstrual cycle		
1–3 days	1	1.4
1 week	64	86.5
2 weeks	9	12.2
Total	74	

Based on Table 2, respondents that are participating in this study were from 20 years to 26 years. From 74 respondents above, there are 28 respondents who are in the age of 20–22 years old (37.8%), 29 respondents in the age of 22–24 years old (39.2%). Meanwhile, respondents in the age of 24–26 years old (23%).

Table 2 shows that 16.2% of the respondents are from semester 1 equal to 12 respondents, 9.5% from semester 2 equal to 7 respondents, 10.8% from semester 3 equal to 8 respondents. Meanwhile, 27% from semester 4, which consists of 20 respondents. 13.5% from semester 5 equal to 10 respondents, 16.2% from semester 6 consists of 12 respondents and for semester 8, 6.8% equal to 5 respondents.

Table 2 also shows the respondent's age of their menarche or the first occurrence of their menstruation. It shows that most of the respondents 54.1% were had their menarche at 10 to 12 years old equal to 40 respondents. 31 respondents equal 41.9% were had their menarche at 13 to 15 years old, followed by 3 respondents equal 4.1% were had their menarche at the age of 15 to 17 years old.

In terms of respondent duration of menstrual cycle, it is shown that only 1 respondent choose the duration of menstrual cycle in 1 to 3 days (1.4%), for 64 respondents (86.5%) choose their duration of menstrual at 1 weeks and 9 respondents (12.2%) choose their duration of menstrual cycle for 2 weeks.

Types of Menstrual Disorder

Table 3. *Descriptive Statistics of Types of Menstrual Disorder*

		Abnormal Uterine Bleeding	Amenorrhea	Oligomenorrhea	Premenstrual Syndrome (PMS)	Premenstrual Dysphonic Disorder (PMDD)
N	Valid	74	74	74	74	74
	Missing	0	0	0	0	0
Mean		2.04	1.72	1.97	3.82	3.01
Median		2.00	1.00	2.00	4.00	3.00
Mode		1	1	1	4	3
Std. Deviation		1.053	0.944	0.950	0.942	1.233

Table 3 shows the result of the types of menstrual disorder that most experience by the female students, from Physical and Health Education. The highest mean indicates the most type that experience by the female students. 3.84 mean experience the most is the Premenstrual Syndrome (PMS). While the lowest mean is 1.72 which is the Amenorrhea. The mean for Abnormal Uterine Bleeding is 2.04, Oligomenorrhea 1.97 and Premenstrual Dysphonic Disorder (PMDD) is 3.01. The highest median also the type of Premenstrual Syndrome (PMS) which 4.0, and the lowest median were Amenorrhea which is 1.0. The median for Abnormal Uterine Bleeding is 2.0, Oligomenorrhea is 2.0 and Premenstrual Dysphonic Disorder (PMDD) is 3.0. For mode, Abnormal Uterine Bleeding, Amenorrhea and Oligomenorrhea have the same mode which is 1.0. While the highest mode is Premenstrual Syndrome (PMS) (which is 4) and the mode for Premenstrual Disorder (PMDD) is 3. Therefore, the standard deviation for Abnormal Uterine Bleeding is 1.053, Amenorrhea is 0.944, Oligomenorrhea 0.950, Premenstrual Syndrome (PMS) is 0.942 and 1.233 for PMDD.

The Symptoms during that Time (before Menstrual) and Symptoms for Today (during Menstrual)

Table 4. *Paired Sample Result*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Section C1	31.34	74	6.488	0.754
	Section C2	35.2568	74	8.44492	0.98170

Several statistics are presented in the first table using Paired Samples Statistic (Table 4). The examination of these means suggests that the average symptoms that are experienced by female students were higher during their menstruation.

Table 5. *Paired Samples Correlations*

	N		Sig.
Pair 1 Section C1 & Section C2	74	0.482	0.000

The paired-samples t-test procedure automatically computes the correlation between the two sets of section. From Table 5, we can see that there is no significant positive correlation between the section which are before and during menstruation (r=0.754), indicating that most of the respondents experience the symptoms during their menstruation.

Table 6. *Paired Samples Test*

	Paired Differences					T	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Section C1 - Section C2	-3.91892	7.78435	0.90491	-5.72241	-2.11543	-4.331	73	0.000

Based on Table 6, presents the results of the t-test. The first column shows the actual difference between two means (-3.92), which is the numerator of the t-test formula. This shows that a negative number because the mean after the menstruation is a larger value and subtracted from before the menstruation which is a smaller value.

The Effects of Menstrual Disorder towards Female Quality of Life

Table 7. *The Effects of Menstrual Disorder towards Female Quality of Life*

Questions Number	**Statements**	**Mean**	**SD**
34.	There is lowered school or work performance during my menstruation.	3.22	1.037
35.	Menstruation problem limits me in performing everyday living activities.	3.42	1.034
36.	I lost my concentration and low in performance for educational system.	3.35	1.254
37.	Menstrual problems can limit my physical activity such as sport.	3.53	1.063
38.	Often suffer from menstruation can affect my life to be meaningful.	3.23	1.188
39.	Often suffer from menstruation can affect my emotion and easily irritated by others.	3.51	1.037
40.	I will avoid social activities during my menstruation because of discomfort feelings.	3.68	1.022
41.	I prefer to sleep and stay in my bed during my menstruation.	3.82	1.052
42.	I am suffering from sleepiness during menstruation.	3.26	1.304
43.	I can't manage my time easily due to changing my pad or tampon frequently.	3.26	1.415

The effects of menstrual disorder were used to determine the quality of life among female students in physical and health education. Table 7 shows that the

highest mean that give effects towards female quality of life is 3.82 which is (I prefer to sleep and stay in my bed during my menstruation). The second highest is 3.68 which is (I will avoid social activities during my menstruation because of discomfort feelings) and third is 3.52 which is (Menstrual problems can limit my physical activity such as sport). The lowest mean that give effects towards female quality of life is 3.22 which is (There is lowered school or work performance during my menstruation). The second is 3.23 which is (Often suffer from menstruation can affect my life to be meaningful). While third is 3.26 which is (I am suffering from sleepiness during menstruation). The highest standard deviations are 1.415 and the lowest were 1.034.

Discussion

Types of Menstrual Disorder

Every month female or women will have their menstrual. To reach the menstrual cycle is a proof to a woman as the phase of maturation. Some woman may experience a problem with their menstruation which can affect the daily routines. Menstrual only comes a month, but some women may experience that no menstruation for a few months, or there is a woman experience a prolonged duration of menstruation. Some women complaints and refer to the doctors, but some woman tend to handle the menstrual problems by their own-self. During conducting this research, the researcher had asked several respondents about the types of their menstrual problem and most of them is not sure and some of them do not know that the menstrual problems that they face is regarding the types of menstrual disorder. There are several types of menstrual disorder such as PMS, PMDD, Abnormal Uterine Bleeding, Oligomenorrhea and Amenorrhea.

From the analysis of data collected reveal that, most of female students in UItm Puncak Alam having the types of PMS equal to 3.83 mean. The second types that are often experienced by female students is PMDD and equals to 3.01 mean. The moderate types of menstrual disorder that are experienced by women is Abnormal Uterine Bleeding and equals to 2.04 mean. Meanwhile, the lowest mean that indicates the type of experience by the female is Amenorrhea or also known as the absence of menstrual bleeding equal to 1.72 mean. There is still lack of knowledge among female students in University regarding their menstrual problems. Most of the respondents stated the general types of "menstrual problem", but lack of knowledge on the specific types of menstrual disorder.

As mentioned before, Abnormal Uterine Bleeding is a type of menstrual problems that is excessive or prolonged menstrual bleeding, Amenorrhea is a type of menstrual problem which is the absence of menstrual bleeding. Oligomenorrhea is a type of infrequent menstruation or light that experience by the female students, and the most and often experience by women is PMS, a type of physical and emotional discomfort due to prior menstruation. And the last type is PMDD which is a type of severe physical and emotional discomfort due to prior menstruation.

Based on the previous research, the types of menstrual disorder that the female may face is affecting by the age of menarche (Kaskowitz et al. 2016).

Symptoms of Menstrual Disorder

According to findings, there is a significant correlation between the symptoms before and during their menstruation. Most of the respondents is experiences their PMS and some of them were experiences the symptoms of menstruation problems during their menstrual cycle. The highest percentage of the symptoms that the respondents experience is the one of the easily irritability. Frequency (n=23) and the percentage is 31.1 %. This can happen either before the menstruation of before the menstruation. Some woman indicates that, the feel irritates when somethings affect their emotions. This symptom may change due to hormone system in the body function. The lowest score this symptom is (n=9) equal to 12.2% which is experience acute by some women.

The second symptom that is often experienced by female students is the easily mood swings. According to findings, the frequency (n=25) and the percentage is 33.8%. These symptoms have the relationship between easily irritated. When woman feel irritated by someone or things that they can't do, it is can make the woman got their mood swing. The researcher had some discussion by women during conducting the research, and the researcher found out that, the mood swings can be worst during their menstrual cycle. During the day that the women not in their menstruation, all things they do is went well, they can wait for things, they can be nice to people, but when it comes to their menstrual cycle either before or during small matters can be the big issues. This is what we call as a speciality of women and no one can describe that. Some people agree that, it is a natural way of being women. But there is also a woman that no experience of the symptoms which the frequency is (n=5) and the percentage is 6.8%.

The third symptom that is often experienced by female students is a change in their eating habits. The frequency of the respondents in this symptom is (n=23) equal to 31.1%. The eating habits may divide into two parts. The first one is eating too little and second is eating too much. Both of this can give a warning sign to the female body that is not functioning properly. During conducting the research, the respondents had stated that this symptom was high experience before their menstruation. And they experience it moderate during their menstruation. Some women think that, this eating habit is a normal, but there is a respondent indicates that, their symptoms of eating disorder make them feel acute of uncomfortable (n=13) equal to 17.6%.

Effects of Menstrual Disorder towards Female Quality of Life

Menstrual disorder can give impact to the female quality of life. This is due the severity of the symptoms that the respondents may experience. As mentioned before, the researcher had stated the types of menstrual disorder and the symptoms of menstrual disorder that affect the female quality of life. There are 10 questions been asked with 5 different answers that indicate their experience of. Between the

10 questions, the highest statements that give impact towards their daily routine is they prefer to sleep and stay in their room during their menstruation. The mean of this data is 3.82. The percent of the respondents is 40.5%. This can lead in absence from the school or lower score in education performance. According to Schoep et al. (2019b), a young female that may experiences the severity of the symptoms may result in not attending school and can lead to reduction in academic performance.

In addition, second highest mean is 3.68 which the respondents indicate that they will avoid social activities during their menstruation because of discomfort feeling. The percentage of the respondent is 41.9%. One of the types of quality of life that the researcher seeks to is the changes of behaviour towards female with menstrual disorder. Therefore, this result shown that, there is a change in female behaviour due to menstrual disorder. The symptoms of the menstrual disorder lead to worst of feeling to the woman until she can't do anything. If the woman having the type of Abnormal Uterine Bleeding which is 3 weeks duration of menstrual, it can give negative change in the woman life.

The third highest mean is 3.53 which is menstrual problems can limit female students physical of activity such as sport. The highest percentage of this statement is 40.5%. One of the highest symptoms that been experience of respondents is cramps on their abdominal part. When they experience this kind of symptom, it is can limit the movement of the female students.

Conclusion

The researcher found that impact of menstrual disorder towards females' quality of life is considerable. Parents should educate girls about what to expect of a first menstrual period and the range for normal cycle length of subsequent menses. Once girls begin menstruating, clinicians should ask at every preventive care or comprehensive visit for the patient's first day of her last menstrual period and the pattern of menses. Identification of abnormal menstrual patterns in adolescence may improve early identification of potential health concerns for adulthood. It is important for parents to have an understanding of the menstrual patterns of adolescent girls, the ability to differentiate between normal and abnormal menstruation, and the skill to know how to evaluate the adolescent girl patient. It is hoped that this research able to helps those people who are interested in exploring the impact of menstrual disorder towards female quality of life.

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Students' Perceptions about the Profession of Nursing

By Zamira Shabani[*] & Fatbardha Osmanaga[‡]

Nurses represent the largest category of professional workforce in the health care system. The role and contribution of them have a vital importance in the provision of health care system, especially in nowadays. The aim of this study is to evidence the students' perceptions about the profession of nursing. This is a cross-sectional study. The study was realized during the period of January–February 2020. The study was conducted with nursing students in first, second and third year of study, in bachelor degree. The research question is: "What are the nursing students' perceptions about the profession of nursing?" In this study we conduct a standardized questionnaire about the perception of nursing profession. The survey performed in classroom was anonymous. All data collected were elaborated with SPSS version 19. There are given the conclusions and recommendations.Nursing students have good perception about the nursing profession. It exist an non-significant and negative correlation between the age and students' perception. There is no significant relationship between students'course of study and their perception about nursing profession. There is a significant relationship between having family members in health care and students' perception about nursing profession. The inclusion of the subject "Introduction to nursing" in the high school curriculum should be considered.

Keywords: *nurse, perception, student*

Introduction

There are indications that professional identity can have a broadly positive influence on the practice of healthcare (Professional Standard Authorities 2016).

Professional identity can be defined as one's self as perceived in relation to a profession and to one's membership of it. Professional identity is created through one's beliefs and attitudes, values, motives and experiences through which individuals define themselves, in their current or anticipated professional life (Tsakissiris 2015).

An individual's professional identity as either a social or role identity is important because it is a key way that individuals assign meaning to themselves, and it shapes work attitudes, affect and behaviour (Caza and Creary 2016).

Kansas University School of Nursing (2020) define the professional identity in nursing as "a sense of oneself that is influenced by the characteristics, norms and values of the nursing discipline, resulting in the individual thinking, acting and feeling like a nurse" (Kansas University School of Nursing 2020).

Nurses have become healthcare professionals in their own right who possess a great deal of knowledge. The problem of nurses' professional identity continues to be seen in the disjunction between theoretical training and clinical placements. Moreover, it is not known how nursing students perceive these contradictions or

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how this discrepancy influences the construction of professional identity. However, the public does not always value the skills and competences nurses have acquired through education and innovation. The actual public image of nursing is diverse and incongruous. This image is partly self-created by nurses due to their invisibility and their lack of public discourse. Nurses derive their self-concept and professional identity from their public image, work environment, work values, education and traditional social and cultural values. Nurses should work harder to communicate their professionalism to the public. Social media like the Internet and YouTube can be used to show the public what they really do. To improve their public image and to obtain a stronger position in healthcare organizations, nurses need to increase their visibility. This could be realized by ongoing education and a challenging work environment that encourages nurses to stand up for themselves. Furthermore, nurses should make better use of strategic positions, such as case manager, nurse educator or clinical nurse specialist and use their professionalism to show the public what their work really entails (Hoeve et al. 2014).

A nursing professional identity (PI) develops continuously throughout an individual's lifetime, commencing prior to starting the pre-registration program and constantly evolving throughout their professional career (Maginnis 2018). A nursing PI possesses a common identity through using the title "nurse" and sharing common experiences. This is emphasized through professional socialization whereby the nursing student internalizes a sense of professionalism and belonging (Maginnis 2018).

According to Hoeve (2018) "In nurses, the development of professional identity occurs through work experience and the associated contextual impacts, such as cognitive challenges and workplace relationships".

Hoeve (2018), for example, concluded that professional identity in nursing is about how nurses conceptualize what it means to act and be a nurse (Hoeve 2018).

Nurses' concepts of their professional roles have changed over time, from thinking of themselves chiefly as doctors' assistants in the mid-20th century, to now conceiving of themselves as more autonomous and active in-patient care (Kalisch and Kalisch 2004). Research into how nurses form their sense of identity, and how this can be tested and strengthened, is essential to the development of nursing as a profession. For researchers to fully realize these implied relationships, a comprehensive review of what professional identity is and how it is formed is required. Self-concept is defined as our personal understanding of our perceived attributes (as a social, physical and cognitive person) Self-concept is how we think and feel about ourselves thereby including the multiple selves of awareness, esteem, worth and confidence (Marsh and Scalas 2010).

Professional identity in nursing is complicated, and nurses historically have struggled to define their work in parallel to the other professions. It is proposed that through applying SIT to the nursing profession, nurses will develop a fuller understanding of their own professional identity. As explained throughout this paper, SIT recognizes the contextual importance of organizational groups. Equally important are the contexts in which professional groups engage in the daily activities characteristic of their profession and their workplace. The relevant concepts include group belongingness as a consequence of the interpersonal–

intergroup continuum, group identity salience, the complexities of individuals and their multiple social identities, and the situational relevance and subjectivity of these identities. An adequate understanding of nurse professional identity must incorporate recognition of the diversity of contexts in which nurses undertake their practice. It is essential that our understanding of nurse professional identity not be limited to the academic preparation of nurses and the transition of graduates into the workplace. Rather, comprehensive and clear description of professional identity in nursing requires specific attention to the workplace settings where and the social actions through which nurses meet the daily demands of their profession (Willetts and Clarke 2014).

Nursing students believed that both theoretical and practical trainings were indispensable. Nevertheless, clinical placements were considered essential to confer sense to the theory and to shape their identity, as they helped student nurses to experience their future professional reality and to compare it with what they had been taught in theoretical and academic classes. The role of the clinical placement mentor was essential. With regard to theory, the skills developed in problem-based learning gave novice nurses' confidence to approach the problems of daily practice and new situations. Equally, this approach taught them to reflect on what they did and what they were taught and this ability was transferred to the clinical setting. For students, both strategies (theory and practice) are vital to nursing education and the construction of a professional identity, although pride of place is given to clinical placements and mentors. The skills developed with problem-based learning favor active and reflective learning and are transferred to learning in the clinical setting (Marañón and Pera2015).

In Albania, Law no. 10 171, dated 22/10/2009 "On the regulated professions in the Republic of Albania changed with law No. 10 470, dated 13/10/2011", among others, defines as a regulated profession also the profession of nurse, midwife and physiotherapist (article 5, points c, ç, d).

According to this law, "regulated profession" is an activity or group of professional activities, the right to exercise which or one of the forms of exercise is regulated by law is conditioned by a certain level of training or mastery of special professional qualifications (article 4, point a). Then, articles 7 and 8 determine what the vocational training and qualification should be as well as the criteria for practicing the regulated profession.

At the University of Shkodra "Luigj Gurakuqi", Albania, there are three Bachelor study programs that prepare nurses, namely Bachelor in General Nursing, Bachelor in Midwife and Bachelor in Physiotherapy offered by the Nursing Department, Faculty of Natural Sciences. The Nursing Department also offers a second cycle program, Professional Master in "Health Psychology".

The University of Shkodra "Luigj Gurakuqi", started its academic activity in 1957. At this time with a Decision of the Council of Ministers this institution was named the "Higher Pedagogical Institute of Shkodra". After its expansion and development in 1991 this institute was established at the University level (University of Shkodra "Luigj Gurakuqi").

The program of the first cycle of studies "General Nursing" was opened with the Order of the Ministry of Education and Science, no. 784/1, dated 05/06/2001,

full time, 3.5 years old, who with letter no. 11263/1 prot, dated 06/11/2018, based on article 124, point 2, of law no. 80/2015 "On higher education and scientific research in institutions of higher education in the Republic of Albania", has been converted as an Integrated Second Level Diploma (DIND), equivalent today to the Master of Sciences. The motive for opening this branch was related to the unsatisfactory level of Nursing staff, especially those with 1-year courses.

Bachelor in Midwife study program was opened in 2007. The motive for the opening was to increase the educational level of midwifery nurses. Also, the increase of labor market demand enabled the opening of this study program.

Bachelor in Physiotherapy study program was opened in 2007. In the academic year 2004–2005 the Bologna card system was implemented for the "General Nursing" study program, while the two new study programs, Bachelor in Midwife and Bachelor in Physiotherapy have started their studies respecting the Bologna charter.Professional Master in "Health Psychology" study program was opened in 2012.

The employers are satisfied with the graduate students in the three Bachelor study programs and with the graduate students in the program of the Professional Master study. There have never been any special requests regarding the change or modification of the curriculum. Over the years we have seen that the number of applicants coming to this branch is very large compared to the quotas offered and the quotas offered by USH have always been met. The Nursing branch can be called as a trend of the time and is in demand in every country of Albania and abroad.

Given the significant impact that professional identity has on the work practice of nurses, it has been seen as important to analyze the perceptions of future nurses regarding the nursing profession.

The aim of this study is to evidence the students' perceptions about the profession of nursing. The research question is: "What are the nursing students' perceptions about the profession of nursing?" The objectives of the study are:

1. Exploring the correlation between students' age and their perception about nursing profession.
2. Exploring the relationship between students' course of study and their perception about nursing profession.
3. Exploring the relationship between having family members in health care and students' perception about nursing profession.

Methodology

Study Design

This is a cross-sectional study. The aim of this study is to evidence the students' perceptions about the profession of nursing. The research question is: "What are the nursing students' perceptions about the profession of nursing?" The objectives of the study are:

1. Exploring the correlation between students' age and their perception about nursing profession.
2. Exploring the relationship between students' course of study and their perception about nursing profession.
3. Exploring the relationship between having family members in health care and students' perception about nursing profession.

The study was realized during the period of January–February 2020. The study was conducted with nursing students in first, second and third year of study, in bachelor degree in "General Nursing" of University of Shkoder, Department of Nursing.

In this study we conduct a standardized questionnaire about the perception of nursing profession. The Cockrell-Punter Nursing Perceptions Scale Instrument was the questionnaire used. The source of the questionnaire was the study made by Cockrell in 2002 and it was adapted for the Albanian context.

Part I of questionnaire used is composed by the demographic data and the students are asked about the first choice of study branch, the reason of choice, the influencing such as: the presence of family members in health care system, the previous experiences with nurses. Part II of the Cockrell-Punter Nursing Perceptions Scale consisted of 23 perception statements related to nursing to which respondents were asked to indicate their level of agreement on a five-point Likert-Type Scale ranging from 1=Strongly Disagree to 5=Strongly Agree. The survey performed in classroom and was anonymous. All data collected were elaborated with SPSS version 19 program.

Data Collection Tools

The questionnaire was considered as the main tool for obtaining the data of this study. Were conducted also several focus groups in order to have a clear idea about the reliability of the data obtained from the questionnaire.

The Focus Group (FG) has won recognition as a technique of production of data, by the application in various research areas (Kinalski et al. 2017).

Focus groups arguably provide researchers with more surprises than other types of research. Individuals who participate in focus group sessions are not restricted by the "A, B, C" choices provided by the typical survey researcher. Participants generally are allowed to say anything they would like in focus groups sessions. Focus groups therefore are considered to be naturalistic (Grudens-Schuck et al. 2004). The researcher listens not only for the content of focus group discussions, but for emotions, ironies, contradictions, and tensions. This enables the researcher to learn or confirm not just the facts (as in survey method), but the meaning behind the facts".

Analysis of the Data

The data obtained from the questionnaire were processed through SPSS program, version 19. It is used Pearson Correlation in order to explore the

correlation between students' age and their perception about nursing profession. It is used Anova Table in order to explore the relationship between students' course of study and their perception about nursing profession and the relationship between having family members in health care and students' perception about nursing profession.

Ethical Consideration

The permission has been obtained for the development of the questionnaire to the governing authorities of the faculty. Students are assured of maintaining anonymity and confidentiality. Students have been free to participate or not in the study.

Results

Study Sampling

From all data collected and elaborated we have evidence the demographic data. The population of the research is composed by the students of the Bachelor degree in General Nursing. There are 270 students in this study program, 202 (74%) are female and 68 (26%) are male. 90 students are in the first year, 25 of whom are male and 65 are female; 90 students are in the second year, 18 of whom are male and 62 are female and in the third-year study 90 students, 25 of whom are male and 55 are female. The sample size is composed of 152 students (56.29% of the population). The sample size in the study is a representative of students' population. The selection of the sample size is based on students 'desire to participate. All students don't work. In this study were included n = 152 students, respectively: n= 55 (36.2%) in the first year, n = 52 (35.2%) in the second year and n = 45 (29.6%) in the third year of study. In this study, 13.2% (n = 20) of students were male and 86.8% (n = 132) were female. The distribution of student's age was: 15% were 18 years old, 33% were 19 years old, 32.2 % were 20 years old, 13.2% were 21 years old and 6.6% were over 21 years old. The mean was 19.8 years old, minimum 18 years old, maximum was 30 year old, Std. Dev ± 1.46. According to the residence, 109 (71.7%) of students were from urban area and 43 (28.3%) from rural area, 54% of them were from Shkodra and 46% were from the other cities such as Lezha, Malësi e Madhe.

The Data Obtained

The research question is: "What are the nursing students' perceptions about the profession of nursing?" In the second part of the questionnaire we have collected the perception of students about this profession.

It should be noted that these scores no longer reflected simply agreement/ disagreement, but as positive or negative perceptions of nursing with a scale values ranged from 1=negative perception to 5=positive perception (Cockrell 2002).

In Table 1 we can see that the mean is 82.53, the median is 83 and the mode is 85, the minimum is 64 and the maximum is 101. So, students have good perception about the nursing profession. More detailed information we can obtain from Figure 1.

Table 1. *Data about the Perceptions of Future Nurses regarding the Nursing Profession*

	N	Mean	Median	Mode	Std. Deviation	Minimum	Maximum
Perception	152	82.53	83	85	7.58	64	101

Figure 1. *Data about the Perceptions of Future Nurses regarding the Nursing Profession*

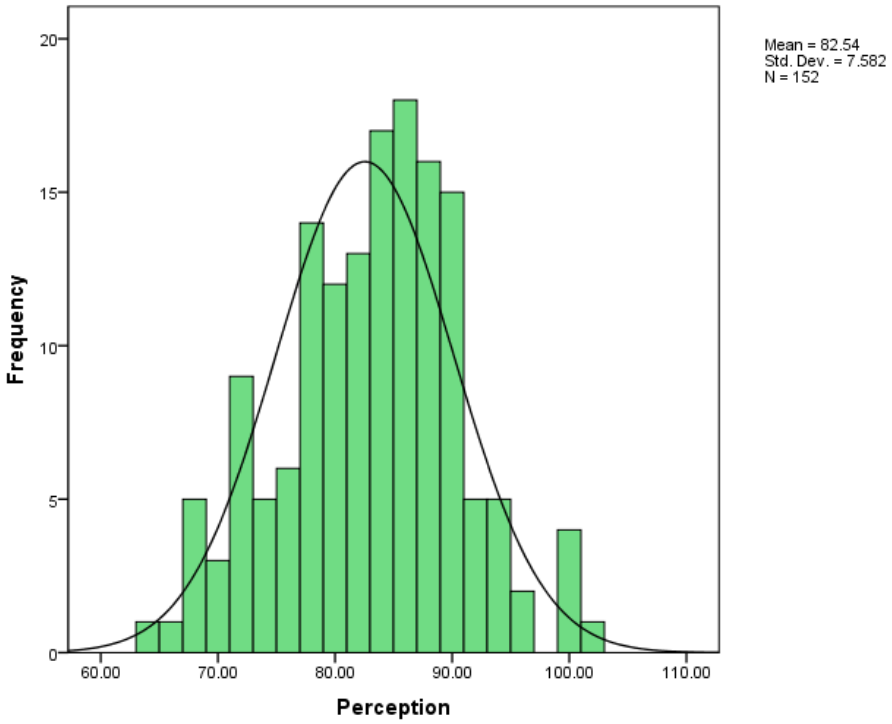

Table 2. *The Frequency and Percentage of Answers about the Students' Perception*

Items	Strongly Disagree 1	Disagree 2	Undecided 3	Agree 4	Strongly Agree 5
Popular media is the primary source by which individuals define nursing.	N=12 (8%)	N=44 (29.3%)	N= 51 (34%)	N=41 27.3%	N=2 1.3%
Nursing students in rural and underserved areas are more likely to want to return to their hometown to work after graduation.	N=8 (5.3%)	N=21 (13.9%)	N=54 (35.8%)	N=49 (32.5%)	N=19 (12.6%)
Students are more likely to	N=6	N=12	N=16	N=96	N=22

choose nursing if family members or friends are in healthcare careers.	(3.9%)	(7.9%)	(10.5%)	(63.2%)	(14.5%)
Patient education is a major part of the role of nurses.	N=0 (0%)	N=4 (2.6%)	N=8 (5.3%)	N=57 (37.5%)	N=83 (54.6%)
Most high school graduates make the decision to enter nursing based on accurate information about nursing.	N=5 (3.3%)	N=21 (13.8%)	N=51 (33.6%)	N=63 (41.4%)	N=12 (7.9%)
There is currently a shortage of registered nurses.	N=7 (4.7%)	N=37 (24.7%)	N=74 (49.3%)	N=28 (18.7%)	N=4 (2.7%)
The Albanian Order of the Nurses position is that Baccalaureate nursing education should be the standard for entry into professional nursing.	N=0 (0%)	N=1 (0.7%)	N=25 (16.7%)	N=93 (61.2%)	N=31 (20.7%)
Mentoring is critical for success in nursing.	N=1 (0.7%)	N=9 (6%)	N=22 (14.6%)	N=75 (49.7%)	N=44 (29.1%)
Graduates from a baccalaureate nursing program can be employed in a wide variety of medical areas.	N=4 (2.7%)	N=19 (12.7%)	N=45 (30%)	N=67 (44.7%)	N=15 (10%)
The majority of currently employed licensed nurses work in a hospital setting.	N=3 (2%)	N=38 (25%)	N=44 (28.9%)	N=57 (37.5%)	N=10 (6.6%)
High salaries are the primary reason students choose nursing as a career.	N=24(15.8%)	N=49(32.2%)	N=37 (24.3%)	N=31 (20.4%)	N=11 (7.2%)
Nurses are called on to fulfil multiple roles as nursing professionals.	N=4 (2.7%)	N=21 (14.1%)	N=38 (25.5%)	N=62 (41.6%)	N=24 (16.1%)
Managed healthcare has had a positive influence on nursing.	N=0 (0%)	N=3 (2%)	N=22 (14.5%)	N=98 (64.5%)	N=29 (19.1%)
Students in baccalaureate nursing programs are automatically licensed as registered nurses upon graduation.	N=16 (10.6%)	N=22 (14.6%)	N=44 (29.1%)	N=51 (33.8%)	N=18 (11.9%)
Observing and "shadowing" nurses influences an individual's perceptions of the nursing profession.	N=2 (1.4%)	N=8 (5.4%)	N=21 (14.2%)	N=83 (56.1%)	N=34 (23%)
High school graduated understand the roles and responsibilities of professional nurses.	N=8 (5.3%)	N=59 (38.8%)	N=45 (29.6%)	N=31 (20.4%)	N=9 (5.9%)
Career information about nursing is readily available to all students on the university campus.	N=1 (0.7%)	N=16 (10.8%)	N=25 (16.9%)	N=74 (50%)	N=32 (21.6%)
Licensed nurses cannot make decisions about patient care without first consulting with a physician.	N=2 (1.3%)	N=9 (6%)	N=24 (15.9%)	N=63 (41.7%)	N=53 (35.1%)
Understanding the nursing profession is a primary concern of high school graduated.	N=2 (1.3%)	N=12 (7.9%)	N=45 (29.6%)	N=70 (46.1%)	N=23 (15.1%)

High school graduated would benefit from a pre nursing orientation course.	N=3 (2%)	N=6 (4%)	N=19 (12.8%)	N=60 (40.3%)	N=61 (40.9%)
Nurses are regarded a highly ethical and honest professionals.	N=3 (2%)	N=13 (8.6%)	N=19 (12.6%)	N=63 (41.7%)	N=53 (35.1%)
Completion of an Introduction to Nursing class before entering nursing school would have a strong influence on students' perceptions of nursing.	N=2 (1.3%)	N=2 (1.3%)	N=14 (9.3%)	N=70 (46.4%)	N=63 (41.7%)
The majority of currently employed nurses have positive perceptions about nursing.	N=5 (3.3%)	N=9 (5.9%)	N=42 (27.6%)	N=65 (42.8%)	N=31 (20.4%)

In Table 2 we can see the evaluation according to the 23 items. It is important to evidence that 35.8% of students from rural areas are undecided to return to their hometown to work after the graduation. More than 77.7% of students admit that are more likely to choose nursing if family members or friends are in healthcare careers. They are well informed about the duties, role and obligations of nurses. So 78.8% of them agree that mentoring is critical for success in nursing, 77.7% admit that nurses are called on to fulfill multiple roles as nursing professionals. 79.1% claim that observing and "shadowing" nurses influences an individual's perceptions of the nursing profession. The students are conscious that understanding the nursing profession is a primary concern of high school graduated (61.2%). They think that high school graduated would benefit from a pre nursing orientation course (81.2%). About the item if the nurses are regarded a highly ethical and honest professionals 71.6% of students agree and strongly agree. Also 88.1% of students think that completion of an introduction to nursing class before entering nursing school would have a strong influence on student's perceptions of nursing. 63.2% admit that the majority of currently employed nurses have positive perceptions about nursing.

According the answers we can evidence that students have a positive perception about the nursing profession.

When the students are asked about the first choice of study branch, 109 (71.7%) of them claim it was their first choice and 43 (28.3%) refer that it was not the first choice.

If they had the opportunity to choose another branch of study, some of them would like to choose: medicine (12.5%), dentistry (6.6%), physiotherapy (6.6%) and psychology (5.3%), but 9.9% were not decided if they want another choice. Is fact that they want to choose medicine, physiotherapy; dentistry and psychology because all these branch are human sciences similar with nursing sciences and the opportunity for a good job. So we can see this opinion in different studies.

In the study 70.4% (n=107) admit that observing a nurse in action didn't influence them to choose nursing as a career. The reasons of choosing nursing as the profession were expressed by them such as: the desire to help the others (71.7%), diversity of job opportunities (63.2%), Desire to take care of family and friends (46.7%) and individual professional fulfillment, interested in research of health and human sciences.

In this study we can conclude that between the age and the perception exist a non-significant and negative correlation (see Table 3). This means that with age the level of perception decreases, so the oldest have not a positive perception. Youngest student are more altruist and expect more from the future.

Table 3. *Correlations between Age and Perception of Students*

Correlations between age and perception		Age	Perception
Age	Pearson Correlation	1	-0.056
	Sig. (2-tailed)		0.491
	N	152	152

There is no significant relationship between students'course of study and their perception about nursing profession (Sig=0.848) (Table 4).

Table 4. *The Relationship between Students' Course of Study and their Perception about Nursing Profession*

Course	Mean	N	Std. Deviation	Minimum	Maximum
First Year Ba	83.0000	55	6.80686	66.00	95.00
Second Year Ba	82.3654	52	6.84572	68.00	100.00
Third Year Ba	82.1778	45	9.25470	64.00	101.00
Total	82.5395	152	7.58168	64.00	101.00

As we can see, the students' perception of the first academic year is more positive, but this difference is very small, it is not significant.

It is difficult to explore the relationship between having family members in health care and students' perception about nursing profession, because 59.9% of them admit that didn't have anyone in family in healthcare. Only 35.5% have family members other than parents in healthcare, and 4.6% of students have one or both parents in healthcare. The most of students are well-oriented about their choice. They are convinced that they will have a secure job in the near future.

Table 5. *The Relationship between having Family Members in Health Care and Students' Perception*

Having family members in health care	Mean	Nr	Std. Dev.	Min	Max
One or both parents is/are in healthcare	86.0	7	9.2	73.0	101.0
Family members other than parents are in healthcare	84.4	54	8.1	66.0	100.0
No one in family is in healthcare	81.1	91	6.8	64.0	94.0
Total	82.5	152	7.5	64.0	101.0

There is a significant relationship between having family members in health care and students'perception about nursing profession (Sig=0.018) (Table 5). The mean is higher among the students that have one or both parents is/are in healthcare.

There is no significant relationship between students'gender and their perception about nursing profession (Sig=0.331) (Table 6), but it should be noted

the fact that in this study program nursing is a women-dominated profession. As we can see, the female nurses have more positive perception about nursing profession.

Table 6. *The Relationship between Gender and Students' Perception*

Gender	Mean	N	Std. Deviation	Minimum	Maximum
Male	81.0000	20	8.97951	68.00	100.00
Female	82.7727	132	7.35843	64.00	101.00
Total	82.5395	152	7.58168	64.00	101.00

There is a significant relationship between students'residence and their perception about nursing profession (Sig=0.028) (Table 7).

Table 7. *The Relationship between Students' Residence and their Perception*

Residence	Mean	N	Std. Deviation	Minimum	Maximum
City	83.5596	109	7.65147	66.00	101.00
Village	80.3611	36	6.92471	64.00	92.00
Total	82.7655	145	7.58197	64.00	101.00

The mean is higher among the students that are borned in the city.

Discussion and Conclusion

Nursing students have good perception about the nursing profession. Between the age and the perception exists a non-significant and negative correlation. This means that with age the level of perception decreases, so the younger students have more positive perception. There is no significant relationship between students' course of study and their perception about nursing profession. There is a significant relationship between having family members in health care and students' perception about nursing profession.

It is important to evidence that 35.8% of students from rural areas are undecided to return to their hometown to work after the graduation. Most students admit that are more likely to choose nursing if family members or friends are in healthcare careers. They are well informed about the duties, role and obligations of nurses. So, most of them agree that mentoring is critical for success in nursing, most of them admit that nurses are called on to fulfill multiple roles as nursing professionals and claim that observing and "shadowing" nurses influences an individual's perceptions of the nursing profession. It is positive the fact that nurses are regarded a highly ethical and honest professionals for most of the students. The students are conscious that understanding the nursing profession is a primary concern of high school graduated. They think that high school graduated would benefit from a pre nursing orientation course. About the item if the nurses are regarded a highly ethical and honest professional most students agree and strongly agree. Also 88.1% of students think that completion of an introduction to nursing class before entering nursing school would have a strong influence on student's perceptions of nursing.

In general, the findings of the study are similar to the findings of similar studies in the world. The inclusion of the subject "Introduction to nursing" in the high school curriculum should be considered, because a considerable part of the students think that most high school graduates make the decision to enter nursing based on accurate information about nursing. We think that the inclusion of this subject should be considered also for the fact that only 26.3% of the study participants think that high school graduated understand the roles and responsibilities of professional nurses, so, they need this kind of information. Most of the study participants think that a primary concern of high school graduates understand the nursing profession and the vast majority of them think that high school graduated would benefit from a pre nursing orientation course.

Marcinowicz et al. (2016) concluded that "the decision about choosing nursing is mainly determined by practical aspects, e.g., the opportunity for employment. Although young people are aware of the low prestige of the nursing profession in Poland, they believe it is possible to improve its image and enhance its prestige". Wilkes et al. (2015) conducted a study with nursing students of their first year of study in Sydney, Australia. They concluded that "Nursing remains a career of choice for young and mature students entering university. It is seen to provide security, interest and opportunity to help and care for others".

In the study made by Elibol and Harmanci (2017) in Istanbul with students in nursing program, it was resulted that "related to the reasons for choosing the nursing profession, it was determined that the majority of those who had at least one person in their family in the nursing profession (50.6%) had positive thoughts on nursing prior to coming to the nursing school (91.8%) and already knew about the nursing profession before attending the nursing school (69%)" (Elibol and Harmanci 2017). It was determined that most of the students knew about the profession prior to entering the school (69%) and that the majority (91.8%) had positive feelings towards nursing and the majority chose the profession on account of "easily finding a job", while a smaller number of the students chose "the nursing profession willfully" (Elibol and Harmanci 2017). So, we can conclude that the results of our study are similar with those of our international colleagues.

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