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ABSTRACTING & INDEXING

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ABOUT THE JOURNAL

About the Health Sci. Q.

Health Sciences Quarterly (Health Sci. Q.) journal as known by the name of "Journal of Scientific Perspectives" until April 2021 which has been published since 2017 is an international peer-reviewed journal of HOLISTENCE ACADEMY. It is published quarterly in January, April, July, and October. All manuscripts submitted for publication are evaluated by the editor-in-chief, section editor, editorial board, and referees. In addition, the journal provides a medium for highlighting selected articles reporting highly significant original findings, as Editor's Choice Manuscripts.

Aims and Scope

Health Sciences Quarterly (Health Sci. Q.) is an open-access journal that publishes original research papers, case reports, and reviews, clinical studies covering a wide range of subjects in life sciences and medicine as well as clinical and experimental investigations only in English.

Researchers in health sciences will find much of great use and interest in the Health Sci. Q.

HSQ aims to supply scientists of health with resources in order to provide the scientific knowledge through the publication of peer-reviewed, high quality, scientific papers and other material on all topics related to Medicine, Pharmacy and pharmaceutical sciences, Dentistry, Nursing, Bioethics, History of medicine, Health economics, Pharmacoeconomics, Medical education, Public health, and Epidemiology.

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E-mail: hsq@holistence.com
GSM: +90 530 638 7017

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EDITORIAL

Dear Colleagues;

A new year comes with new opportunities. We wish a new year gives everybody a chance to begin new and fresh. Thus, we work harder to make the journal Health Sciences Quarterly (Health Sci. Q.) better and include quality, scientific, academic papers.

In this January issue, we have four original articles about malpractice in midwifery, transcervical submandibular gland surgery, mNUTRIC score in critical patients, reproducibility of choroidal thickness measurements in hemodialysis patients. Additionally, two original articles and a review is about COVID-19 and pandemics. One of them is highly technical and includes a trigger question "Is COVID-19 responsible for asthma and COPD exacerbations?" The two others are about nursing, emotions, care difficulties, ethical problems, and sadness during the COVID-19 pandemic.

Health Sci. Q. (formerly Journal of Scientific Perspectives) is an open-access, peer-reviewed journal dedicate to delivering leading-edge research in all disciplines of health sciences to publish. Health Sci. Q. encourages scientists and academicians all around the world to share their original writings in the form of original research, review, mini-review, case report, letter to the editor, commentary, news and views, editorial, as well as meeting reports. Full texts of all published articles can be downloaded for free from our website.

We again would like to thank the authors, the referees who evaluated the manuscripts carefully, and everyone (also every life form) who contributed to these studies/articles.

Hope to meet in the upcoming issues.

Kind regards.

Hasan Erbay. MD, PhD, MBGPH

Editor-in-Chief

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ORIGINAL ARTICLE

Malpractice in midwifery: A cross-sectional retrospective study from Turkey

Burcu Tuncer Yılmaz[1] **Sultan Alan**[2] **Melike Öztürk**[2]

1 Department of Midwifery, Faculty of Health Sciences, Eskisehir Osmangazi University. Eskişehir / Turkey
2 Department of Midwifery, Faculty of Health Sciences, Cukurova University. Adana / Turkey

Abstract

Medical malpractice could result from personal reasons such as negligence, carelessness, ignorance, lack of skills, and insufficiency in patient care. The aim of the authors of this study to determine the knowledge, views, experiences and observations of midwives about malpractice. The study was carried out between April-September 2013, on 75 midwiwes working in three different hospitals in a city of Turkey. The semi-structured interview form developed by researcher has been used. It has been determined that the causes of malpractice are mostly thought by midwives as inability and inexperience in profession (90.7%), carelessness (86.7%) and lack of attention (40%). It has been determined that 24% of the midwives has witnessed a faulty medical practice and 5.4% of midwives make medical errors. The most observed types of medical errors encountered by midwives; umbilical cord prolapses due to amniyotomy prematurely (42.7%), damage to the anal sphincter during episiotomy (62.7%) and forgetting foreign object after repair of episiotomy (32%). At the end of the study has appeared should be giving importance to vocational training and postgraduate service training for reducing medical errors and protection from malpractice midwives.

Keywords: Malpractice, midwifery, care, incorrect application, medical error

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Corresponding Author:
Burcu Tuncer Yılmaz
Email: tunburcu51@gmail.com

Introduction

The importance of midwifery comes from its role in the health of women. The period of pregnancy has an undeniable importance for the health of both mothers' and the public. Medical failures and malpractices in this field could directly affect the health of public [1]. Moreover, midwives have additional roles such as adapting the professional practice standards, improving the services, and updating their knowledge about legal and professional organizations [2]. There has been a sharp increase in both the penalties and remedial actions against medical malpractices. This increase is evident in both the researches carried out in the court archives and statistical studies performed by experts of trials or surveys implemented by research institutions and companies. Among these institutions are the Supreme Council of Health, Institute of Forensic Medicine, Chambers of Medicine, and Directorates of Health [3]. In a study of Buken and Buken, of 653 files examined in the Institute of Forensic Medicine between the years of 1990 and 2000, 107 files were related to the field of gynaecology [4]. According to a study of Gündoğmuş et al. based on the records of Supreme Council of Health between 1993 and 1998, midwives had the highest rate of responsibility with 52% in 59 medical malpractice trials. This rate has been followed by physicians and nurses with a percentage of 29% and 19%, respectively [5]. The most common errors that have been subject to the trials of midwives are incapability in following the pregnant and the foetus, inability in evaluating the problems and complications related to pregnancy and not reporting these problems to the physician on time, implementing improper practices during childbirth (using vacuum extractor, faulty episiotomy), and using faulty or overdose oxytocin. Apart from these, there are also faulty practices related to patient security, drug applications, and communication and registering [5]. In a study that retrospectively examined 30 malpractice cases referred to the Supreme Court between 1978 and 2006 in Turkey, the cases related to the field of obstetrics and gynaecology comes second after surgical branches [6]. In another study carried out by Beigi et al. which retrospectively examined lawsuit petitions of malpractice allegations filed in 5 years period at Iranian institution of forensic medicine, 32% of 66 malpractice cases is related to midwives [1]. Women and new-born care is attached much importance in the United States of America and the risk of responsibility related to malpractice has been steadily increasing in the last 20 years [7]. It has been determined in a national web-based study carried out in the USA that midwives have been responsible for 25% of trials when this study has been carried out for the first time while this percentage has increased up to 32% and 35%, respectively, after 5 years and for later periods [7–9]. Angelini and Greenwald examined 65 closed lawsuits in 2005 related to nurse-midwives and identified that midwives were defendant in more than 60% of trials. Two major reasons for malpractice responsibility of midwives were identified again in this study [10]. One of these responsibility issues was related to foetal monitoring and the other was about shoulder dystocia. Mccool et al. examined 162 lawsuits related to malpractice of midwives between 2010 and 2011 and they categorized the reasons of malpractices as Angelini and Greenvald did [10,11]. Similar to the results of other studies, this study has also found out that foetal/new-born deaths or complications rank first while negligence in pregnancy and shoulder dystocia are other examples for malpractice [11]. As understood from similar results of the studies, it has been identified that the follow-up of mother-foetus and the management of childbirth that are the primary fields of care for midwives are risky particularly in terms of malpractice. The authors aim in this study identify not only the knowledge and opinions of midwives about malpractice but also the frequency of medical failure types that could cause malpractice which midwives have experienced and observed throughout their professional career.

Materials and Methods

Participants

The study was conducted a cross-sectional retrospective type. The universe of the study is 82 midwives working at maternity and postnatal wards of three hospitals in located in the centre

of a city in Turkey. Since three of them have been on leave at different times and four of them have been seconded at different departments, a total of 75 midwives have been included in the study.

Data Collection

Face-to-face interview technique were used to collect the data. The data collecting form has been created by researcher and contains three separate parts: first part consists of six questions revealing the descriptive and professional features of midwives; second part contains 11 questions investigating the knowledge and views of midwives about malpractice and their observations and experiences related to malpractice that they gained throughout their professional career; last part consists of 23 items created with the aim of identifying midwives' experiences with medical failure types throughout their professional career. The participants have responded to the items of the third part by selecting one of these two options: "yes (encountered)" or "no (never encountered)".

Data analysis

The statistical analysis was performed on SPSS (Statistical Package for the Social Sciences) for windows (version 21.0) through descriptive statistics (number, percentage calculation) and Chi-square tests. The value of statistical significance has been determined as $p<0.05$.

Ethics approval

The necessary approval to carry out the study has been received from the Ethics Committee of Non-Invasive Clinic Researches of the Faculty of Medicine at Çukurova University (Date: 14.02.2013, Registration Number: 16/27). The survey forms have been applied to midwives on voluntary basis whose oral and written consents have been received after being given information about the study.

Results

The mean age of the midwives is 36.37±8.82. The 38.7% of the midwives is the graduate of associate's degree while 32% and 29.3% are bachelor and high school graduate, respectively. The 45.3% works in delivery room and 54.7% works in postnatal wards. The average actual hours are 6.21±5.32 (min.-max.:0-25 years). The total actual hours in this profession is 15.87±9.35 (min.-max.:0-42 years) on average. The 84% of midwives is on the night shift while 16% is on the day shift (Table 1).

Table 1. Descriptive properties of midwives (n=75)

Properties	n	%
Age in years		
<30 years	16	21.3
30-44 years	44	58.7
≥ 45 years	15	20
Education status		
High school	22	29.3
Associate	29	38.7
License	24	32
Department		
Delivery ward	34	45.3
Postpartum service	41	54.7
Working time in the current unit		
0-5 years	44	58.7
5-10 years	20	26.7
≥ 10 years	11	14.7
Years of experience as midwife		
0-5 years	13	17.3
5-10 years	9	12
≥ 10 years	53	70.7
Shift		
*Night shift and mixed**	63	84.0
Day shift	12	16.0

*Mixed shift workers were included in this group.

The Findings Related to the Knowledge, Views, Observations and Experiences of Midwives about Malpractice

It has been identified that the 53.3% of the midwives has never heard of "malpractice" concept before and 66.7% has had no knowledge about faulty medical practices and legislative regulations related to malpractice (Table 2). When the level of education of the ones that have knowledge about the concept of malpractice is examined, it has been identified that the 91.7% of bachelors, 31% of associates and 18.2% of high school graduates have had knowledge about malpractice before. There has been found a statistical significance between the level of education and knowing of the concept of malpractice ($p<0.05$).

The first three reasons for malpractice according to midwives are professional inability and inexperience (90.7%), carelessness (86.7%), and lack of attention/care (40%) (Figure 1). Twenty-four percent of midwives has stated that they witnessed a faulty medical practice done by one of their colleague throughout their professional career. 18.7% has indicated that they witnessed once and 6.6% has indicated they witnessed

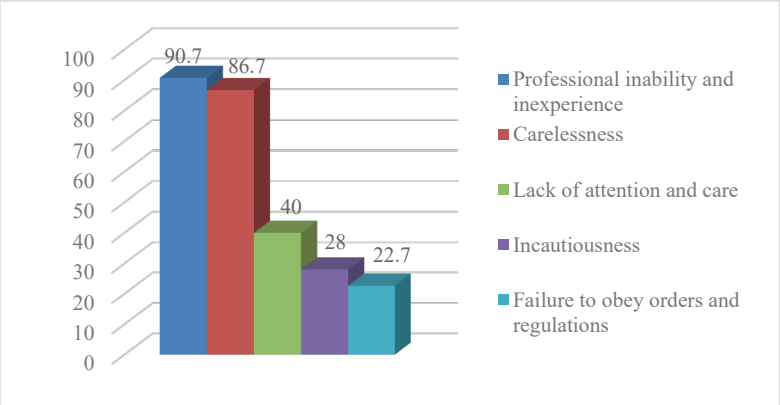

Figure 1. The distribution of reasons of failure according to midwives (More than one answer has been selected for the question)

Table 2. Descriptive properties of midwifes and their information status about malpractice

Features	**Know malpractice**		**p**	**Having knowledge about the legal regulations of malpractice**		**p**
	n	**%**		**n**	**%**	
Age in years						
<30 years	11	68.7	0.062	11	68.8	**0.002**
30-44 years	20	45.5		12	27.3	
≥ 45 years	4	26.7		2	13.3	
Education status						
High school	4	18.2	**<0.001**	3	13.6	**<0.001**
Associate	9	31.0		5	17.2	
License	22	91.7		17	70.8	
Department						
Delivery ward	15	44.1	0.817	11	32.4	0.534
Postpartum service	20	48.8		14	34.1	
Working time in the current unit						
0-5 years	23	52.3		19	43.2	0.065
5-10 years	10	50.0	0.121	5	25.0	
≥ 10 years	2	18.2		1	9.1	
Years of experience as midwife						
0-5 years	10	76.9		10	76.9	**0.001**
5-10 years	6	66.7	**0.013**	2	22.2	
≥ 10 years	19	35.8		13	24.5	
Shift						
*Night shift and mixed**	26	41.3	0.055	19	30.2	0.158
Day shift	9	75.0		6	50.0	
Total	**35**	**46.7**		**25**	**33.3**	

* Mixed shift workers were included in this group.

more than once to a legal proceeding against one of their colleagues due to malpractice. Out of 25 investigation cases to which midwives have witnessed, it has been identified that relevant persons have been executed penal sanctions in 8 cases (10.7%); the judicial process has been going on in 8 cases (10.7%); no judicial actions have been applied to relevant persons in 5 cases (6.7%), and the judicial process has been concluded in favour of relevant persons in 4 cases (5.3%). It has been observed that the midwives who have been working for more than 10 years within their department have witnessed a faulty medical practice of one of their colleagues that pose a risk for the patient safety at least once in their entire professional career. There has been a statistically significant difference between the year of experience at the department and witnessing to a faulty medical practice ($p<0.05$). 5.3% of the midwives has indicated that a legal action has been initiated against themselves due to an allegation of malpractice. The reasons of these four different cases because of which the midwives have undergone a legal action are the allegations of inadequate intervention to postpartum haemorrhage (PPH) due to uterine

Table 3. Midwives experiencing with medical errors

Types of Medical Errors	experiencing with medical errors n (%)
Medical errors specific to antenatal period	
– Umbilical cord prolapse due to untimely amniyotomy	**32 (42.7)**
– Quick birth because of hypertonic contractions due to excessive use of oxytocin	**25 (33.3)**
– Inability to follow-up fetal monitor and failure to identify fetal distress	**12 (16.0)**
– Development of fetal hypoxia due to excessive hypertonic contractions resulting from overuse of oxytocin	**8 (10.7)**
– Development of ablation placenta due to excessive hypertonic contractions resulting from overuse of oxytocin	**4 (5.3)**
– Development of uterine rupture due to excessive hypertonic contractions resulting from overuse of oxytocin	**2 (2.7)**
– Use of oxytocin in inappropriate presentations (cephalopelvic disproportion,transverse or breech presentation etc.)	**2 (2.7)**
Medical errors specific to during birth	
– Damage to the anal sphincter during episiotomy	**47 (62.7)**
– Neonatal brachial plexus due to birth trauma	**10 (13.3)**
– Dropping the baby	**7 (9.3)**
– Use of vacuum or forceps in unsuitable conditions	**6 (8.0)**
– Atonic bleeding connected with excessive Crede's Maneuver	**5 (6.7)**
– Atony due to extreme pressure from outside the uterus	**4 (5.3)**
– Cerebral palsy due to prolonged fetal hypoxia	**4 (5.3)**
– Uterus inversion due to excessive Crede's Maneuver	**3 (4.0)**
Medical errors specific to postpartum period	
– Forgetting a foreign body in the patient during episiotomy repair	**24 (32.0)**
– Aesthetic damage in the tissue as a result of incorrect repair an episiotomy	**22 (29.3)**
– stitches re-opening after episiotomy repair	**13 (17.3)**
– dorp newborn to the floor	**7 (9.3)**
– Damage of newborn with cutting-drilling tool	**1 (1.3)**
General medical errors	
– errors in vital signs	**27 (36.0)**
– misadministration to mother	**12 (16.0)**
– Taking wrong / inadequate medical history and anamnesis	**9 (12.0)**
– Misadministration to baby	**1 (1.3)**

atony (in two cases), new-born trauma (clavicle break during birth) and anal sphincter injury during episiotomy. It has been learnt that all the patients exposed to these faulty medical practices have fully recovered and there has been no sequellae because of these faulty practices.

Findings Related to Faulty Medical Practices Encountered by Midwives

The types of faulty medical practices encountered by the midwives have been grouped as "antenatal period", "intrapartum period", "postpartum period", and "general faulty medical practices" (Table 3). The most common faulty medical practices in these periods respectively are "damage to foetus after umbilical cord prolapse due to ill-timed amniotomy" (42.7%), "anal sphincter injury during episiotomy" (62.7%), "forgetting a foreign object inside vagina during episiotomy" (32%), and "identifying wrong vital signs" (36%).

Discussion

In this descriptive retrospective study, the knowledge and opinions of midwives as well as their observations and experiences they gained throughout their professional career about faulty medical applications and malpractices have been evaluated. It has been identified that almost half of the midwives participating in the study do not have any knowledge about the concept of malpractice. The rate of awareness about the concept of malpractice is higher in the ones that are bachelor and have less than five years of experience. It is an anticipated result that the rate of awareness should be higher as the level of education increases; however, as the years of experience increase, the percentage of the awareness about malpractice decreases and this could be explained by the possibility of forgetting theoretical knowledge after graduation as years pass by and not following up-to-date knowledge due to increasing busy schedule. Legislative regulations such as malpractice insurance law for physicians and other healthcare staff have been on the agenda recently and as a result, awareness about faulty medical practices, which could be the reason of violence against healthcare personnel, has increased. In spite of all these developments, the rate of knowledge about malpractice of midwives who work face-to-face with their patients has been found lower than anticipated. For the reliability of the study, a short definition of malpractice has been presented to participants within the rest of the research and this definition has been used together with the concept of faulty medical practice.

The midwives have stated such personal reasons for malpractice as professional inexperience and inability, carelessness, and lack of attention and care. Apart from these, the reasons of malpractice could be systematic factors and professional inabilities. When the literature has been reviewed in terms of this aspect, similar results have been obtained. In a study of Beigi et al. which studied malpractice concepts of midwives, it has been identified that the most common reason of faulty medical practices is negligence while other reasons have been lined up as failure to obey rules, carelessness, lack of care, and professional inability [1]. In a study of Oztunc regarding the reasons of faulty medical practices carried out in gynaecology clinics, it has been determined that 47.4% of nurses and midwives has done faulty medical practices because of personal issues (carelessness, negligence, lack of knowledge, not knowing about treatment and care procedures, etc.) while 32.2% and 20.4% have carried out faulty medical practices due to institutional reasons (systematic based) and professional inabilities, respectively [12]. Similar results have been obtained in a study of Can et al. [6] The most common reason of malpractice has been found as failure to obey institutional regulations in the study of Ayoubiyan et al. which examined forensic cases related to malpractice allegations of midwives which followed by negligence, carelessness, and lack of skills [2]. In another study carried out on other healthcare professionals, being nurses, by Alemdar and Aktas, apart from personal issues such as exhaustion, the reasons for malpractice has been identified as heavy workload, prolonged working hours, staff shortage, and extra duties other than defined duty (secretarial duties, etc.) [13]. Other studies carried out on nurses have yielded similar results for malpractice [14,15].

The reasons of four different cases in this study because of which the midwives have undergone a legal action are the allegations of new-born trauma, anal sphincter injury during episiotomy, and inadequate intervention to postpartum haemorrhage (PPH) due to uterine atony (in two cases). Many of the practices within the authority and responsibility of midwives are risky practices. Therefore, it is of utmost necessity that midwives have full competency about the practices and they should also be aware about on which stage their responsibility ends and that of physicians' begin. Otherwise, the risk of ending up with a faulty practice is quite high and the results of the studies also support this situation. In their studies, Mccool et al. and Angelini & Greenvald have stated that foetal complications are within the major risk categories among the reasons of lawsuits against midwives [10,11]. In the study of Ilgili, 117 files are related to the mistakes done during vaginal births while 32 files are related to the faults during pregnancy follow-up and antenatal period [16].

Umbilical Cord Prolapse (UCP) is a rare obstetrical emergency complicating pregnancy and the incidence rate is generally between 1/162 and 1/714 [17]. In their study that examined the foetal and maternal results of umbilical cord prolapse cases between 1999 and 2002, Esinler et al. have concluded that 11 cases out of 13 developed after amniotomy. These 13 cases were followed up for vaginal birth; however, all of them were converted to emergency caesarean section and it was stated that all the new-borns were healthy [18]. The cases of umbilical cord prolapse due to ill-timed amniotomy have been examined in this study and it has been found out that the incidence rate and the results of other studies in the literature are very similar to those in this study.

Being one of the intervention types applied during delivery, episiotomy is the most common applied surgical practice in maternity wards [19]; however, current approaches in the light of last evidence based applications recommend limiting routine episiotomy practices [20]. The most common complications of episiotomy are prolonged application and third and fouth degrees of perineal lacerations and infections [21]. The fact that more than half of the midwives have encountered anal sphincter injury during episiotomy supports the results of other studies in the literature. In their study carried out in 16 countries in Latin America on primipara women, Althabe et al. have found out the rate of episiotomy as 80% and 90% in 91 hospitals and 69 hospitals, respectively [22]. Sayıner and Demirci have identified that 96.72% of primipara pregnant women and 51.85% of multipara pregnant women have been applied episiotomy and the total rate of episiotomy in all the deliveries is 70.33%. Besides, they have also found out that the common use of episiotomy increases the rate of perineal trauma among women [23].

According to the results obtained within this study, the most common faulty medical practice of midwives in the antenatal period is leaving a foreign object inside vagina during episiotomy with a percentage of 32. Furthermore, midwives come across with other faulty medical practices in the antenatal period such as aesthetical deterioration of the tissue due to faulty episiotomy, disruption of episiotomy suture, and injury of new-born due to possible stab wounds. Leaving a foreign object inside the patient body is a situation that is mostly experienced by operating room nurses and all the healthcare staff carrying out invasive practices. In their multicentre study, Ozata and Altunkan have identified that the least common faults of healthcare personnel is leaving a foreign object inside the patient body [24].

The general faulty practices that midwives encounter apart from delivery are identifying wrong vital signs, medication errors on the mother, identifying wrong or inadequate history or anamnesis from the patient and injury of the infant because of medication errors. There are several studies in the literature about general faulty medical practices of nurses and other types of malpractices have been identified among these applications in which medication errors being on the top [12,14,25].

Conclusion

In this study, the findings related to the knowledge and opinions of midwives as well as their observations and experiences they gained throughout their professional career about faulty medical applications and malpractices have been obtained. It has been determined that midwives have no adequate knowledge about the concept of malpractice and its related legislative regulations. Moreover, midwives have stated that the most common reasons for malpractice are professional inexperience and inability, carelessness, and lack of attention and care. On-the-job trainings should be increased and the staff should be directed to scientific activities while midwives should further attend to the activities of the Association of Midwives in order to raise awareness of the midwives for malpractice allegations. Midwives should be trained to know about the types of malpractices with regard to the type of clinic they work in and they should be warned against these faulty practices. More advanced evidence-based studies should be carried out regarding the field of application of midwives.

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Conflict of interest

There is no conflict of interest among the authors.

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ORIGINAL ARTICLE

Transcervical submandibular gland surgery; management, outcome, and complications of 120 cases

Çağlar Günebakan[1] **Selçuk Kuzu**[1] **Abdulkadir Bucak**[1]

Orhan Kemal Kahveci[1] **Şahin Ulu**[2]

1 Department of Otorhinolaryngology, Faculty of Medicine, Afyonkarahisar Health Sciences University. Afyonkarahisar / Turkey
2 Department of Otorhinolaryngology, Faculty of Medicine, Bahcesehir University, Istanbul / Turkey

Abstract

Surgical intervention is the treatment procedure of many diseases of the submandibular gland such as sialolithiasis, chronic sialoadenitis, and tumors. This study aims to analyze the management, outcomes, and complications of transcervical submandibular gland excision cases of a tertiary clinic and to discuss the results in light of the current literature knowledge. 120 cases who applied to a tertiary otorhinolaryngology clinic between 2014-2019 and who underwent submandibular gland excision were analyzed retrospectively. Postoperative histopathological results revealed that 108 cases were benign and 12 of cases were malignant. The most frequent benign pathology was chronic sialoadenitis in 82 cases. The most common non-malignant tumor was pleomorphic adenoma in 16 cases. Although the result obtained with fine-needle-biopsy was benign in 2 patients, the histopathological result after surgery was malignant (adenocarcinoma in 1 patient, mucoepidermoid carcinoma in 1 patient). As complications of surgery; marginal mandibular nerve injury in 11 cases (permanent in 2 cases) and hematoma in 7 cases were noted. A benign fine-needle aspiration biopsy result does not necessarily exclude malignancy in submandibular gland masses. As a result, we found that the percentage distribution of our submandibular gland histopathological results is consistent with the literature. Although marginal mandibular nerve injury is one of the most common complications of submandibular gland excision, transcervical submandibular gland excision is still a reliable surgery.

Keywords: Submandibular gland, surgery, histopathology,fine-needle aspiration biopsy, complication

Abbreviations: Computed tomography, (CT); Fine-needle-aspiration-biopsy , (FNAB); Magnetic resonance imaging, (MRI); Submandibular gland, (SG); Ultrasonography, (USG).

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Corresponding Author:
Selçuk Kuzu
Email: dr.selcukkuzu@hotmail.com

Introduction

Primary lesions of the submandibular gland (SG) are quite rare compared to parotid masses. SG lesions can be of inflammatory, cystic, or neoplastic type. We can achieve diagnosis by evaluating the patient's age, complaints, clinical findings, and assisted diagnostic methods together.

SG pathologies frequently include sialolithiasis, sialoadenitis, benign and malignant tumors. Sialolithiasis is the most often form of salivary gland disease and is the most frequent reason for salivary gland dysfunction. Its prevalence in the community is 1% and it is more in men [1,2]. 80% of saliva calculi arise in the SG, 20% in the parotid, 1-2% in the sublingual gland, and small salivary glands. Although the calculi can be seen in the canal, we often find it in the gland's hilus [3]. 3% of all head-neck tumors are seen in salivary glands. 70-80% of these arises from the parotid, 10% from the SG, and 1% from the minor salivary glands [4,5]. Approximately 50% of those seen in the SG are malignant. Among the SG malignant tumors, adenocystic carcinoma is the most common [6].

Excision is the treatment procedure of many diseases of the SG, such as sialolithiasis, chronic sialoadenitis, and tumors [7]. Lingual nerve, hypoglossal nerve, and marginal mandibular nerve may be injured because of a close neighborhood during the removal of the gland [5].

This study aims to analyze the management, outcomes, and complications of transcervical submandibular gland excision cases of a tertiary clinic and to discuss the results considering the current literature knowledge.

Materials and Methods

The Ethical Committee of Afyonkarahisar Health Sciences University approved the study with Ethical Institution Code: 2011-KAEK-2 no: 109.120 cases of SG excision of a tertiary otorhinolaryngology clinic, between 2018-2021, were analyzed retrospectively. We reviewed the anamnesis and examination findings of the patients. Age, gender, complaints, and physical examinations were noted. For preoperative evaluation, all patients underwent ultrasonography (USG) and fine-needle-aspiration-biopsy (FNAB). CT (computed tomography) and MR (magnetic resonance) imaging were also requested for patients who were reported as malignant or suspicious because of FNAB. We additionally applied neck dissections to the patients detected as malignant.

Results

75 (62.5%) of the patients were male and 45 (37.5%) were female, with an average age of 43.2 (13 years-79 years). The most common complaints were painless swelling in 70 (58%), painful swelling occurring after meals in 17 (14%), and frequent infections in 17 (14%). We detected calculi in 80 of 120 patients (67%) in USG (Figure 1,2). In terms of malignancy exclusion, we performed FNAB in all patients, and 16 patients had pleomorphic adenoma, 4 patients had flat epithelial cell carcinoma, 2 patients had mucoepidermoid carcinoma and 8 patients had atypical cells. SG excision was performed in all patients via transcervical approach. We found all the 8O patients who had calculi in USG to have calculi during surgery. We observed that there were 2 calculi in the channel in one patient. In 70 (58%) of the cases, the right SG excision was performed in 50 (42%). We performed functional neck dissection on the same side in malignant cases. Histopathological results revealed that 108 cases were benign and 12 of the cases were malignant. The most often benign pathology was chronic sialoadenitis in 82 cases. The most often benign tumor was pleomorphic adenoma in 16 cases. Although the result of FNAB was benign in 2 patients, histopathological results were malignant (adenocarcinoma in 1 patient, mucoepidermoid carcinoma in 1 patient).

We diagnosed 4 of 12 malignant cases as undifferentiated carcinoma, 5 of them were squamous cell carcinoma and 3 of them were mucoepidermoid carcinoma. We showed histopathological evaluation results in Table 1.

As complications of surgery; marginal mandibular nerve injury in 11 cases (permanent in 2 cases) and hematoma in 7 cases were noted.

Table 1. Histopathological results

Histopathologic Diagnosis	Number of Patients
Chronic sialadenitis	82
Pleomorphic adenoma	16
Indifferentiated carcinoma	4
Mucoepidermoid carcinoma	3
Squamous cell carcinoma	5
Total	120

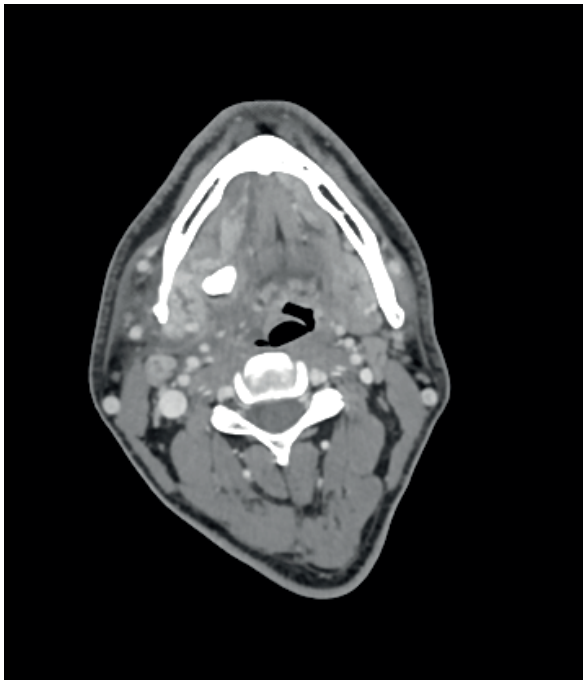

Figure 1. CT image of the submandibular gland (calculi on the right side)

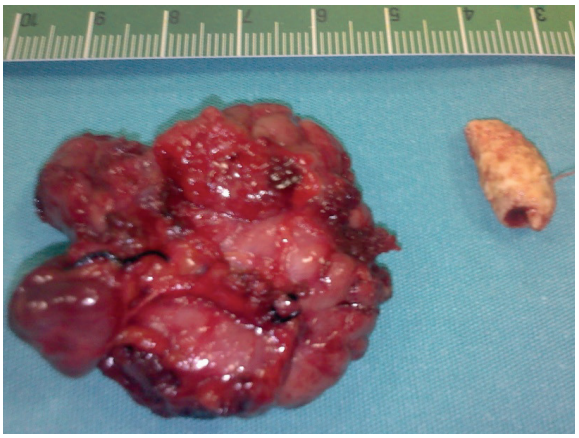

Figure 2. Right submandibular gland and calculi

Discussion

In a significant part of the SG surgeries, the cause is chronic infections of the salivary gland that develop secondary to the calculi in the salivary gland. In autopsy studies, the incidence of sialolithiasis is noted as 1%, but clinically symptomatic calculi are much rarer. 80-92% of symptomatic calculi cases originate from the SG [8]. The reasons that SG has more frequent calculi than other major salivary glands are because of the more alkaline structure of the produced saliva content, more mucin, longer gland duct, and richer in calcium and phosphate content. We consider calculi being formed because of the accumulation of calcium salts around the nucleus, which comprises spilled epithelium cells, bacteria, and salivary mucins [9]. Salivary gland calculi are usually single and maybe two or more in approximately 3-4% of patients. Unlike parotid, SG calculi shows more intra-canal placement [10,11]. In our study, 80 patients had calculi and only 1 patient had 2 calculi in the canal.

50% of SG tumors are malignant and the most often malignant pathology is adenocystic carcinoma. In pleomorphic adenoma surgery, there is a high probability of recurrence when enucleation applies to the tumor and cannot be expunged. Therefore, the total removal of the gland is recommended as a standard approach [12,13]. Neck dissection and radiotherapy should be added to the treatment when necessary. In our study, we reported 4 of 12 malignant cases as undifferentiated carcinoma, 5 of them were squamous cell carcinoma and 3 of them were mucoepidermoid carcinoma.

Among the head-neck masses, FNAB shows the lowest sensitivity for the SG masses [14]. FNAB is a method of diagnosis that can be performed easily, can be got quickly and is minimally invasive. Most salivary gland masses are superficial and sufficient aspiration material

can be got by FNAB [15].In our study, although the results of FNAB were benign in 2 patients, histopathological results were malignant (adenocarcinoma in 1 patient, mucoepidermoid carcinoma in 1 patient). In 1 patient who was also reported as sialolithiasis by USG, FNAB revealed suspected malignancy and postoperative pathology was mucoepidermoid carcinoma.

USG is the most frequent method used in the diagnosis of submandibular lesions because of its non-invasiveness, low cost, and easy accessibility [11,16]. It is especially useful in SG superficial lesions [17]. Papaspyrou reported the sensitivity and specificity of USG as 87% and 81.3%, respectively, in the diagnosis of sialolithiasis [18]. We also performed USG for all patients with whom we considered SG surgery. We also requested CT and MRI for surgical planning and evaluation of the neck for cases of suspected malignancy.

Transient marginal mandibular nerve injuries after transcervical SG surgeries are reported in the literature as high as 36%, and permanent nerve injury as high as 12% [19]. In our study, we observed the marginal mandibular nerve injury in 11 cases, 2 of which were permanent. The point to be considered minimizing the risk of marginal mandibular nerve injury is the necessity to search for the nerve by approaching the two fingers from the mandibular corpus inferiorly during the subplatysmal plane during surgery.

We can sort other surgical complications of SG excision as hematoma, hypoglossal nerve damage, lingual nerve damage, and wound infection.

Conclusion

Knowing the possible preoperative diagnosis in SG masses provides an important advantage to the surgeon in planning the operation and preparing the patient for the operation. When evaluating the mass, the patient's age, gender, duration of the disease, complaints, clinical findings, imaging methods, and FNAB should be assesed together. For patients admitting with a mass in the submandibular gland, the diagnosis was mostly chronic sialadenitis and sialolithiasis. Transcervical SG excision is satisfactory with low complication rates when surgical techniques are applied correctly.

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Conflict of interest

Any of the authors declare no conflict of interest.

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ORIGINAL ARTICLE

Is COVID-19 responsible for asthma and COPD exacerbations?

Şule Çilekar[1] **Aydın Balcı**[1] **İbrahim Güven Coşgun**[1]

1 Department of Pulmonary Diseases, Faculty of Medicine, Afyonkarahisar Health Sciences University. Afyonkarahisar / Turkey

Abstract

COVID-19 is an infectious disease that is transmitted by the respiratory tract and was first identified in the Wuhan province of China. The causative agent of the disease is SARS-CoV-2. There is little known about this disease and its agent, which affected the whole world in a short time and became a pandemic. Molecular interactions between COVID-19 and chronic respiratory diseases are unknown. In this study, we examined the patients admitted to our outpatient clinic with the diagnosis of Asthma and Chronic Obstructive Pulmonary Disease (COPD) exacerbation. We investigated how much of the exacerbations during the pandemic period are caused by the COVID-19 virus and whether there have been any changes in the treatment of and approaches to exacerbations stemming from COVID-19. COVID-19 was detected in 135 of the patients. Clinically, fever, myalgia, and headache findings were significantly more common in patients with a positive COVID-19 PCR CoV 2 test in patients who were diagnosed with an attack of Asthma or exacerbation of COPD ($p<0.001$). The number of hospitalizations, the need for intensive care, the need for ventilation support, and the number of mortality were high in asthma and COPD patients with positiveSARS- CoV-2 tests ($p<0.05$). Based on the results of our study, patients with COPD and asthma exacerbations due to COVID-19 should be evaluated from a wider perspective. As is known, chronic diseases are poor prognostic factors for COVID-19, but asthma and COPD chronic disease are prominent among them. If there is a need for different approaches for the treatment of these patients, these approaches should be determined urgently.

Keywords: COPD exacerbation, Asthma exacerbation, COVID-19

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Corresponding Author:
Şule Çilekar
Email: drsstol@hotmail.com

Introduction

At the end of 2019, a viral, contagious, atypical pneumonia outbreak was announced in Wuhan province, China. In January 2020, COVID 19 disease was reported for the first time. There are many unknown aspects of the virus, SARS-CoV-2, which causes the disease. It is known that the disease transmitted by droplets causes infections in the lungs. There are many studies in which various comorbidities are determined for coronavirus disease [1]. How many of the patients diagnosed with COVID have asthma and how many of them have the chronic obstructive pulmonary disease (COPD) is unknown. After all, asthma and COPD are comorbidities of COVID-19. We should determine how many of those who present with asthma and COPD attacks are infected with COVID-19. Asthma and COPD exacerbations are characterized by the sudden increase of existing findings. Patients experience an increase in shortness of breath, cough, and phlegm. There might be changes in the color of phlegm. Increased tiredness might be experienced. Effort capacity reduces. Although this is mostly caused by infections, it might also be due to unknown reasons [2-4]. During the pandemic period, if these patients come to the hospital with an attack, we should be alert and scan about COVID-19 Polymerase Chain Reaction (PCR). Since this infection is a disease that primarily affects the lungs, we think that patients with chronic diseases in their lungs will be more susceptible. Therefore, patients with asthma and COPD, in particular, should be investigated more thoroughly for COVID-19. Patients infected with COVID-19 should be investigated specifically for asthma and COPD disease irrespective of age and comorbid diseases, and their treatment, follow-up, and long-term results should be evaluated.

According to previous studies, cardiovascular diseases and diabetes seem to be the most important comorbidities for COVID-19. Chronic respiratory diseases, on the other hand, involve decreased lung capacity and chronic lung inflammation. In addition, respiratory rhinovirus, syncytial virus, or other coronaviruses (OC43, E229) cause significant physiological changes through the immune response and may adversely affect the respiratory tract of patients and lead to exacerbation [2,7]. In severe cases, ARDS (Acute respiratory distress syndrome) may progress [8-10]. In studies conducted so far, the rate of patients reporting chronic respiratory diseases among those infected with COVID-19 has been low. In a study of 140 cases in Wuhan, China, there was no asthma patient, and 1.4% of the patients had COPD [11]. In another multicenter study including 476 COVID-19 infected cases, 4.6% of the patients had COPD and 0% had asthma [12]. Asthma and COPD rates reported in many studies or reviews with comorbidities in patients infected with COVID-19 were very low. Later on, the rates reported in newer studies have been higher with the increasing awareness [13].

Materials and Methods

Sample population

This study was performed in the chest diseases clinic of the university hospital of the Health Sciences School. Patients diagnosed with asthma and COPD who came for examination for chest diseases during the pandemic (from 11.03.2020 to 31.03.2021) were included in the study. Patients who allowed nasopharyngeal swabs to be taken and whose SARS-CoV-2 PCR test was positive were included in the study. The tests were performed initially by the University School of Medicine until the hospital system developed in-house PCR testing protocols (Roche Cobas SARS-CoV-2 platform). The files of the patients were retrospectively scanned from the hospital database. Files of 5345 patients were scanned retrospectively. Nine hundred and forty-seven of these patients were diagnosed with asthma and 1635 with COPD (Figure 1). Most of the patients applied for exacerbations. We evaluated the smoking histories, symptoms, and examination findings of these patients. We evaluated whether their asthma was under control as well as their comorbidities and inhaled steroid use. Their COVID-19 PCR test and tomography results were also evaluated. We determined how many patients with exacerbation had positive SARS-CoV-2 test. We tried to observe patients with the corona disease who presented with exacerbation

in terms of various specific conditions.

Ethics committee approval was obtained from the ethics committee.

Statistical analysis

The SPSS software version 18.0 (Statistical Package for the Social Sciences Inc, Chicago, IL, USA) was used for statistical analysis. The Kolmogorov-Smirnov test was used to evaluate whether the variables were distributed normally. Continuous variables were expressed as mean (±) standard deviation (SD) or median (min-max) according to distribution state. Nominal variables were expressed as numbers and percentages. Categorical variables were compared using the Chi-square test. Student's t-test or Mann-Whitney U (Bonferroni) test was used to compare parametric or nonparametric variables for two independent group analyses. Statistical significance was set at $p < 0.05$.

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request. Patients provided written informed consent to take part in the study.

Results

A total of 5345 patient files were examined. These patients were those who were diagnosed with asthma and COPD and presented with exacerbation. Apart from these patients, there were 746 newly diagnosed patients (Figure 1). These patients were not included in the study. Patients with pneumonia, bronchitis, bronchiectasis, newly diagnosed asthma and COPD who presented to the chest diseases outpatient clinic were excluded from the study. The results of patients diagnosed with asthma are shown in Table 1. In patients diagnosed with asthma, a COVID-PCR swab test was taken from all those who presented with an asthma attack. PCR test was positive in 33 of 947 patients. The ratio of women to men in asthma patients with positive PCR test was 15 (45.5%) to 18 (54.5%).

Table 1. Characteristics of patients with asthma stratified by PCR Cov 2 tests

	Asthma Pcr CoV 2 Positive	Asthma Pcr CoV 2 Negative	*p* value
N=947	33	914	
Age*	57 (35-80)	61(35-80)	0.875
Female\Male n(%)	15(45.5) \ 18(54.5)	444(48.6) \ 470(51.4)	0.724
Co Morbidite DM	23 (69.7)	566 (96.1)	0.336
Co Morbidite HT	18 (54.5)	540 (59.1)	0.336
Co Morbidite HLP	20 (60.6)	613 (67.1)	0.336
Smoking History Never	25 (75.8)	547 (59.8)	0.168
Smoking History Current	5 (15.2)	192 (21)	0.168
Smoking History Former	3 (9.1)	175 (19.1)	0.168
Treatment KS	23(69.7)	574(62.8)	0.174
Treatment LABA	16 (48.5)	551(60.3)	0.174
02 SAT (%)*	96 (89-99)	96 (89-99)	0.953
Cough n(%)	23 (69.7)	565 (61.8)	0.234
Sputum n(%)	24 (72.7)	558 (61.1)	0.385
Dyspnea n(%)	16 (48.5)	431 (47.2)	0.510
Fever n(%)	27(81.8)	124(13.6)	**0.000**
Miyalji n(%)	27(81.8)	123(13)	**0.000**
Headache n(%)	24(72)	119(13)	**0.000**
Pneumonic Consolidation n(%)	30(90)	70(7.6)	**0.000**
Need for Hospital Insurance n(%)	14(42)	123(13)	**0.03**
Need For Intensive Care Unit n(%)	5(15)	1(0.1)	**0.078**
Need ventilation n(%)	5(15)	1(0.1)	**0.134**
Mortality	9(27)	0	**0.004**

DM; Diabetes Mellitus, HT; Hypertension, HLP; Hyperlipidemia, KS; Corticosteroids, LABA ; Long Action Beta Agonist
*median(min-max)

Table 2. Characteristics of patients with COPD stratified by PCR CoV 2 tests

	COPD, Pcr CoV 2 Pozitif	COPD, Pcr CoV 2 Negatif	*p* value
N=1635	164	1471	
Age*	57 (35-80)	61 (35-80)	0.875
Female\Male n(%)	65(39.6) \99(60.4)	609(41.6)\862(58.4)	0.667
Co Morbidite DM	107 (65.2)	830 (56.4)	**0.03**
Co Morbidite HT	105 (64)	954 (64.9)	0.863
Co Morbidite HLP	125 (67)	934 (61.9)	0.836
Smoking History Never	33 (20.1)	263 (17.9)	0.774
Smoking History Current	77 (47)	716 (48.7)	0.774
Smoking History Former	54 (32.9)	492 (33.4)	0.774
Treatment KS	104(63.4)	881(59.9)	0.382
Treatment LABA	102 (62.2)	946(64.3)	0.592
02 SAT (%) *	97 (89-99)	97 (89-99)	0.215
Cough n(%)	106 (64.6)	964 (65.5)	0.818
Sputum n(%)	105 (64)	958 (65.1)	0.779
Dyspnea n(%)	73 (44.5)	647 (44)	0.897
Fever n(%)	123(75)	220(31)	**0.000**
Miyalji n(%)	153 (93)	376 (25)	**0.000**
Headache n(%)	147 (89)	403 (27)	**0.000**
Pneumonic Consolidation n(%)	160 (97)	189 (12)	**0.000**
Need for Hospital Insurance n(%)	74(46)	385(26)	**0.001**
Need For Intensive Care Unit n(%)	54(32)	114(7)	**0.015**
Need Ventilation n(%)	54(32)	17(14)	**0.035**
Mortality n(%)	14(8)	13(0.8)	**0.002**

DM; Diabetes Mellitus, HT; Hypertension, HLP; Hyperlipidemia, KS; Corticosteroids, LABA ; Long Action Beta Agonist

*median(min-max)

There was no significant difference between the female to male ratio in patients with negative PCR test (p = 0.724). There was no significant difference between the comorbidities, smoking history, cough, sputum, and dyspnea symptoms of asthma patients with positive and negative PCR tests (p= 0.336-0.168-0.174-0.234-0.510). When the symptoms and complaints of the patients were evaluated, fever, myalgia, and headache findings were significantly higher in patients with COVID-19. (p <0.001).

In patients diagnosed with COPD, COVID-PCR swab tests were taken from all those who presented with exacerbation(Table 2). The PCR test was positive in 164 of the 1635 patients. The ratio of women to men in PCR-positive patients with COPD was 65 (39.6) to 99 (60.4). There was no significant difference between the ratio of females to males in patients with negative PCR test

(p= 0.724). There was no significant difference between comorbidities, smoking history, cough, sputum, and dyspnea symptoms of patients with positive and negative PCR tests (p= 0.863-0.774-0.818-0.779-0.897). Only patients with diabetes mellitus (DM) had a significantly higher history of DM. (P = 0.03) When the presenting symptoms of the patients were evaluated, fever, myalgia, headache findings were significantly higher in patients with the COVID-19 disease. (p<0.001)

The number of hospitalizations, the need for intensive care, the need for ventilation support, and the number of mortality were high in asthma and COPD patients with positive SARS- CoV-2 tests (p<0.05).

Discussion

We expect the effect of COVID-19 to be more pronounced in patients with chronic respiratory diseases, especially asthma and COPD.

Although the rate of asthma and COPD as comorbid diseases was reported to be low in studies, these rates have become higher with the increasing awareness [13]. Asthma and COPD are likely to become more severe comorbidities with increased age. In our study, we could not see a clear difference between those who were and were not diagnosed with COVID among the patients seen on an outpatient basis. In this study, we wanted to examine the impact of COVID-19 on patients, especially in those with asthma and COPD, by examining those who had positive COVID-19 PCR test. All of our patients were diagnosed with asthma or COPD and we did not make a comparison with normal healthy individuals. Significantly more patients with a diagnosis of COVID-19 had fevers, myalgia, and headache.

Evidence suggests that respiratory virus infection will severely affect patients with chronic respiratory diseases such as asthma and COPD. Therefore, lower respiratory tract infections are considered to be important risk factors for exacerbation and hospitalization [14]. The World Health Organization (WHO) classifies asthma and COPD as major public health problems. COPD was the third leading cause of death worldwide in 2016 [15]. We have known for 18 years that asthma patients are more vulnerable to respiratory viruses than those without asthma. As with other viruses, COVID-19 is a risk factor for asthma exacerbation. If the patient's asthma is not well controlled, exacerbation due to viruses may be very severe [16]. Interferon (IFN)-α, IFN-β6, and many IFN-λ7 responses are missing in the lung cells of asthmatic patients [17]. According to disease control and prevention centers and the American Academy of Allergy, Asthma and Immunology, asthma is a risk factor for severe COVID-19 [18]. According to a meta-analysis of COPD and smoking patients, SARS-CoV-2 is more severe in these patients [19]. Corona disease is more severe and more fatal in COPD [20]. It has a more severe course, especially in active smokers. Remarkable measures are needed to reduce this result. Although COVID-19 remains largely unknown, beneficial conclusions can be made through observational findings by examining patients with COPD and asthma [21]. Factors contributing to the acute worsening of COPD and asthma have been identified, but infection, including seasonal coronaviruses, remains the main trigger [22]. There are very few dedicated studies investigating the risk specific to patients with chronic respiratory diseases with a history of COPD and asthma. This study addresses this knowledge gap to help clinicians assess the situation.

Undoubtedly, we anticipate that COVID-19 will be more progressive in patients who require hospitalization. [6-10] COVID-19 disease causes advanced pneumonia in the lungs. There may be no lesions in computed tomography (CT) in the first days when the symptoms first occur [22]. Pneumonia delays the hospitalization process and recovery of symptoms in COPD patients [23]. It increases the likelihood of mechanical ventilation in COPD patients [24]. In asthmatic patients, having pneumonia increases the likelihood of rehospitalization and having an asthma attack. The effectiveness of betamimetics decreases in asthma patients with pneumonia [25]. Since the disease is thought to be more severe in patients with asthma and COPD, there have been studies suggesting hypotheses such as early antibiotic initiation and prophylactic antibiotic administration in these patients [26]. In our study, almost all patients with positive COVID-19 PCR test had pneumonic infiltration. ($p < 0.001$) In our patients included in our study, we added macrolide-derived antibiotics to reduce the progression for those with a diagnosis of COVID-19.

At the same time, based on the results of the studies, we recommended hygiene control, washing hands, and using an inhaler device with the right technique for asthma patients diagnosed with COVID-19. We recommended the use of asthma treatment more carefully and regularly, especially during the pandemic period [27-29].

In order to understand to what extent asthma and COPD will be considered as comorbid diseases in COVID-19, we need to learn the number of cases of asthma and COPD in multiple regions. Unfortunately, the numbers given are very low

and this may be due to underdiagnosis. After it was understood that asthma and COPD are some of the most important factors that can change the course of the disease, more numbers have been reported in the later studies [30]. Further, we do not know how many asthma and COPD patients were admitted to the hospital. Some patients may have chosen to never apply to the hospital [31]. The fact that COPD is not known and ignored by the public also causes underdiagnosis [32]. During the pandemic period, asthma and COPD diagnoses or reports may have been overlooked due to intense workload, near-collapse of healthcare systems, and panic in countries around the world. Not being able to use spirometry during the pandemic period was also another important factor. However, there is increasing evidence from studies that COPD and asthma are comorbid diseases [33-35]. Analysis of comorbidities was performed in 1590 COVID-19 patients across China, and a probability ratio of 2.681 (95% CI 1.424-5.048; p= 0.002) was found in terms of admission to ICU, mechanical ventilation, and death probability for COPD [36-37]. In our study, we evaluated the immediate clinical, radiological, and laboratory conditions of outpatients. All of these patients with a diagnosis of corona received inpatient treatment. Almost all patients without a diagnosis of COVID (non-COVID asthma, non-COVID COPD) received outpatient treatment. Although there were patients with a good overall condition, they received inpatient treatment because they had comorbid diseases (COPD, asthma). Moreover, some of these patients were transferred from the service to the intensive care unit (ICU) and needed mechanical ventilation. Monitoring even one of these patients in the intensive care unit is considered statistically significantly higher since all other non-COVID patients were treated as outpatients. In a multi-center study conducted in China, patients with moderate COPD infected with COVID-19 were compared with patients with severe COPD and the study found that the mortality rate was higher in patients with severe COPD [12]. In many other studies, similar differences were found between hospitalizations in the ICU, although the rates of COPD were statistically lower [34].

An important discovery regarding COVID-19 is that the virus uses ACE2 (Angiotensin-converting enzyme 2) scavenger receptor to enter cells. ACE2 is a pathway that makes it easier for the virus to enter cells. The renin-angiotensin-aldosterone system (ACE2) is a transmembrane metalloprotease expressed in a variety of tissues, including the intestines, heart, upper and lower respiratory tract. The ACE2 receptor is overexpressed in the epithelium of the bronchioles in COPD patients and asthma patients compared to the normal population. This may explain the more severe course of COVID-19 [35-37].

When we look at biological parameters in patients infected with SARS-CoV-2, we see that some proinflammatory cytokine levels and other biological parameters are increased. Many studies show a significant link between C-reactive protein (CRP), interleukin (IL)-6, lactate dehydrogenase, amyloid A protein, neutrophils/lymphocytes, D-dimer, and cardiac troponin levels, and the severity of COVID-19. These values were significantly higher in severe COVID-19 patients compared to non-severe patients [38]. This deregulation is a condition independent of having a chronic respiratory disease, however, the results will not be the same for patients with chronic respiratory diseases compared to those without chronic respiratory disease. In fact, a higher concentration of tumor necrosis factor-alpha (TNF-α) in asthma patients prior to infection compared to controls is positively correlated with bronchial hyperreactivity [39,40]. In addition, a high TNF-α level lowers the functional expiratory volume in 1 second (FEV1) in patients with asthma and COPD [41]. Therefore, it may increase the risk of exacerbation in asthma patients during SARS-CoV-2 infection.

Limitations

The most important limitation in our study was we could have include ferritin, CRP, procalcitonin, and lymphocyte values of all patients in the study. We did not include different comorbidities to rule out their effects and to associate the symptoms of the COVID-19 disease directly with asthma and COPD. We

included DM and hypertension (HT) because many patients have concomitant DM or HT.

Conclusions

COVID-19 has a severe course in patients with asthma and COPD. Hospitalization rates, ventilator support needs, and mortality rates of these patients are high. Since COVID-19 infection is a disease that primarily affects the lungs, we think that patients who already have chronic diseases in their lungs will be more affected. Therefore, especially those with asthma and COPD should be examined more thoroughly for COVID-19. Patients infected with COVID-19 should be examined specifically for asthma and COPD disease irrespective of age and comorbid diseases, and their treatment, follow-up, and long-term results should be evaluated.

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Conflict of interest

No potential conflict of interest was reported by the authors.

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ORIGINAL ARTICLE

Emotions, care difficulties and ethical problems experienced by nurses during the COVID-19 pandemic: A qualitative study

Meryem Türkan Işık[1] **Rana Can Özdemir**[2] **Elif Karadeniz**[3]

1 Fundamental Nursing Department, Faculty of Nursing, Mersin University. Mersin / Turkey
2 Department of Medical History and Ethics, Medical Faculty, Akdeniz University. Antalya / Turkey
3 Mersin University Hospital. Mersin / Turkey

Abstract

Protecting the health and safety of nurses and other health professionals taking an active role during the COVID-19 pandemic is important. Risks not understood by health professionals and inadequate working conditions cause concern and lead to ethical problems. This qualitative research study was conducted to gain an understanding of the difficulties and emotions nurses experience, and their awareness of the ethical problems experienced while providing nursing care in the COVID-19 clinic. Data was collected by two different methods; deep conversation and semi-structured interview and evaluated by content analysis. Using an empirical phenomenological approach, data analysis concluded with two main themes and eight sub-themes. The average age of the nurses is 32.8±6.7, 91.1% are female, 73.3% have a bachelor's degree. Average weekly work hours before COVID-19 pandemic was 43.3± 4.6, after the pandemic 37.8± 5.5, 86.7% expressed that the care patients with COVID-19 received was adequate. The emotions experienced by the participants are positive, negative and ambivalent. During the COVID-19 outbreak, nurses were dominated by negative emotions intensified with the ethical issues surrounding the safety of patients, colleagues, families and themselves. Nurses primarily experience ethical problems related to their, patients', colleagues' and families' safety. Positive emotions expressed by nurses; hopefulness, heroism, joy and success because of the patients' recovery, respect and emotions of gratitude. Some of the difficulties experienced by the participants are difficulties in care due to protective gear worn, difficulty reaching the physician and communication problems. Different studies can be planned regarding the factors affecting healthcare professional-patient communication during the COVID-19 care and treatment process.

Keywords: COVID-19, clinician nurse, ethical problem, professional ethics, nursing care

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Corresponding Author:
Rana Can Özdemir
Email: rcan0131@gmail.com

Introduction

During pandemics health professionals have an important role in pandemic control through safe patient care [1]. When faced with a pandemic, the purpose of the health care provision is to ensure the greatest good by saving the lives of the largest number of patients. With the principle of justice in health, individuals are expected to receive social and medical opportunities fairly [2]. Keeping in mind the principle of respect for the autonomy of the individual, it is important for health workers to respect the privacy and confidentiality of the patient, act honestly, inform the patient and obtain patient's informed consent prior treatment [3].

On the other hand, with all these principles, it is also important to protect the health and safety of nurses and other health workers who take an active role in the COVID-19 pandemic process Protecting the health and safety of nurses and other health professionals taking an active role during the COVID-19 pandemic is important. Risks not understood by health professionals and inadequate working conditions cause concern and lead to ethical problems [4]. Professional ethics may need to be suspended during an outbreak, which can be a source of stress for health workers. Limited resources, inadequate health care professionals, uncertainty, risk of infection, intense working conditions and concerns can lead to lower standards of care [5,6]. Communication breakdowns may cause difficulty where patient and employee safety may be adversely affected and problems related to team work may arise.

The American Nurses Association states in its code of ethics (2015) that nurses' primary duty is to provide services to the individual, family, and community, and also protect their own health and safety [7]. Nurses try to fulfill their responsibilities to the patients while protecting themselves and their loved ones in outbreaks. In achieving this balance, nurses can face ethical dilemmas [4]. Contemporary nursing ethics in particular highlights the relational dimension of care activities, recognizing that nurses' personal and professional lives are often based on independent relationships of responsibility and care [8]. In outbreaks, uninterrupted health care is maintained within the framework of government policies and intervention plans. In this process, nurses are asked to work in different fields, with increased work loads, and limited materials and resources. In addition to the obligation to protect their own and family's health, nurses must maintain care services, act honestly, communicate effectively, and make transparent decisions within the principle of equality framework [4,9] . Different studies listed the difficulties that nurses experience during the COVID-19 crisis as follows; (1) problems with the use of equipment during service (limited medical supplies, equipment, hospital beds, etc.); (2) issues that may arise due to witnessing patients dying without family members because of visitor restrictions (3) collective/frequent loss experience, fatigue due to workload and program changes, struggle with the concern of infecting themselves or family while fulfilling professional obligations [4,9,10]. While health workers accept risks as part of their profession, they may be concerned about restricted individual freedoms and family communication, and harming family, especially elderly with weakened immunity or chronic ailments [6,10].

This research study was conducted to gain an understanding of the difficulties and emotions nurses experience, and their awareness of the ethical problems experienced while providing nursing care in the COVID-19 clinic.

Materials and Methods

Sampling and Recruitment

The university hospital where our study took place started providing care to patients diagnosed with COVID-19 on March 26, 2020. Nurses working at the university hospital that were not on a leave and agreed to participate in the study during data collection were included in the sample, while nurses who did not meet the criteria were not. Descriptive (phenomenological) design was used in this qualitative research approach.

Data was collected using in-depth face-to-face interview technique with semi-structured

Creating Research Questions	➢	What are the emotions you experienced while caring for patients with COVID-19? What are the difficulties you experienced in caring for patients with COVID-19? What are the ethical dilemmas you experienced and your thoughts on these issues when caring for patient with COVID-19?
Sample Selection	➢	Nurses working in the COVID-19 clinic at a university hospital
Identifying the Conditions Worked in	➢	Identifying the difficulties, emotions and ethical problems experienced by nurses working in the COVID-19 clinic
Sample Selection	➢	The sample of the study seems to be suitable for the criterion sample type, which is one of the purposive sample types.
Data Collection	➢	Personal Information Form Semi-structured individual in-depth interview questionnaire
Data Analysis	➢	Content Analysis

questions between May 11, 2020 and June 01, 2020 with 45 trained nurses. The interviewer collected the data by meeting the nurses at mutually convenient times in an appropriate interview environment at the hospital and recorded the responses in writing. The interview was conducted on average in 30-45 minutes. One pilot interview which was not included in the study was conducted after which the questions were reconfigured.

Research Stages

In order to determine sample size for qualitative studies, a sampling approach is used where researchers continue collecting data through repeated processes until sufficient numbers are reached to answer the research questions (i.e saturation point reached) [11].

Data Collection

Data were collected using deep conversation and semi-structured interview. The personal information form and semi-structured interview questionnaire were prepared by the researchers in line with the literature [5, 6, 9,10]. Personal information form is designed to collect sociodemographic data such as age, gender, marital status, experience working as a nurse, weekly working hours and number of patients cared for. Semi-structured interview form identifies, emotions, the difficulties and ethical issues experienced.

Data Analysis

All interview data from the study was copied without any changes. No computerized algorithms were used in data analysis. Descriptive data of the participants was

evaluated using percentage, average, frequency and standard deviation.

Qualitative data analysis method: Qualitative research methods are extremely important in understanding the thoughts, emotions, experiences, social processes and ways of working of the research participants. Phenomenological research design, one of the qualitative research methods, reveals the experiences, beliefs and perceptions of individuals regarding a phenomenon. The purpose of phenomenological research is to understand an experienced phenomenon and its nature. The researcher then collects data from those who experience the phenomenon and develops a unified definition of the essence of that experience for all individuals. This definition includes "what" individuals experienced and "how" they experienced it [11]. In this study, in order to hide the identities and personal information of the participants after data collection, each participant was given a number from 1 to 45 in the order of their interview. The analysis was conducted independently by the two researchers with qualitative research experience who are also nurses who received their doctorate degrees in the field of medical history and ethics and took courses on this subject. In the first phase of the study, two researchers put together the recorded interviews, coded and classified them. In the second stage of data analysis, participants' responses for each topic were evaluated separately and the repetitive components were examined semantically considering the differences and similarities. The inductive approach was used in the third stage of data analysis. Steps of thematic analysis according to Braun and Clarke (2019) are (1) familirazing oneself with data; (2) creation of initial codes; (3) searching for themes; (4) reviewing themes; (5) identifying and naming themes, and (6) producing the report [12]. The entire data set was read by the researchers. As a result of the evaluation, common themes were formed that were found appropriate by both researchers. After codes were evaluated and associated with the phenomenon conceptually similar codes were classified and two main themes and eight sub-themes were created.

Ethical aspects

Board decision number 2020/319 dated 29/04/2020 from a university clinical research ethics committee and approval from the scientific research platform of the Ministry of Health on 09.05.2020 (Form name:2020-05-05T21_30_20) were obtained. After informing the nurses about the purpose of the study, oral and written consent was obtained.

Results

Research findings are given in two themes after

Table 1. Themes related to the emotions, difficulties and ethical problems

MAIN THEME	SUB-THEMES
THEME 1. Emotions	1. Positive emotions
	2. Negative emotions
	3. Ambivalent emotions
THEME 2. Difficulties and ethical problems	1. Principle of justice
	2. Safety of nurses, patients, colleagues and families
	3. Principle of autonomy
	4. Difficulties related to nurse-patient communication
	5. Principle of providing benefit and not harm

the descriptive features of the participants. The first theme includes the emotions of the participants, and the second theme includes the ethical problems encountered during care.

Descriptive characteristics of the participants

The average age of the nurses is 32.8±6.7 (min=23, max=48), 91.1% (n=41) are female, 62.2% (n=28) are married, 73.3% have a bachelor's degree (n=33), and 60% work day and night (n=27) shifts. Nurses have been working in the profession an average of 116.7±79.6 months (min=2, max=348). Average weekly work hours before COVID-19 pandemic was 43.3± 4.6 (min=40, max=56), after the pandemic 37.8± 5.5 (min=32 max=48). 37.8% of nurses indicated that they were undecided about their satisfaction in offering care to their patients with COVID-19, while 75.6% stated they were not considering leaving the profession.

Pre-pandemic, the number of patients nurses provided care on day shift was 12.3±0.9 and on night shift was 12.3±0.9. During the pandemic the number of patients cared for during day shift is 6.2±0.5, and the night shift is 4.5±0.4%, 86.7 % expressed that the care patients with COVID-19 received was adequate.

Table 1 includes the findings including the difficulties and ethical problems that nurses experience while caring for a Patient with COVID-19.

Theme 1. Emotions

1. Positive emotions sub-theme

Nurses had positive emotions (1N, 9N, 14N, 9N, 23N, 25N, 38N) such as being happy, hopeful, heroism, joy and achievement. Nurses stated,

"I did not have any problems while caring for the patients. On the contrary, I felt happy as a soldier fighting on the front lines." (2N), and

"The gratefulness of the patients being discharged makes me very happy. I am glad I am a nurse." (23 N).

Nurses stated that they felt positive emotions during the pandemic and they fondly performed their profession.

2. Negative emotions sub-theme

Although the nurses had previous clinical experience, they experienced negative emotions and excitement when they first met the patient diagnosed with COVID-19.

Nurses experience negative emotions such as fear, anxiety, anger, helplessness, burnout, lack of support, loneliness, and hopelessness (2N, 3N, 4N, 5N, 6N, 8N, 10N, 11N, 12N, 13N, 15N, 16N, 17N, 18N, 19N, 22N, 28N, 31N, 33N, 34N, 35N, 37N, 39N, 40N, 41N, 43N, 44N, 45N). Sample expressions about the negative emotions are as follows:

"When I first went into the patient's room, I felt my heart pound. I felt fear, anxiety and helplessness." (20N), and

Nurses experienced intense negative emotions in the first days of the pandemic because they did not have enough information about the disease and the process (26N, 32N).

"In the first days I started working in the unit where COVID-19 patients are located, the disorder in the unit, the uncertainty in patient care and the constant change of the doctors caused me to feel inadequacy and fear while dealing with this disease we are inexperienced about and treatment methods we just started to recognize. Those emotions have diminished these days." (26N).

3. Ambivalent emotions sub-theme

Nurses working in the COVID-19 clinic sometimes experienced two opposite emotions at the same time. Nurses state that they experience positive emotions such as hopefulness, heroism, joy, success, happiness, and negative emotions such as fear, anxiety, anger, desperation, burnout, lack of support, loneliness, and hopelessness (27N, 29N, 30N, 36N, 42N). They stated,

"When I first started, I came to the clinic with fear, anxiety and concern. I was saddened by having to shower in the hospital after work and leaving my old clinical setting. Being at the forefront of this war, looking after the patients with COVID-19 made me feel success and happiness." (21N), and

"In this pandemic, we are like pawns put forward in the game of chess. We have to do many tasks such as blood collection, blood pressure measurement and keeping records. Not being able to use the technology we have in our hands is a very bad situation! Drowning in so much paperwork is deplorable! It is not a problem to fill in these documents, but I am disturbed by the fact the disease can be transmitted by paper. Despite such difficulties, I am still happy to be a nurse." (7N).
Nurses stated that they felt like they were in a war zone and a chess game during the pandemic. In those situations one cannot anticipate the next moves and can experience intense emotions, just like the nurses stated.

Theme 2. Difficulties and ethical issues

1. Principle of justice sub-theme:

Nurses state that they have difficulties due to limited resources while caring for COVID-19 patients (1N, 2N, 3N, 4N, 5N, 7N, 10N, 12N, 14N, 17N, 18N, 20N,21N, 24N, 26N, 27N, 28N, 30N, 34N, 36N, 37N, 40N, 41N, 42N, 43N, 45N). These difficulties are;

"Insufficient materials such as masks, disposable gowns, protective glasses, gloves to take protective measures in the hospital" (1N).

"The number of nurses in the service is insufficient and the number of patients looked after is high" (4N). Nurses have stated that in situations where resources are limited, the correct distribution and use of them is important.

In the context of the principle of justice in order to reduce the risk of transmission to other patients, nurses emphasized the necessity of providing care in certain separate health institutions to patients diagnosed with or suspected of COVID-19 (14N, 21N, 26N, 27N, 32N, 33N, 34N, 35N, 39N). Their thoughts were;

"Many of them are asymptomatic, stable patients, but there is a situation that prevents them from staying in their homes. A center can be established for this patient group" (8N), and

"There should have been a clean healthcare institution without the risk of COVID-19 disease where individuals with normal diseases could go to; it would have prevented the transmission of COVID-19 disease to other patients." (14N).

2. Safety of nurses, patients, colleagues and families sub-theme

Nurses state that there are some difficuties related to the safety of themselves, patients, colleagues and their families due to concerns of getting infected and infecting others (2N 5N, 7N, 11N, 12N, 13N, 15N, 18N, 24N, 25N, 26N, 27N, 28N, 29N, 30N, 32N, 34N, 35N, 36N, 37N, 38N 39N 40N, 41N, 42N).

Nurses stated,

"I have seen nurses get infected from patients without symptoms. This situation scared me as I could endanger my family's health. I could not stay at home due to the risk." (40N) and "Despite being sick while caring for a patient with COVID-19, I had to give care" (26N).

In the context of nurse-patient communication, nurses stated that they had difficulty being patient and understanding while giving care to patients with COVID-19 (1N, 18N, 22N, 34N, 41N, 44N, 45N). Their reasons were,

"The average age of patients were high and they were agitated" (41N) and "I wanted to get out as soon as possible and have little contact" (44N).

Nurses state that they have difficulty identifying or empathizing with patients reason being (14N, 16N, 34N), "I am afraid of the possibility and risks of infection, I cannot stay in the room long." (14N).

The nurses stated the reasons for having difficulty in giving care to the fatal patients with COVID-19 (7N, 8N,13N, 21N, 34N) as;

"I have difficulty in reaching the doctor. When the doctor comes, it can take a long time to dress up to take isolation measures" (8N) and "It is difficult to carry out maintenance and treatment procedures with isolation equipment." (13N).

3. Principle of autonomy sub-theme

In the context of the ethical principle of respecting patient autonomy, nurses stated that they had

difficulty in informing the patient about the care process (5N, 16N, 18N, 21N, 24N, 25N, 26N, 27N, 28N, 34N). Some of their statements were,

"Because patients experience anxiety and concern, they do not accept information about their condition." (34N) and "There is not much information about the exact clinical course of the disease, I may not be able to answer the questions." (18N). Informing the patient is an approach that supports autonomy. However, sometimes environmental or individual factors can negatively affect the disclosure process.

4. Difficulties related to nurse-patient communication sub-theme,

Although nurses believe nurse-physician-patient relationship is a very important component in care and treatment practices, they experience difficulties in maintaining and continuing this relationship (8N,12N, 23N, 30N, 32N, 34N). The reasons stated were;

"The doctor changes daily and I have difficulty reaching and communicating to him/her." (30N), and "The number of staff is not enough for this, there is constant staff rotation in the unit" (23N). Healthcare professional-patient communication forms the basis of the care and treatment process. Communication problems negatively affect the trust and treatment process.

Although the nurses knew the kind of special care and treatment the patients in the service have a right to receive (15N, 16N, 18N, 28N, 30N), they explained the reasons for the difficulties as;

"The number of employees is not enough" (15N) and "It takes a long time to prepare by taking isolation measures before entering the room" (18N).

5. Principle of providing benefit and not harm,

Within the context of do no harm principle, nurses state administrative nurses make plans to reduce the risk of transmission by making clinical changes. Nurses stated that they did not want to leave the COVID-19 unit and work in other clinics (4N, 7N, 5N, 20N, 26N, 34N, 36N, 37N, 38N, 39N, 44N, 45N). Their reasons were, "There is not enough protective equipment in the other clinics, I feel I am protected from the disease more in this clinic than other clinics. I don't know if a patient is COVID-19 positive in another clinic, it's more risky." (37N) and "I have a good command of the unit I work in, I want to make care applications easy to my patients." (34N)

The equipments available for treatment and care in the COVID-19 are different than the other clinics. Therefore, nurses have preferred to work in clinics that are properly equipped to protect themselves, their relatives and patients.

Discussion

This research revealed the difficulties, emotions and ethical problems experienced by nurses while giving nursing care in the COVID-19 clinic. It was determined that the nurses were experiencing negative emotions, ethical problems related to safety and communication problems in the first place.

There is a need to take measures to reduce moral distress in nursing during the pandemic since our results indicate that our participants were in the younger age group. One third of the participants were undecided about satisfaction with providing care to COVID-19 patients and the majority did not intend to leave their profession. Nurses cared for fewer patients and had less working hours during the pandemic. Sun et al.'s determined that the number of patients cared for increased and the workload of nurses increased proportionally by 1.5-2 times the normal hours [13]. The lower rate of satisfaction can be affected by many reasons, such as limited resources and safety risks. The fact that nurses' patient care satisfaction is not high during the pandemic process also raises important care ethics problems that may occur in the patient care process.

Emotions

Nurses experience positive emotions such as hopefulness, heroism, joy and success because of the patients' recovery, respect and emotions of gratitude. A study reported that nurses were happy, despite the difficult conditions (13). The approaches supporting this emotion are

the patients' sense of respect, appreciation and gratitude which is parallel to our study. More than half of the nurses in our study experienced negative emotions. Sun et al.'s noted that nurses working in intensive care units experienced intense negative emotions in early stages while caring for COVID-19 patients[13]. Studies have shown that during different pandemics health professionals have difficulties such as emotional stress [14] and burnout [15]. In our study, some of the nurses stated that they had ambivalent emotions. These were positive emotions such as being hopeful, heroism and joy; and negative emotions such as fear, anxiety, loneliness and hopelessness. Nurses expressed a decrease in negative emotions over time. A similar study indicated that nurses experienced positive and negative emotions together during the epidemic, while negative emotions predominated at early stages, positive emotions emerged gradually [13].

Difficulties and ethical problems

In our study, nurses indicated experiencing difficulties with fair use of limited resources when caring for patients. These difficulties were lack of adequate number of staff and personal protective measures. In studies conducted with patients with COVID - 19 diagnoses, the lack of protective equipment caused fatigue and discomfort in nurses [13,16] and the professional obligation to provide care by taking appropriate personal measures within the framework of professional ethics is emphasized [4,9,17]. In order to reduce the risk of transmission, the nurses in our study emphasized the necessity of providing care to patients diagnosed with or suspected of having COVID-19 in certain seperate health institutions. Although there is no social expectation during the pandemic, nurses always perform their duties with personal commitment to their profession [18]. Most of the nurses indicated that pandemic hospitals should be separate and that everyone has the right to receive health care in line with their needs emphasizing the principle of justice and their concerns about the risk of transmission.

Nurses stated the difficulties they experienced in caring for their patients were due to concerns of the risk of transmission and the safety of themselves, their patients, colleagues and their families. Nurses with elderly family members, with chronic illness and children in particular were found to have serious concerns in ensuring safety. Health professionals working during the pandemic have ethical obligations, such as not harming patients and their own relatives [4,7,9,18,19]. Sun et al.'s notes that nurses who live with their parents prefer to hide the fact that they work in COVID-19 unit, that they feel helpless and guilty after being separated from their parents and those who live with elderly and children are particularly concerned [13]. Ayanian concluded that healthcare professionals' concerns about COVID-19 transmission arising from workplace exposures are more intensely experienced by those who have family members that are elderly or with immunocompromised or chronic diseases [20]. These results parallel our findings.

Obstacles can be experienced in nurse-patient communication, especially when there is uncertainty. Nurses in our study emphasized that they had difficulty being patient and understanding. While nurses wanted to have less contact with the patients because of the risk of transmission, older patients had high agitation levels, which led to difficulties in communication and empathy. In a study conducted in intensive care units, during epidemics employment of professionals who can use evidence-based practices in care, evaluate patients psychosocially, approach them with kindliness and compassion, and have critical thinking skills were emphasized [21]. In our study, nurses stated that although they believed nurse-physician-patient relationship was a very important, they had difficulties in maintaining and contuniung this relationship during the pandemic. Nurses explained the factors that negatively affect this relationship as the daily rotation of physicians, having difficulty reaching and communicating with the physician and having continuous staff rotation in the units. In a different study, it was stated that patients in intensive care units had difficulty communicating with health professionals working with personal protective measures

and experienced anxiety, stress and fear due to non-disclosure of health professionals who visit continuously without introducing themselves [22]. Except in cases where the patient refuses to be informed, information is important in context with patient's autonomy rights.

Nurses in our study stated difficulties in providing care to the dying patients in isolation as difficulties reaching the physician and working with personal protective measures. In one study, it was reported that the quality of nursing care in intensive care units of patients with suspected or positive COVID-19 diognoses was affected negatively by the treatment of additional diseases, increased workload, stressful work environment and possibility of transmission [22]. Strengthening the emotions of kindliness and compassion of healthcare professionals who care for the dying is important in increasing empathy and decreasing fear [23]. Dying patients have the right to die with dignity. It is the primary responsibility of the nurse to evaluate the patient holistically and to provide care. Meeting the needs of the dying patient and family 's an approach that contributes to the peaceful death.

In our study, nurses stressed that they had difficulty informing the patient about the care process and experience ethical difficulties. The nurses said patients who were in a state of concern and anxiety, who did not have relatives with them, who did not know the process did not understand or accept the information given. In addition, nurses had difficulty answering the patients' questions because they did not have much knowledge about the course of the disease. It is essential to inform the patient within the framework of the principle of autonomy. however, nurses have ethical problems in informing patients in this process.

Nurses in our study are aware that patients diagnosed with COVID-19 have the right to receive special care and treatment. However, the nurses faced difficulties in performing this due to the lack of adequate number of employees, long process of taking personal protective measures, and difficulty of care with these measures and sweating. Also, demanding working hours, difficulty accessing protective equipment, daily stress and concern for personal health and family safety caused difficulties in providing care during the pandemic [13,20].

It is important for managers in institutions to make the necessary planning in managing the pandemic process. In our study, nurses stated that executive nurses made plans to reduce the risk of transmission by frequent rotation of nurses; however, most of the nurses did not like this approach. Nurses said there were not enough protective measures in other clinics and since they did not known whether patients in other clinics had COVID-19, they expressed concerns of it being more risky. Therefore, nurses find it safer to work in units with COVID-19 patients. It is important that appropriate policies are developed to increase the motivation of nurses in the pandemic process, ensuring patient safety, and employee satisfaction [17,20,24,25].

Conclusion

This study investigated the difficulties and ethical problems experienced by nurses of COVID-19 patients using qualitative methods. Nurses are experiencing significant amounts of negative emotions, and foremost facing ethical problems related to safety. Nurses sometimes had difficulties in caring for patients due to the uncertainty in the care process and the excessive anxiety of the patients. These difficulties were determined to be mostly safety-related problems and concerns. The personal protective gear worn by the nurses in clinics to protect themselves and their surroundings also causes difficulties in patient care in addition to not being able to reach the physician during the care process. Due to the environmental and individual related reasons, difficulties were experienced in nurse patient communication and interaction.

During the pandemic, more studies should be planned to identify satisfaction with working conditions, motivation and burnout of nurses and reveal the factors that affect them. In addition, different studies can be planned regarding the factors affecting healthcare professional-patient communication during the COVID-19 care and treatment process. Since COVID-19 is a new

disease and the medical system and culture of different countries vary, research is needed on the challenges and ethical problems experienced by nurses.

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Conflict of interest

No potential conflict of interest was reported by the authors.

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ORIGINAL ARTICLE

Reproducibility of choroidal thickness measurements in hemodialysis patients: A spectral domain optical coherence tomography study

Mehmet Murat Uzel[1] **Özgür Eroğul**[2] **Leyla Eryiğit Eroğul**[3]

Ayşe Güzin Taşlıpınar Uzel[4] **Avşin İbiş**[5] **Hamidu Hamisi Gobeka**[6]

1 Department of Ophthalmology, School of Medicine, Balıkesir University. Balıkesir / Turkey
2 Department of Ophthalmology, Faculty of Medicine, Afyonkarahisar Health Sciences University. Afyonkarahisar / Turkey
3 Ophthalmology Clinic, Afyonkarahisar State Hospital. Afyonkarahisar / Turkey
4 Ophthalmology Clinic, Balıkesir State Hospital. Balıkesir / Turkey
5 Nephrology Clinic, Afyonkarahisar State Hospital. Afyonkarahisar / Turkey
6 Department of Ophthalmology, Faculty of Medicine, Ağrı İbrahim Çeçen University. Ağrı / Turkey

Abstract

Aside from general body fluid fluctuation, hemodialysis (HD) may cause changes in ocular fluid balance, resulting in changes in subfoveal choroidal thickness (SFCT) and other ocular parameters. As a result, the purpose of this study was to investigate the effects of hemodialysis on the reproducibility of SFCT measured by spectral domain-optical coherence tomography (SD-OCT). Twenty-six HD (26 eyes) patients had their pre- and post-HD SFCT measured, and the results were compared for reproducibility. Following a thorough ophthalmic examination, SD-OCT was performed three times in a row during a single session. The same physician measured SFCT after automatically identifying choroid with a software caliper. Reproducibility parameters, including intra-class correlation coefficients (ICCs), coefficients of variation (COV), and test-retest variability (TRTV) were then calculated. Males made up 53.85% of the 26 HD patients. There was a significant IOP difference between pre-HD (16.42±3.14 mmHg) and post-HD (14.21±2.78 mmHg) (P<0.001). SFCT decreased significantly from pre-HD 243.50±10.23 µm to post-HD 234.29±9.41 µm (P<0.001). ICC value increased significantly after HD, rising from 0.948 to 0.989 (P<0.001, for all). Pre- and post-HD COV values were 1.6% and 0.65%, respectively. Also, pre- and post-HD TRTV values were 7.864±1.996 µm and 3.074±1.536 µm, respectively. In this study, the reproducibility of SFCT as measured by OCT was lower during pre-HD compared to post-HD. Post-HD SD-OCT assessment appears to improve the reliability of clinical outcomes in the diagnosis and monitoring of HD patients.

Keywords: Hemodialysis, spectral domain-optical coherence tomography, subfoveal choroidal thickness, reproducibility

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Corresponding Author:
Özgür Eroğul
Email: ozgur_erogul@hotmail.com

Introduction

Hemodialysis (HD) is a life-saving treatment for patients with end-stage renal disease. Uremia, volume load, and serum osmolality in the body all decrease secondary to HD [1]. Changes in ocular fluid balance may also result from this procedure. Intraocular pressure (IOP), corneal thickness, retinal nerve fiber layer, as well as subfoveal choroidal thickness (SFCT) have been reported to change following HD [2-4].

Our understanding of ocular structures is growing in tandem with a rapid advancement of optical coherence tomography (OCT) technology. More precise choroidal measurements have been made possible thanks to enhanced depth imaging-OCT. Choroidal thickness has been shown to be affected by some diseases and to be an important predictor of treatment response in recent studies [5-9]. As a consequence, accurate SFCT measurements are critical in assessing and monitoring certain retinal diseases.

Reproducibility of SFCT has been a subject of several studies, which were performed in homogeneous groups of patients [10-14]. Furthermore, reproducibility of SFCT measurements in patients with various types of retinal fluid was found to be lower in patients with subretinal fluid [11].

We therefore hypothesized that changes in body fluids would also influence SFCT measurements before and/or after HD for similar reasons. As a result, we intended to look into the effects of HD on SFCT reproducibility using spectral domain-OCT (SD-OCT).

Material and Methods

Study design and participants

Twenty-six eyes from 26 patients who received HD therapy secondary to diabetic nephropathy at Afyonkarahisar Health Sciences University Ethics Committee (Approval Code: 2011-KAEK-2; 07 September, 2018). Hospital were included in this comparative study. The study protocol complied with the ethical principles of the Declaration of Helsinki and received full approval from the institutional review boards of Afyonkarahisar Health Sciences University Ethics Committee (Approval Code: 2011-KAEK-2; 07 September, 2018). Prior to the study, all patients provided written consent. Our study included patients who underwent HD three days a week due to an end-stage renal failure, had an axial length (AL) of 22-26 mm, no retinal pathology, as well as no prior intra and/or extraocular surgery.

Ophthalmic examination and optical coherence tomography imaging

A comprehensive ophthalmic examination was performed before HD, including measurement intraocular pressure by Goldmann applanation tonometer (Goldmann; Haag-Streit AG, Köniz, Switzerland), axial length by AL-Scan (Nidek CO., Gamagori, Japan) as well as anterior and posterior segment slit-lamp biomicroscopy before and after full pupil dilation.

Spectral domain-OCT (Spectralis, Heidelberg Engineering, Inc., Heidelberg, Germany) scanning was performed 30 minutes before and after HD using the Macula Line Raster scanning protocol. The measurements were taken three times, with two-minute rest periods in between. Subfoveal CT was measured by a physician who was blinded to the patients as a vertical distance between the outer boundary of the retinal pigment epithelium-Bruch membrane layer and the manually drawn sclera-choroidal interface automatically determined by SD-OCT from the subfoveal region.

Statistical analysis

Statistical analysis was performed using SPSS v. 21.0 for Windows (SPSS, Inc., Chicago, IL, USA). The Shapiro-Wilk test was used to determine the normality of the data distribution. Since variables were normally distributed, the paired-t test was used to compare them before and after HD. Reproducibility was analyzed using the intra-class correlation coefficient (ICC), coefficient of variation (COV), as well as test-retest variability (TRTV). For choroidal measurement comparison, the mean of the three scans was used. Data significance level was set at $P<0.05$.

Table 1. Demographic characteristics and other findings of HD patients

Parameter	($\bar{x}$±s)		
HD duration (months)	56.54±7.76		
AL (mm)	23.76±1.45		
	Pre-HD ($\bar{x}$±s)	**Post-HD ($\bar{x}$±s)**	**P-value**
IOP (mmHg)	16.42±3.14	14.21±2.78	**0.001**
SCT (μm)	243.50±10.23	234.29±9.41	**0.001**
$\bar{x}$: Mean; s; Standard deviation; HD: Hemodialysis; AL: Axial length; IOP: Intraocular pressure; SCT: Subfoveal choroidal thickness; P<0.05 was accepted as statistically significant.			

Table 2. Intra-session reproducibility of consecutive SFCT measurements based on changes in pre- and post-HD ICC, COV, and TRTV values.

Parameter	Pre-HD	Post-HD	P value
ICC (95% CI)	0.948 (0.895-0.976)	0.989 (0.977-0.995)	0.001
COV ($\bar{x}$±s) (%)	0.016±0.004	0.006±0.003	
TRTV ($\bar{x}$±s) (μm	7.864±1.996	3.074±1.536	
$\bar{x}$: Mean; s; Standard deviation; HD: Hemodialysis; SFCT: Subfoveal choroidal thickness; ICC: Intra-class correlation coefficient; COV: Coefficient of variation; TRTV: Test re-test variability. P<0.05 was accepted as statistically significant.			

Results

Twenty-six HD patients (female-to-male: 14:12) who met the predetermined inclusion criteria were investigated. These patients were 46.23±9.54 years old on average. Table 1 displays demographic characteristics of the study patients. There was a statistically significantly decreased IOP following HD (P<0.001). When compared to pre-HD measurements, there was also a statistically significantly decreased post-HD SFCT measurements (P<0.001).

Post-HD ICC increased statistically significantly when compared to pre-HD ICC (P<0.001, for all). Pre- and post-HD COVs were 1.6% and 0.6%, respectively. The pre-HD TRTV measured 7.864±1.996 μm, while the post-HD TRTV measured 3.074±1.536 μm (Table 2).

Discussion

Pre- and post-HD reproducibility of SFCT measurements in diabetic nephropathy patients were investigated in this study. Overall, pre-HD SFCT measurements were associated with significantly lower intra-session reproducibility values, including ICC, COV, and TRTV, compared to post-HD SFCT measurements.

The relationship between SFCT and various retinal diseases is becoming more understandable as OCT technology advances. Several studies have focused on the role of SFCT in especially diabetic retinopathy and its treatment. One study reported choroidal thinning prior to diabetic retinopathy, as well as the association of thin choroid with microalbuminuria [15]. Another study described the short-term anatomic and functional responses to anti-VEGF therapy in patients with thicker SFCT, emphasizing the significance of SFCT as a prognostic marker in the treatment of diabetic macular edema [16]. Moreover, several factors, including AL, age, body mass index, diurnal variation, and systolic blood pressure, have been reported to affect choroidal thickness in healthy individuals [17-20].

Subfoveal CT has also been measured before and after HD in previous studies, with the majority of them reporting lower post-HD SFCT values [21-25]. This could be ascribed to a decreased osmotic gradient in serum and choroidal interstitium as a result of post-HD decreased serum osmolality. Lower SFCT has previously been correlated with lower serum osmolality, body weight, and a low systolic blood pressure [23]. In addition to a significantly lower post-HD IOP (P<0.001), our study's findings of a significantly lower post-HD SFCT compared to pre-HD SFCT (P<0.001)

in diabetic nephropathy patients who had HD for nearly five years were in line with previous reports. An increase in post-HD SFCT, on the other hand, has been observed in another study [26]. This finding, which is inconsistent with our study, could have resulted from misleading measurements caused by the low reproducibility of pre-HD SFCT.

Various studies have addressed SFCT reproducibility, and it has been noted that SFCT reproducibility ranges between 0.89 and 0.99, especially in healthy individuals [27,28]. In a study of patients with neovascular age-related macular degeneration, swept-source OCT was found to be capable of detecting SFCT changes of ≥57.2 μm [14]. The same study also noted that SFCT changes >35 μm in SD-OCT could be detected in the same group of patients. Swept-source OCT may also be used to measure SFCT with high reproducibility in diabetic macular edema patients [13]. Furthermore, SFCT measurements taken from the edge of choroidal stroma have been reported to be more reproducible [29]. Contrastingly, another study found no difference in SFCT reproducibility between healthy subjects and patients with diabetic retinopathy [10]. And, the presence of subretinal fluid has been shown to decrease CT reproducibility, which has been attributed to fluid signal attenuation and shadowing caused by the subretinal fluid [11]. Besides, several studies have found that as choroid thickness increases, reproducibility decreases [11,12]. Pre-HD SFCT measurements had lower reproducibility in our study. Several hypotheses have been advanced to explain the lower pre-HD SFCT measurements. As previously stated, it is possible that increasing SFCT has a negative impact on reproducibility. Another possibility is that chronic renal failure may cause an increase in extracellular fluid volume, resulting in hemodynamic instability.

We acknowledge the limitations of this study. Importantly, the size of the study population was just not high enough to improve the efficacy of our study. The measurements were carried out only horizontally. Moreover, we evaluated only the reproducibility of SFCT, which was the goal of our study. Again, residual influencing factors might have led to an unexplained analytical preference. Thus, long-term prospective studies with a larger sample size may yield clinically useful results in determining relatively accurate reproducibility of SFCT and other ocular microstructures not only before but also after HD in diabetic patients with and/or without diabetic nephropathy

Conclusions

Besides changes in systemic hemodynamics, HD may result in ocular fluid imbalance, which may be accompanied by changes in SFCT and other ocular parameters. Reproducibility of SFCT has been studied using enhanced depth imaging-OCT technology, but mostly in homogeneous groups of patients, with choroidal thickness in patients with different types of retinal fluid associated with lower reproducibility. Changes in body fluids are expected to influence SFCT measurements before and/or after HD for similar reasons. Significant changes in post-HD SFCT as well as reproducibility were observed in HD patients with diabetic nephropathy. Post-HD OCT assessment during diagnosis and follow-up of HD patients may be associated with more consistent outcomes. Regardless, determining the consistent and accurate consequences of HD on SFCT measurements, as well as its reproducibility, necessitates large-scale randomized OCT studies.

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Conflict of interest

The authors claim no conflict of interest.

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REVIEW

Sadness in nurses during the COVID-19 pandemic

Serpil Uyar[1] **Fatma Eti Aslan**[2] **Hayat Yalın**[2]

1 Department of Nursing, Faculty of Health Science, Afyonkarahisar Health Science University. Afyonkarahisar / Turkey
2 Department of Nursing, Faculty of Health Sciences, Bahçeşehir University. Istanbul / Turkey

Abstract

This study aimed to draw attention to sadness and ensure that the sense of sadness experienced by nurses during the COVID-19 pandemic is noticed. During the pandemic, the sadness of nurses who have the most and close contact with patients should be evaluated. Support programs that would increase psychological resilience should be implemented for them to experience sadness at the lowest levels possible. If healthcare system managers improve the conditions that lead to nurses experiencing sadness and provide the necessary support to them, nurses will feel safe and perform their jobs willingly and enthusiastically.

Keywords: Sadness, COVID-19, pandemic, nurse

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Corresponding Author:
Serpil Uyar
Email: serpilrayu@gmail.com

Introduction

Every person encounters countless problems throughout his or her life. People can sometimes overcome these problems, and sometimes they can't. When it cannot be overcome, various psychological problems develop, especially sadness [1,2]. The Turkish Language Association defines sadness as sorrow, grief and distress [3]. In an essay about psychology dictionary, sadness is defined as "an emotional state caused by a spiritual agony" [4].

The COVID-19 pandemic has emerged unexpectedly. It started with the first case of COVID-19, detected on December 31, 2019, in Wuhan, China. COVID-19 infection was declared as a pandemic by the World Health Organization (WHO) on March 11, 2020, when the first case in Turkey was detected also [5]. COVID-19 infection is a disease transmitted from person to person through the respiratory system, with fever, shortness of breath, cough and radiological findings concordant with bilateral lung infiltration. Furthermore, in severe cases, severe acute respiratory diseases, pneumonia, kidney failure may occur and may even result in death [6].

Unexpectedly arisen problems have affected all humanity. It has led to the hindrance of feeling safe, one of the basic needs of people [7]. During the COVID-19 pandemic, various impacts have been observed in the health systems and employees of many countries. Nurses, in particular, are at high risk for the COVID-19 infection due to their close contact with patients and the round-the-clock care they provide for patients. This is the cause of extreme stress. The feeling of sadness has developed in nurses due to not feeling safe, extreme stress, uncertainty about the process. It is thought that nurses have increased levels of sadness together with the psychological distress experienced due to reasons such as lack of personnel, beds, medical devices and personal protective equipment, role conflicts and most importantly, the fear of getting infected and infecting their relatives [8].

There is no definite information about how the COVID-19 pandemic will continue and when it will end [9]. Therefore it was aimed, in this review, to draw attention to sadness and ensure that the sense of sadness experienced by nurses during the COVID-19 pandemic is noticed. The feeling of sadness experienced by nurses during the COVID-19 pandemic has been discussed in two aspects: the individual sadness of the nurses during the COVID-19 pandemic and the sadness experienced by the nurses as a result of the health conditions and losses of the patients they provide care for and the individuals around them.

The Sadness Experienced by Nurses during the COVID-19 Pandemic

The sadness experienced by nurses during the COVID-19 pandemic has been discussed from two aspects as below:

1.The Individual Sadness of Nurses during the COVID-19 Pandemic

Nurses, in addition to providing health care, are also human beings. They are also someone's child, spouse, mother, father, friend, neighbor, and relative. Along with the risk of getting infected themselves, they experience anxiety due to the risk of transmitting the disease to their relatives [10]. While people are even worried about getting close to each other these days, nurses provide close-contact care to patients one-on-one. When nurses do not feel safe while performing their duties, they cannot perform their jobs willingly and enthusiastically, and they experience sadness [11]. Maben et al. reported in their study conducted on the subject that nurses do not feel safe due to the inadequacy of personal protective equipment in the working environment [12]. In another study by Karasu et al., an intensive care nurse stated that she or he felt vulnerable during the COVID-19 pandemic and that she/he could not go home where she/he lived with her/his sister and aunt due to the risk of transmitting the disease, resulting in her/him experiencing deep sadness [13]. In another study, they stated that they constantly stayed in the hospital for 2-3 weeks to reduce the risk of infection, worked long hours, isolated themselves in various facilities for 2 weeks before going home [14]. An intensive care nurse expressed his or her feeling

as such: "I'm glad I'm not married. From what I've seen from my friends, I see that having a spouse and children causes twice the stress in this period. My friends told their experiences that they cannot hug, kiss, see and embrace their children" [13]. Nurses have been observed to experience difficulties due to uncertainties about how long the COVID-19 pandemic would last, how much more restrictions would be imposed on life, and whether nurses would get infected with the virus themselves or their relatives, and the possibility of transmitting the disease to their relatives themselves [15]. A study conducted in Turkey found that nurses and midwives have had difficulties in coping with uncertainty the most since the beginning of the pandemic [16]. In other studies, the uncertainty in the COVID-19 pandemic has shown that nurses who come into direct contact with the deadly virus experience high levels of anxiety and, accordingly, sadness [9].

Due to the increasing number of patients during the COVID-19 pandemic, there has been a need for more nurses, especially in emergency services, intensive care units, and COVID services. Besides, the workload of non-infected nurses was observed to increase much more when nurses had to take a break from work due to getting infected with the virus. Due to this increasing need for nurses, nurses from different fields had to work in fields that they were not used to. Therefore, the stress of both the newly allocated nurse and the nurses working with her or him has increased [17]. The increasing need for more nurses and excessive workload has been considered as the reasons for the sadness of nurses in many studies [12, 18-20].

The nurses have been observed to be subject to stigmatization in society since them, their family members or acquaintances have had COVID-19 [19,21]. An intensive care nurse expressed the feeling of stigmatization as such: "The worst thing is that people stay away from you as if you had the plague" and "I sometimes feel like I am being punished with these perspectives of people. Moreover, there are times when I feel isolated like a desert, like an island" [13].

2. The Sadness Experienced by the Nurses during the COVID-19 Pandemic as a Result of the Health Conditions and Losses of the Patients They Provide Care for and the Individuals around Them

The most basic strategy for preventing human-to-human transmission of COVID-19 infection is isolation, i.e. physical separation of people [22]. Because of the obligation to comply with these isolation rules, relatives of the patients could not be with their patients even in the last stages of their life. During the COVID-19 pandemic, nurses mainly began providing care to patients in the end-of-life period and provided remote communication between patients and relatives of patients who could not see them [9]. During the COVID-19 pandemic, with significantly increased patient and death rates, the individuals that nurses provide care for were their colleagues or relatives sometimes. Many losses have been witnessed [12,18]. This witnessing has happened by seeing people die away from their loved ones, make end-of-life conversations through the phone or take place with the images where the person connected to many devices such as breathing devices. Nurses have experienced sadness due to this situation, which is not in line with a respectable death, and they have experienced disappointment also with the deaths of the patients they provided care for [23,24].

Due to the uncertainty of the COVID-19 pandemic, the communication between nurses and patients and their relatives has been adversely affected by the constantly changing and unknown nature of the process. A loss of trust has developed, especially in communication [25]. Furthermore, nurses, along with people all over the world, also experienced a lack of social relationships during the isolation process in the COVID-19 pandemic. As a result, an increase in feelings of loneliness, anxiety on illness and financials were observed. Their intense concern about these issues has been a cause of sadness for both themselves and all people [24,26].

Various practices have been carried out in different parts of the world for the sadness experienced by nurses who are at high risk for

COVID-19 infection during the pandemic.

Practices in Regards to Sadness Experienced by Nurses during the COVID-19 Pandemic

In Wuhan, China, where COVID-19 infection first began to appear, mental health professionals have set up teams to provide psychological support to nurses and other medical staff. These psychological support teams provided counseling, psychotherapy services, and also distributed psychological support brochures [19]. Especially in the first months of the pandemic due to the number of cases and the strain of the Health System, Italy was one of the countries on the spotlights. In Italy, steps have been taken due to psychological disorders of health workers and Post-Traumatic Stress Disorder (PTSD) observed in some employees. Mindfulness-Based Cognitive Therapy and meditation techniques were used to support the employees at the Policlinico Hospital, one of the largest university hospitals in Milan [27].

Looking at the health care systems and the support provided, Lithuania and Romania were observed to provide the necessary psychological support, childcare support, financial support and other support to health workers [28]. In the United States, one of the countries that experienced pandemic the most severe way, awareness and donation activities were carried out by non-governmental organizations and associations. For example, support was provided to the fund, allocated for nurses, which was announced by the American Nurses Association on its website [29]. On the other hand, the Faculty of Nursing and Health Studies at Georgetown University, one of the largest universities in the United States, has explained how they can support nurses and healthcare professionals during this difficult period through their website [30]. In the US where more than 3,600 healthcare professionals lost their lives in the first year of the pandemic, it was observed that sufficient support was not provided by the state [31].

In Turkey, phone lines have been established by the Ministry of Health General Directorate of Treatment Services and mental health professional organizations in order to provide mental health support for healthcare workers whose workload has increased during the COVID-19 process. These are the Turkish Psychiatric Association Mental support line for healthcare professionals (08505326676) and the Coronavirus Support Program (KORDEP) online support line (08503050034). A mobile application called the Mental Health Support System (RUHSAD) has also been developed to support healthcare professionals [32]. Various information brochures have been published by the Turkish Psychiatric Association, which can be accessed under the COVID-19 and mental health sections at psikiyatri.org.tr. Guidelines for healthcare professionals to avoid burnout in the COVID-19 pandemic, recommendations to healthcare institution managers for the protection of mental health of healthcare professionals and a guide for physicians and healthcare professionals to cope with fear and anxiety of COVID-19 are some of these brochures [33].

In Turkey, additional payments were made to healthcare professionals during some periods of the pandemic. Especially in the first months of the pandemic, healthcare professionals were provided with facilities where they could stay free of charge when they did not want to go to their families. Moreover, the Turkish Nurses Association and the Turkish Intensive Care Nurses Association have closely monitored the developments in Turkey and around the world since the announcement of the first case. Communication with nurses has been actively maintained through the telegram network (a secure instant messaging service with multi-platform support). Reports were prepared for the problems experienced by nurses and forwarded to the relevant departments of the Ministry of Health. Various online activities were conducted, including scientific and up-to-date information, aimed at providing information to healthcare professionals and the public. Care algorithms and personal protective equipment usage videos were prepared and shared [34,35].

Conclusion

During the COVID-19 pandemic, unknown when it will end, the sadness of all healthcare professionals, nurses, in particular, who have

the most and close contact with patients, should be evaluated. People whose basic needs are hindered are likely to experience sadness due to the inability not to be provided with a sense of trust. Managers in the healthcare system should analyze the needs of the nurses and other healthcare personnel at regular intervals. Acute problems observed should be taken into account and appropriate solutions to be developed. All healthcare professionals should be provided with adequate equipment support and a safe working environment. Basic needs such as nutrition and rest during working hours should be met. Nurses who need help with child or parental care while they are at work should be provided with the necessary support. Health checks should be carried out at regular intervals to determine the risk and safety conditions of healthcare professionals. Those working in particularly risky units related to COVID-19 disease should be closely monitored. Also, an increase in sadness may occur with the psychological problems experienced. Psychological problems along with sadness should be evaluated.

For nurses, to experience the sadness least possible way during the COVID-19 pandemic, various activities should be planned. With the in-service training, support programs that increase psychological resilience such as coping with stress, relaxation methods and crisis support systems should be implemented in institutions. In the activities carried out for this purpose, due to the COVID-19 pandemic, attention should be paid to the isolation and the social distancing rules. In this direction, teleconferences, online consultations-therapies, videos and webinars should be preferred more. Countries should inform all healthcare professionals about the support services provided.

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ERRATUM TO: *"Knowledge and attitudes towards cardiopulmonary resuscitation: A cross sectional survey on health care providers in clinical practice"*

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There is an error in the name and the affiliation of an author on the first page (page 87) of the article *titled "Knowledge and attitudes towards cardiopulmonary resuscitation: A cross sectional survey on health care providers in clinical practice"* published in Vol 1, Issue 3 (2021).

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The correct expression is:

Name / Surname: Md. Osman Goni
Affiliation: Life and Care Hospital Limited, Jhauchor, Hazaribagh. Dhaka / Bangladesh

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