Lung Cancer Screening: Beliefs and Recommendations of Primary Care Physicians at the National Guard Hospital (NGHA)

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Abstract

Background: Early detection of lung cancers via screening may aid in decreasing the associated mortality; however, optimal screening methods have not yet been established. Objectives: We aimed to explore the beliefs and attitudes of primary care physicians (PCPs) towards lung cancer screening guidelines in asymptomatic patients. Methods: We conducted a cross-sectional descriptive study at the NGHA primary care centres, using a validated questionnaire, with 11 questions, developed by the National Cancer Institute, USA, and customized to our medical settings. Results: 37

Index terms— Lung cancer, physicians, belief and recommendations of PCPs, screening guidelines, family medicine, internal medicine, asymptomatic.

1 I. Introduction

orldwide, lung cancer is consideredfatal. Early detection via screening may aid in the decrease of cancer-related mortality rate. Till date, the optimal method for lung cancer screening is controversial (Nanavaty et al, 2014). However, regardless of these controversies, due to the lack of sufficient evidence, major medical experts and recent guidelines do not recommend screening in asymptomatic patients, even in those have histories of heavy or long-term smoking (Lung Cancer: Screening -US Preventive Services Task Force, 2013; NCCN Guidelines for Patients® | Lung Cancer Screening, 2016; Lung Cancer Screening Guidelines, Cancer.org. 2016; **??**are, 2015). Due to the increasing incidence of lung cancer in Saudi Arabia, primary care physicians (PCPs) should have significant roles in preventing lung cancers and identifying those who are at risk; the choice of appropriate tools and candidates for screening is very crucial. The aim of this study is to explore the beliefs and attitudes of PCPs, towards lung cancer screening guidelines, in asymptomatic patients.

2 II. Methods

A cross-sectional descriptive study was conducted at the National Guard Hospital (NGHA), Riyadh between January February 2017, using the validated lung cancer screening questionnaire developed by the National Cancer Institute (NCI), USA, in collaboration with the Agency for Healthcare Research and Quality, and the Centers for Disease Control and Prevention, USA. The questionnaire was edited and customized, by adding and eliminating questions, to be compatible with our medical setting.

All 146 PCPs, including family physicians and internists, were included in the study, without sampling. A pilot study was conducted on 10 physicians to ensure full comprehension of the questionnaire; this resulted in some modifications in vocabulary and format to avoid ambiguity. The King Abdullah International Medical Research Center (KAIMRC) also reviewed the survey tool. This contains questions related to the knowledge, attitudes, and demographics of the physicians, and takes approximately 10 minutes to complete.

Data management and statistical analysis were performed usingthe Statistical Package for Social Sciences (SPSS) software version 20.0. Frequencies and percentages were utilized to represent categorical variables, and

the Chi-square test was used to investigate the relationship between variables. The knowledge scores were marked as follows: correct answers were marked with 1, and wrong answers, with 0. The sum of all knowledge questions was calculated for each participant. The knowledge scores were computed based on 11 questions from the questionnaire, and the answers were evaluated according to the guidelines mentioned in Figure 1.

The attitude scores were marked as follows: answers with positive attitude were marked with 1, and negative attitude, with 0. The sum of all attitude questions was calculated for each respondent. Attitude scoreswere computedbased on8questions. The means of these scores were compared between groups, using the Student's t-test. P-values of 0.05 or less were considered significant. Permissionfor conducting the study was obtained from KAIMRC in Riyadh. The cover sheet of the questionnaire explained that the physicians participated voluntarily in the study, and this was considered as consent. All data was treated anonymously.

3 III. Results

A total of 74 PCPs (total response rate, 50.68%), including those from family medicine (response rate, 51%) and internal medicine (response rate, 48.7%) departments, participated in the study. The mean knowledge scores for the internists and family medicine physicians, regarding their belief in the effectiveness of the different screening modalities in reducing the lung cancer-related mortality in asymptomatic patients were 6.6 and 7.6 (P-value=0.54), respectively. The results of the first question on the questionnaire are shown in table-1. IM: Internal Medicine, FM: Family medicine, CT: computed tomography. P-value<0.05 is considered significant.

The mean knowledge scores for family and internal medicine physicians regarding lung cancer screening guidelines were 2.3 and 1.5 (P-value=0.48), respectively. The knowledge of the physicians, regarding the various lung cancer screening guidelines for asymptomatic patients with histories of smoking less than 30 packs per year, or for those who have never smoked is illustrated in figure -1. The second question included various scenarios where the physicians were asked to choose the best lung screening modality, with the assumptions that the patients had not been previously screened, did not have any symptoms of lung cancer, did not express any preferences for lung screening, either in general or using a specific modality, and had no occupational exposure to known or suspected lung carcinogens. The responses to the second question are demonstrated in figure-2. Responses by the physicians to question 2, with the assumptions that these patients had not been previously screened for lung cancer, did not have symptoms of lung cancer, did not expressed any preference for screening, either in general or with a specific modality, and had no occupational exposure to known or suspected lung carcinogens

According to their practice, 37% of family physicians requested chest X-rays, 1.9%, sputum cytology, and 3.7%, low-dose spiral chest computed tomography (CT) scans for lung cancer screening of asymptomatic patients in the past 12 months (figure-3).

Additionally, of 19 internists, 62.5% requested chest Xrays, 5%, sputum cytology, and 42.1%, low-dose spiral CT scans for lung cancer screening of asymptomatic patients in the past 12 months (figure-3). was found that the beliefs of many PCPs regarding lung cancer were inconsistent with the current guidelines and recommendations (Klabunde et al, 2010).

The findings of this study were consistent with existing research and theoretical evidence, which suggests a progressive increase in the incidence of lung cancer in Saudi Arabia, and indicates the challenges encountered in the timely recognition of lung cancer. The research indicated that the average knowledge of family physicians regarding lung cancer screening guidelines was minimal, although they reported a score of 6.6 with respect to their beliefs about the importance of lung cancer screening, and between practice and beliefs with a score of 2.2. This trend continues, despite recommendations by numerous organizations for lung cancer screening.

Previous research has determined that the recommendations by physicians are important predictors of health-seeking behaviour in patients (Dela **??**ruz et al, 2011). Limited knowledge of the guideline recommendations is likely to inhibit physicians from facilitating collective decision-making conversations, concerning the possible advantages, uncertainties, and disadvantages of lung cancer detections, when interacting with their patients **??**Spiro et The results indicated that internal medicine physicians had knowledge scores of 1.5, regarding lung cancer screening guidelines. The findings of this investigation are in agreement with a previous survey in 2011 that examined lung cancer screening practices (Lung Cancer Screening (PDQ®)-Health Professional Version. National Cancer Institute. 2016). The survey illustrated that family physicians have higher preferences for requesting chest radiographs in asymptomatic patients with lung cancer, compared to internists.

The research findings showed that the lung cancer screening recommendations and beliefs of many PCPs were inconsistent with current evidence and guidelines. The study considered the key modalities that have been utilized in lung cancer screening, which include chest X-rays, low-dose CT scans, and sputum cytology. Most internists believe that low-dose CT is efficient in decreasing lung cancer mortalities among current smokers; this concurs with the assertion of previous researchers (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcaredelivery.cancer.gov. 2016; Lung Cancer Screening (PDQ®)-Health Professional Version. National Cancer Institute. 2016). Those physicians who had completed medical schoolmore than 15 years ago were more likely to request for chest radio graphs for lung cancer detection. These results concur with physician beliefs concerning screening. Senior physicians appear torequest the specific lung cancer detection method that is compatible with their prior medical training (Humphrey et al, 2013).

The results show that the demands of patients are related to the physician reports regarding requests for lung cancer detection, andconcur with previous studies demonstrating that the requests of patients affect the physician ordering atest for cancer susceptibility. Physician evaluations linked with lung cancer detection might aid intargeting the involvement of physicians that are in dire need of information and evidence regarding lung cancer detection guidelines (Mazzone et al, 2015). Most PCPs (89.09%) acknowledged that they recommended against screening in patients who were over 50 years of age, who had never smoked, or who did not have substantial exposure to passive smoking, but only 36.36% of PCPs recommended against screening for lung cancer inpatients who were either former or current smokers, including those exposed to passive smoking.

We analysed physician preferences for the best screening modalities for patients that have not been previously screened, have no symptoms of lung cancer, have not expressed a preference for lung cancer screening, either in general or with a specific modality, and have not had any prior exposure to known or suspected lung carcinogens. The results demonstrated that 37% of family physicians requested chest X-rays; 1.9%, sputum cytology; and 3.7%, low-dose spiral chest CT scans, for lung cancer detection. However, among the internists, 42.1% requested low-dose CT scans for lung cancer detection; 62.5%, chest X-rays; and 5%, sputum cytology. From the above results, it appears that primary care physicians in the King Abdulaziz Medical City (KAMC) primary care centre have not decreased the practice of requesting chest X-rays to detect lung cancers in asymptomatic individuals.

Nonetheless, among PCPs who recommend the screening of patients for lung cancer, 63.15% of internists and 36.36% of family physicians recommend the use of chest X-rays, which is not a recommended test (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcare delivery.cancer.gov. 2016). This result is consistent with the previous understanding of the national provider, to examine lung cancer screening practices before launching the NCI guidelines. About 26.31% of internal medicine physicians viewed low-dose CT as an effective screening modality, compared to 14.4% of family physicians. The propensity of PCPs to suggest a particular screening technique increases with the exposure of the patient to smoking.

The knowledge of guidelines was not associated with the utilization of low-dose CT; surprisingly, despite only 31.5% of internists knowing the NCI, compared to 40% of family physicians, the use of Klabunde, 2010). This, in turn, may result in a considerable percentage of incorrectly screened adults, unless intensive efforts are made to notify PCPs of the proper explanation of the NLST results, and better screening approaches in clinical practice.

The study suggests that only 35%of PCPs promote lung cancer screening by initiating conversations with the patients regarding the advantages and risks of undertaking such screening; this limited number results from the lack of familiarity with the clinical practice guidelines for lung cancer detection. The existing evidence does not support screening for asymptomatic patients, not with standing their exposure to smoking (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcare delivery.cancer.gov. 2016). Thismay be because being attuned to the current practice guidelines can be a daunting task for physicians (Klabunde, 2010). The proliferation of several guidelines may negatively affect the ability of PCPs to adhere to them. The use of an academic detailing approach may encourage supportive attitudes and beliefs towards lung cancer screening, as well as, inspire disease advocacy groups, and the encourage the availability of technology that facilitates screening (Nanavaty et al, 2016).

4 Strengths and limitations:

A major strength of this study was the extent of evidence available in literature regarding the research objectives. The results reflect the views of both inexperienced and experienced providers with diverse clinical understanding, from the two predominant fields of primary care services, namely, family medicine and internal medicine.

A limitation of the study is based on the attitudes, recommendations, and practices of physicians; these wereobtained through a self-reported questionnaire that was not verified using any other sources, such as medical claims or reports. To reduce the workload of the respondents, the survey questionnaire on lung cancer detection was comparatively short, and it did not have the capacity to extract details about specific features of the patients for whom the PCPs had requested lung cancer screenings, and their extent and type of smoking exposure. Moreover, the study relied on PCP accounts of screening behaviour, which are subject to recall bias or social desirability. Lastly, the low response rate (51%) did not allow generalization of the results of the study to other primary care centres in Riyadh and Saudi Arabia.

5 V. Conclusion

Additional research is warranted to educate PCPs and health care consumers, concerning the need, evidence base, guidelines, cost, and potential risks, of lung cancer screening guidelines. The public has an exaggeratedly positive view of cancer detection, albeit with an inadequate understanding of the potential damage. The utilization of CT scans is rising rapidly in KAMC primary care centres. There is a need to address current barriers, such as, insurance coverage, financial cost, frequency of false-positive results, and associated complications with screening. These initiatives will be essential in providing PCPs with the necessary knowledge to make decisions regarding lung cancer screening (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcaredelivery.cancer.gov. 2016). These pertinent concerns, in conjunction with study findings and developing an evidence base, highlight the significance of continuously

monitoring the knowledge, practices, and beliefs of PCPs, as these are inter connected with lung cancer detection. Further research is required to enumerate the factors influencing the perceptions and responses of PCPs, regarding lung cancer screening guidelines, to enhance the current understanding of these guidelines.

The present study uncovers the disconnect that exists amid evidence and practice in lung cancer detection, and explores critical background for reflection on the results of the significant and extremely publicized NSLT (Lung Cancer Screening (PDQ®)-Health Professional Version. **??**ational [1]

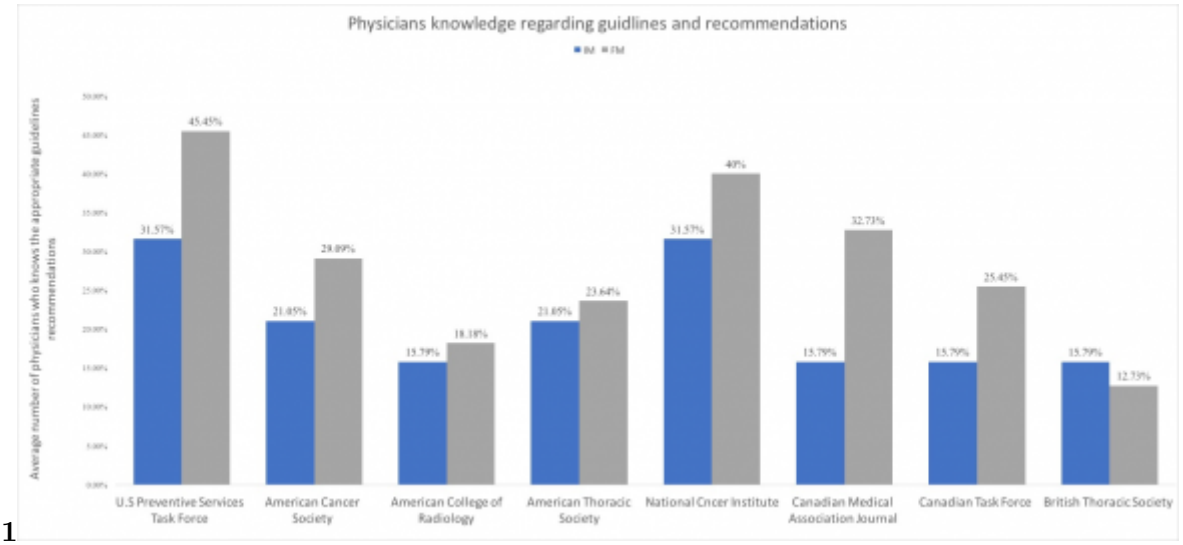

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Figure 1: Figure 1 :

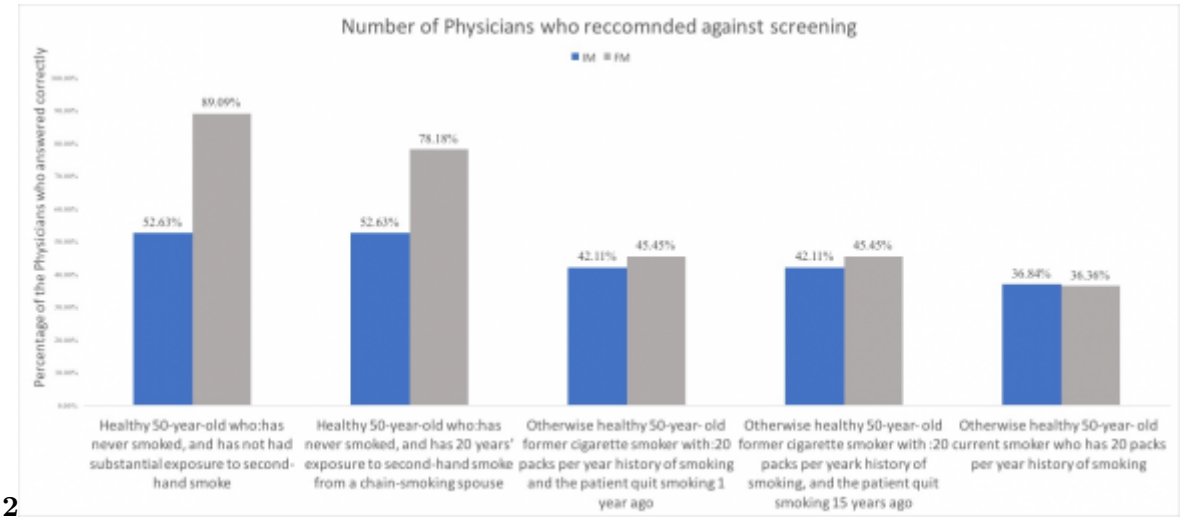

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Figure 2: Figure 2 :

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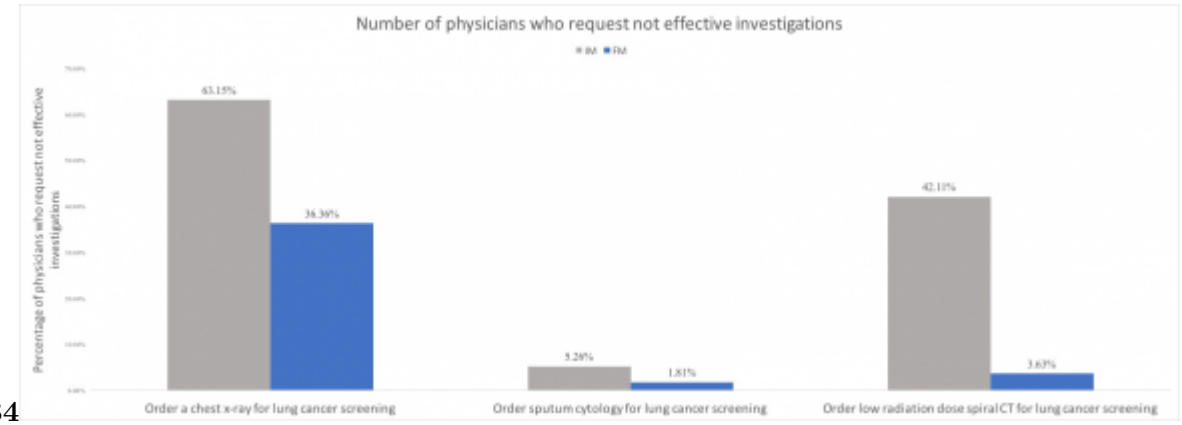

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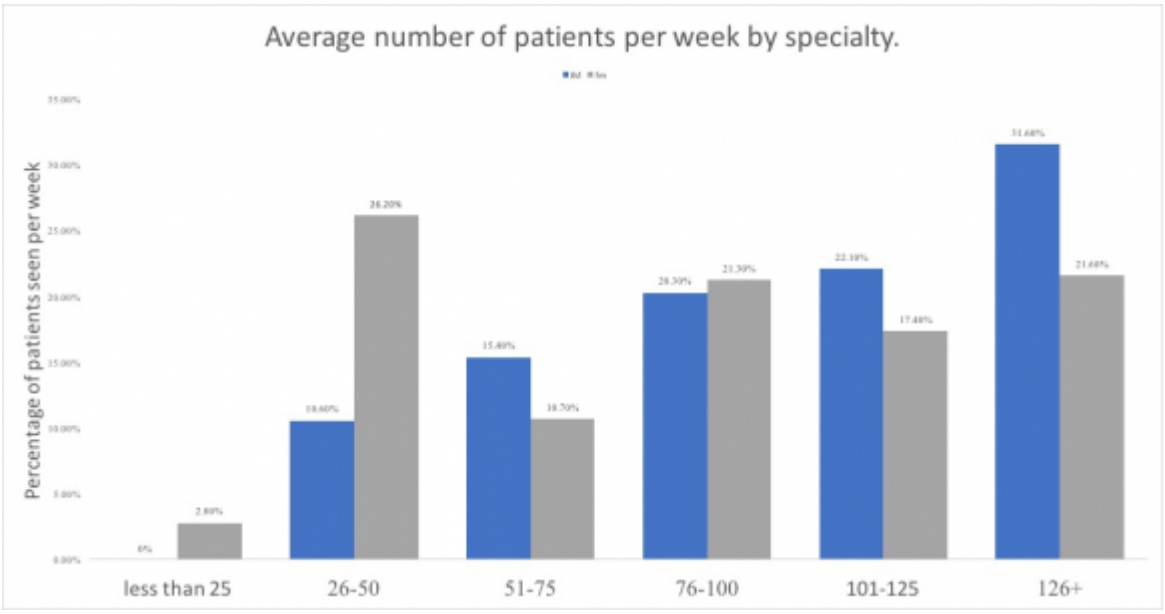
Figure 3: Figure 3 :FFigure 4 :F



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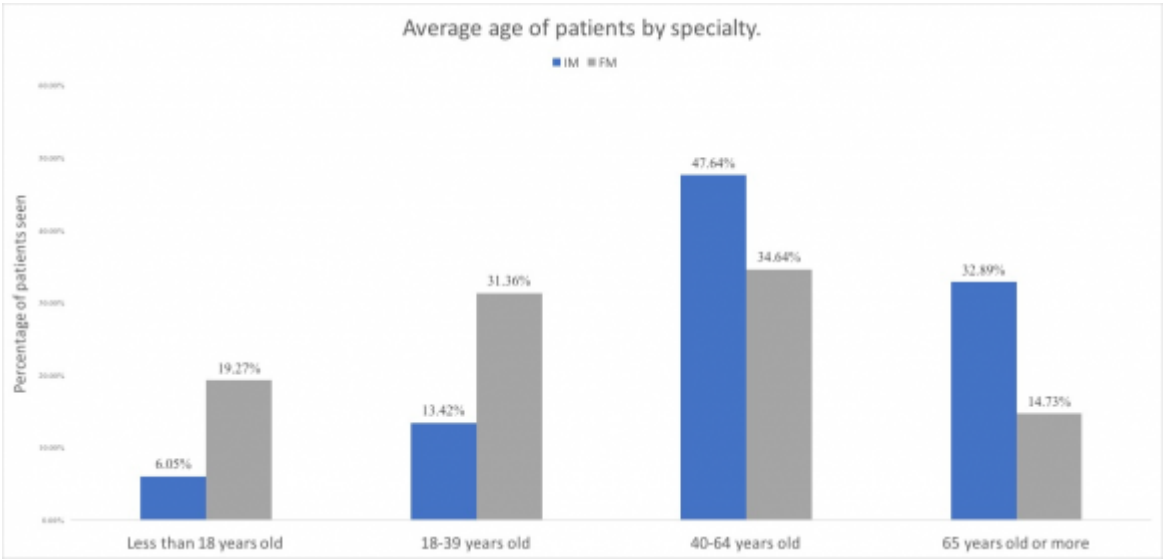

Figure 5:

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Lung Cancer Screening: Beliefs and Recommendations of Primary Care Physicians at the National Gu
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Very Effective Modality	Chest X-ray	IM	Never smoked 5.26% P-Value 7.27% 0.7635 0% P-Value 0% -26.31% P-	
	Sputum Cytology	FM		
	Low-dose CT	IM		
		FM	14.4%	0.2451
Somewhat Effective modality				
Chest X-ray		IM	36.84%	P-Value
		FM	18.18%	0.0955
Sputum Cytology		IM	42.10%	P-Value
		FM	18.18%	0.0361
Low-dose CT		IM	15.8%	P-Value
		FM	12.72%	0.8955
Not Effective Modality				
Chest X-ray		IM	52.63%	P-Value
		FM	72.72%	0.1067
Sputum Cytology		IM	52.63%	P-Value
		FM	70.82%	0.1464
Low-dose CT		IM	47.36%	P-Value
		FM	65.65%	0.2131

Figure 6: Table 1 :

Figure 7:

low-dose CT scans was the highest among the
internists. The use of chest-X-rays is partly accredited to
concerns about financial costs, the unavailability of other
screening modalities, and lack of insurance coverage
(National Survey of Primary Care Physicians'
Recommendations & Practice for Breast, Cervical,
Colorectal, & Lung Cancer Screening. Healthcare delivery.cancer.gov. 2016).
The small percentage (13.01%) of all PCPs who possessed lung screening programs or aids in their work setting may be attributed to the slow uptake of low-dose CT, and the increased usage of chest X-rays becoming more common due toextensive coverage. Nevertheless, the National Lung Screening Trial (NLST) presents evidence that lung cancer detection with low-dose CT is more efficient than with other commonly performed screening interventions, such as sputum cytology and chest X-rays (Lung Cancer Screening (PDQ®)-Health Professional Version. National Cancer Institute. 2016). The research findings have shown the beliefs of PCPs concerning practice guidelines, test effectiveness, and tendency to intensify for any cancer that is highly relatedto the lung cancer screening recommendations. They substantiate an earlier, but much smaller study, which suggests that aggressive cancer screening byfamily physicians is related to their beliefs (Alamoudi, 2010). The requests by PCPs for unverified lung cancer screening techniques have various implications. One such implication is the potential psychological harm that results from false-positive or false-negative results (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcaredelivery.cancer.gov. 2016). Physical damage can also result from unwarranted invasive procedures that are under taken asfollow-up for false-positive screening (Klabunde, 2012). The use of unrecommended lung cancer technologies will eventually drive up health care costs. According to the data from the NLST, an average of 30% of patients who under go low-dose CT scanning as a detection procedure will have at least one false-positive screening (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & Lung Cancer Screening. Healthcare delivery.cancer.gov. 2016). Moreover, three of every 1,000 persons screened are estimated to develop major complications associated with the procedure, and three-to-five people may be over-diagnosed with lung cancer (National Survey of Primary Care Physicians' Recommendations & Practice for Breast, Cervical, Colorectal, & knowledge of lung cancer screening; this screening tends to happen opportunistically rather than through well-organized programs (Lung Cancer Screening (PDQ®)-Health Professional Version. National Cancer Institute. 2016;

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Figure 8:

Healthcaredelivery.cancer.gov. 2016).

Therefore, any alteration in the screening commendations would only

Figure 9:

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