

# What can we learn from Medical Physics occupational analyses? A developing-country case study

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## 1. INTRODUCTION

Medical Physics as a profession has not been fully developed in low- and middle-income countries due to adverse economic and political circumstances [1]. Few standards of Medical Physics practice have been established in countries where such discipline was recently introduced. IAEA has made efforts to make public directories of radiation therapy and nuclear medicine centers worldwide, but such resources do not include occupational statistics.

The clinical practice of Medical Physics in Mexico has not been subject of a comprehensive, systematic and rigorous occupational analysis. The absence of an updated occupational database of the Medical Physics professionals not only raises radiation safety concerns but also imposes challenges to work-policy making. Previous works [2-3] have provided some insight on the status of Medical Physics practice in Mexico, however, such studies have been mainly focused on the analysis of radiation therapy centers and can be considered outdated.

## 2. AIM

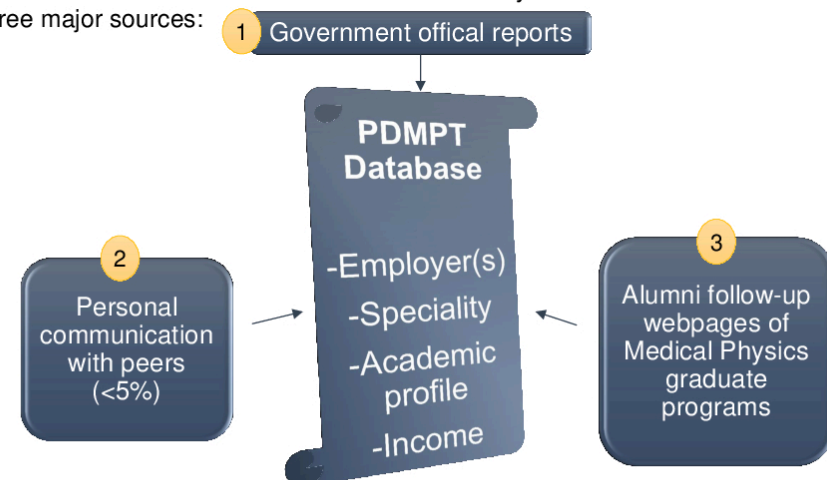
To demonstrate the importance of conducting clinical Medical Physics occupational studies. The case of Mexico was analyzed as an example.

- Mexican audiences benefit from the present study as it overviews the current state of clinical Medical Physics and identifies important challenges to be faced by the Mexican Healthcare System.
- International audiences will find in our work a useful reference on how occupational studies can help to better understand the limitations, challenges, and necessities of clinical Medical Physics practice in a healthcare system.

## 3. METHOD

**cMP:** clinical Medical Physicist  
**PDMPT\*:** any person(s) developing Medical Physics tasks disregarding academic profile, training, or experience.

A **database** of PDMPT in the Mexican Healthcare System was created from three major sources:



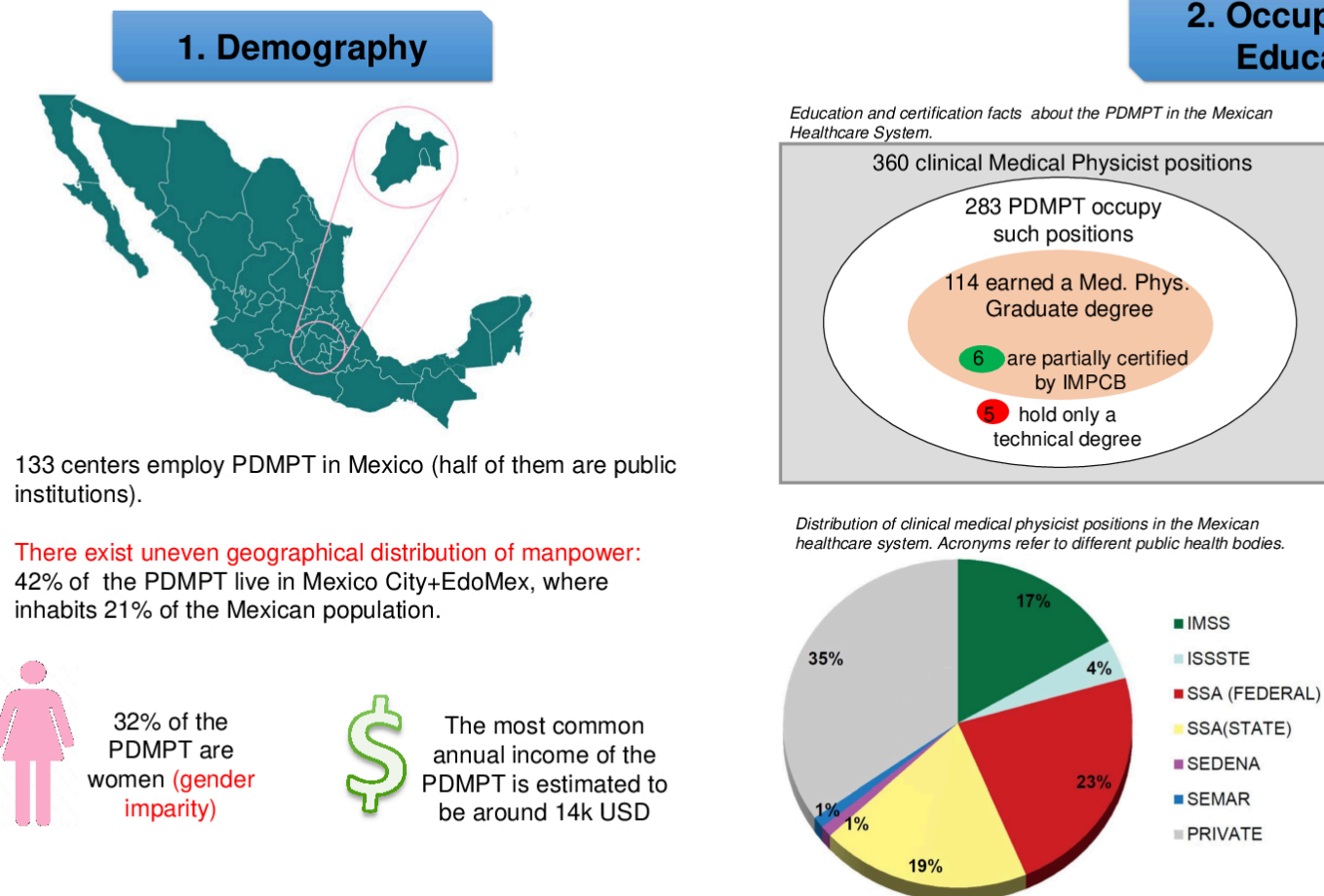
\*In Mexico, there exist professionals executing the roles of cMP, whose education and training is not following international recommendations (IAEA, AAPM, IOMP, EFOMP), that is why such a difference is made.

## 4. RESULTS

### Challenges to healthcare system

### Feasible possible solutions

### Other relevant facts identified



Cases of double and triple shift-workers were identified (possibly due to precarious job conditions).

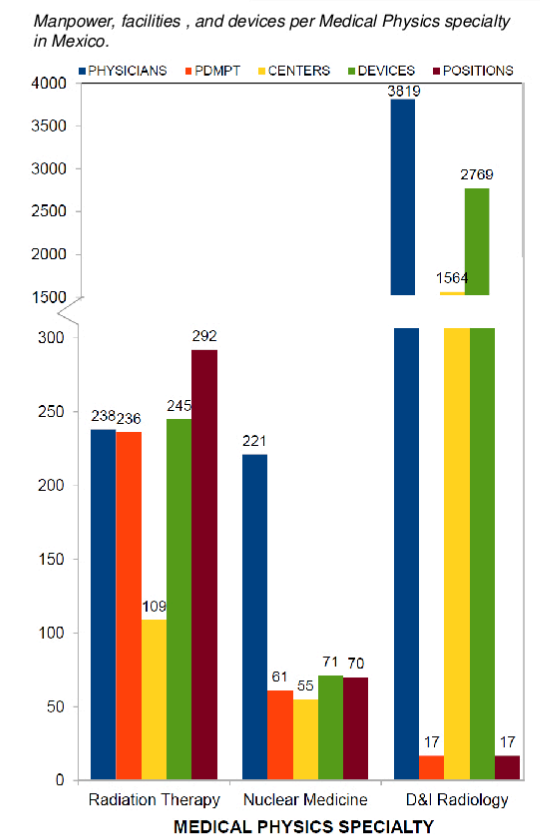
PDMPT education widely differs, ranging from technical degrees to postdoctoral training.

Only 40% of the PDMPT holds a graduate degree in Medical Physics, 46% of whom live in Mexico City+EdoMex.

It is necessary to:

- Increase the number of Medical Physics graduate programs and strengthen the existing ones.
- Design structured clinical training programs in order to develop the skills and competencies necessary to practice in the clinical environment.

Public health services hold 65% of the cMP positions. Up-to-date, 229 persons have earned a Medical Physics graduate degree from the Master's programs. So, it is not unrealistic to pursue the employment of such professionals to cover the public sector demand of cMP.



From all cMP positions, 77% correspond to RT, 18% to NM, and 5% to D&IR.

There is practically no PDMPT working in D&IR.

11% of all PDMPT practice more than one specialty.

Large discrepancies were found when comparing this data with previous works [2-3] and IAEA databases, which suggests that such sources may need to be updated (we localized the double the PDMPT than reported by IOMP, for example).

## 5. CONCLUSIONS

Occupational studies can help to better understand the limitations, challenges, and necessities of clinical Medical Physics practice in a healthcare system.

Improvement and problem-solutions in a healthcare system can be thought out from occupational analyses.

## 6. REFERENCES

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