Pharmacists' interventions in COPD related hospital readmissions

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Introduction

Exacerbation of COPD defined as acute worsening of respiratory symptoms is associated with accelerated disease progression, often leading to hospitalisations impacting patients' quality of life, mortality, and morbidity, and national healthcare systems. A key component in the management of COPD is prevention of exacerbations (GOLD, 2020)[1] which are not only of significant detriment to the patient but consume a considerable portion of healthcare expenditure. The Centre for Disease Control and Prevention estimate that by 2020 COPD expenditure will increase to $49 billion.[2] The European Respiratory Society reported that the annual cost of respiratory disease in the EU zone amounts to over €380 billion of which €48 billion can be attributed to COPD related healthcare and lost productivity costs.[3] Previous studies conducted in Malta focused on different aspects of COPD management other than on understanding factors responsible for increased risk of exacerbations necessitating hospitalisation. The rationale of this research is formulated on an attempt to identify variables contributing towards exacerbation of COPD which lead to hospitalisation whilst highlighting the contribution of the pharmaceutical service provision. The acute general teaching hospital, Mater Dei Hospital which is the main public hospital of the Maltese islands provided the research setting. The hospital offers inpatient and outpatient services in addition to specialised clinics including respiratory clinics.

Aims

To develop, validate, and propose a tool assisting pharmacists in different care settings in the identification of risk factors for COPD hospitalisations and readmissions. The objectives include:

i. identification of risk factors contributing to exacerbation of COPD patients necessitating hospitalisation and early readmission for acute exacerbation of COPD
ii. provision of education re-assessment for correct inhaler technique
iii. review of medication compliance in terms of COPD medications.

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Method

A case-control study design was deemed adequate to identify differences if any between COPD patients hospitalised due to an exacerbation identified as the case (inpatient) cohort versus COPD patients not hospitalised during the previous year represented as the control (outpatient) cohort. A questionnaire-based interview was disseminated to patients who met the inclusion criteria (Table 1). The methodology undertaken was further categorised into 3 Phases:

Phase 1

An evidence-based data collection tool specifically developed and validated for this research was compiled to identify potential factors contributing to hospitalisation of COPD patients experiencing an exacerbation. Other preliminary work involved attending a short training program to assist in smoking cessation.

Phase 2

A pilot study was conducted focusing on the first ten patient recruited between inpatient and outpatient cohort. The scope was to test feasibility and applicability of the compiled tool, appropriateness of recruitment strategies and identify potential modifications required to improve data collection.

Phase 3

Implementation of the tool within the clinical scenario capturing the study findings which were then statistically analysed using IBM SPSS® version 26.

Results

The developed tool entitled "COPD exacerbation risk factors management and prevention" was used as part of an individualised pharmaceutical care plan and consisted of 3 sections each targeting different aspects of COPD care and management. Section A dealt with general data collection incorporating patient-specific factors and COPD-specific variables including patient demographics, medication reconciliation, environmental factors, healthcare professionals involved in the patient's care, spirometry results, smoking history, and seasonality. Section B consisted of an inhaler adherence assessment and patient's behaviour in cases of symptom worsening. Section C incorporated marking schemes developed to evaluate inhaler and nebulizer administration technique. There were no readmissions at 30 days post discharge for the case cohort group. In the study population (N=58), statistically significant differences between cohorts were observed ($p < 0.05$) for corticosteroid and antibiotic prescribing, side effects (irrespective of the type of side effect), number of days per week patients required salbutamol, and where patients report to first when symptoms worsen (Table 2). An almost statistically significant difference was observed for the locality of residence ($p=0.055$) and the involvement of respiratory physiotherapists ($p=0.054$).

Table 1. General Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
under the care of the participating respiratory clinician	palliative patients
confirmed diagnosis of COPD with spirometry-confirmed airflow obstruction	
18 years and over	
comprehend English and/or Maltese	
mentally stable	

Table 2. Statistical analysis of parameters studies

Parameter	Comments	Statistically significant p-value < 0.05
Locality of residence	Southern Harbour District vs Western District	✓
Smoking status	Smokers vs Ex-smoker	x
Medication Adherence	Forget to use inhaler	x
Side effects	Inhaled therapy	✓
Worsening symptoms	Management skills	x
Patient attitudes	Where patients report to first	✓
Inhaler technique	Use of spacer with MDI	x

Conclusion

The identification of variables contributing towards COPD exacerbation admissions in order to establish an evidence-based pharmaceutical care model with the aim of enhancing transition of care which would ultimately benefit patients and the national healthcare system alike. Device-specific inhaler technique difficulties and misconceptions, written self-management action plans for worsening symptoms, and optimisation of comorbidities management are fundamental areas to consider in enhancing transition of care within a pharmaceutical care model in respiratory.

References

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