7. SUMMARY AND CONCLUSION

7.1 Summary

- Prescribing practice is far away from ideal prescription. Poor quality of prescribing is a matter of concern at all healthcare levels.

- Various measures have been developed to evaluate prescribing quality. However, one of the great limitations in measuring the quality of prescription is lack of a method that is sufficiently valid and reliable to allow systematic use in clinical setting.

- In 2010, development of a new tool called Prescription Quality Index (PQI) was described which has been standardized and validated. The PQI is claimed to capture the multidimensional criteria of prescription quality and incorporates the concept of rational drug therapy, evidence based approach and other criteria required for prescription quality. (8)

- A prospective cross-sectional study was conducted to determine the quality of prescribing in patients with two chronic diseases- hypertension and bronchial asthma and attending outpatient departments of different health care facilities namely primary, secondary and tertiary health care facilities near Anand town in Gujarat state of India using Prescription Quality Index (PQI) tool (8) and to assess the reliability of this tool.

- Total seven facilities were identified. Primary Health Care Facilities included primary health centers of villages Changa, Dabhov, Karamsad and Bandhani. Community health center at Mehlav and civil hospital at Petlad town of Anand district were included as secondary health care facilities. Shree Krishna Hospital affiliated to Pramukhswami Medical College at Karamsad, was selected as Tertiary care health facility of Anand District in Gujarat state. The study was approved by the Institutional Human Ethics Committee.

- Data was collected for a period of 4 weeks (Three days in a week) at each facility. After obtaining consent from the patient meeting inclusion criteria,
his/her complete medical history was obtained by personal interview and other relevant information, including prescription details, was recorded in Case Record Form.

- The quality of prescribing was evaluated using 22 criteria of the Prescription Quality Index tool. If prescriptions consisted of more than one drug, each drug was rated individually. Similarly, if patients suffered from more than one disease, each disease state was rated separately.

- The PQI total score was obtained by summing up all the minimum scores for the 22 criteria for all drugs in a prescription. The possible maximum score of the PQI was ‘43’. Prescription with the PQI total score of ≤31 was interpreted as poor quality, scores 32 and 33 as medium quality and scores 34 to 43 as high quality as described in PQI tool.

- Total 356 prescriptions were collected from four PHCs (66), two SHCs (68) and THC (222) during the study period. Two chronic conditions were selected for the study- Bronchial asthma and hypertension.

- The mean age of all patients was 57.7±14.7 years. Mean age of patients at PHC, SHC and THC was 62±15.6 years, 57±13.7 years and 56±2 years respectively. The number of drugs in the prescriptions ranged from one to 10 with the mean value of 4.2 ±1.6. The mean number of drugs per prescription at PHC, SHC and THC was 2.9 ± 1.2, 4.8± 1.7 and 4.8± 2 respectively.

- Total 176 (49.4 %) out of 356 prescriptions were poor quality with ≤31 score.

- Total 46 (69.7 %), 50 (74%) and 80 (36%) prescriptions were poor quality at primary, secondary and tertiary health care facility respectively.

- Based on PQI scores, quality of prescribing at the three levels of health care showed statistically significant difference. (P<0.0001)
• There was no significant difference in proportion of high (P=0.6080), medium (P=0.1633) and poor (P=0.6660) quality prescriptions between hypertension and bronchial asthma at THC.

• Criteria such as correct dosage, correct administration, clinically significant drug-drug interaction, clinically significant drug-disease/condition interactions, Adverse drug reaction, Cost, Generic prescribing, Medication’s name, Legibility, Prescriber’s information and Patient’s information scored higher and contributed to good quality of prescribing.

• Exploratory principal components analysis of the PQI total scores revealed a six factor solution using the minimum Eigenvalue criteria of ≥1. These six accounted for 64.4% of the total variance.

• The criteria including drug indication, drug effectiveness, dosage, evidence based prescribing showed strong correlation while criteria such as correct direction, practical directions, unnecessary duplication, duration of therapy and Patient’s improvement showed moderate correlation with PQI total score. There was a weak correlation with remaining criteria.

• PQI total score correlated well with age, number of drugs per prescription and number of diseases per prescription at each facility. At THC, PQI total score demonstrated weak negative correlation with patient’s age and number of drugs per prescription and showed weak positive correlation with number of diseases per prescription. For SHCs & PHCs also there was weak negative correlation of PQI total score with patients’ age.

• At PHCs, atenolol 50 mg (78.6%), an hypertensive from beta blockers class antihypertensive was the most frequently prescribed drug followed by furosemide (39.3%) for hypertension. Tablet amlodipine (85.7%) in a dose of 5 mg was the drug of choice in hypertension treatment at SHC 2 (n=7). While Tablet atenolol (71.8%) in dose range of 10 mg to 50 mg was the drug of
choice in treatment of hypertension at SHC 1 (n=44). Loop diuretic (furosemide) was prescribed at both the centers.

- At THC, Tablet amlodipine (27 %) in a dose of 5 mg was the most preferred drug as monotherapy for hypertension followed by metoprolol (14%) and atenolol (12.3%), while Tablet amlodipine + atenolol (24.6 %) fixed dose combination in a dose of 5+50 mg and losartan + hydrochlorothiazide (10.7%) were commonly prescribed. Other drugs such as clonidine (4.1%) and prazosin (4.1%) were also prescribed.

- At PHCs, oral salbutamol (30.3%) in a dose of 4mg, theophylline (13.6%) and dexamethasone (13.6%) were prescribed for bronchial asthma. Antihistamines (16.7%) were also prescribed along with anti-asthmatic medicine. Tablet theophylline (83.3%) and dexamethasone (66.7%) were most commonly prescribed drugs at SHC 2, whereas tablet salbutamol and theophylline were drugs of choice in all cases at SHC1. Mucolytic agents were also given along with asthma treatment.

- Prescribing of anti-asthmatic drugs at THC showed prescribing of salbutamol as the most preferred drug either as Metered Dose Inhaler (MDI) (40%) or tablet (22%). Theophylline + Etophylline (61%) was most common FDC followed by Budesonide + Formoterol (61%) rotacap. Tablet prednisolone, and glucocorticoid, was prescribed to approximately 19% patients.

- Total 67 out of 222 patients at tertiary health care facility were ≥65 years old-elderly.

- The PQI score for geriatric group did not differ from the overall PQI score at THC. (P>0.05) Criteria wise scores also were similar.
• PIM prescribing was examined using updated Beers criteria (110). Thirty patients out of 67 had received at least one PIM out of 8 drugs. The most frequent PIM was theophylline in this age group.

7.2 Conclusion

Based on our findings of prescription quality using PQI tool, about half of prescriptions for hypertension and bronchial asthma at the tertiary care hospital are of good quality. The mean PQI total score for all 356 prescriptions was 28.9±8.1 which falls in category of poor quality prescribing. About 50 % of total prescriptions was found to be poor (PQI score ≤31). There was no significant difference in prescribing quality between PHC and SHC. The PQI total scores were not normally distributed. Cronbach’s α value for PQI at different facilities ranged from 0.68 to 0.89 suggesting good internal consistency (reliability). PQI is a valid and reliable tool for measuring prescription quality in Indian health care setup and can be useful for observational as well as interventional studies.

Further work to be carried out:
PQI tool can be used for assessing the prescribing quality for other diseases and at other health care facilities to further explore the reliability and feasibility. The PQI tool could be validated in our set up based on the study finding by modifying the score or deleting the criteria that correlated weakly or had no correlation with PQI score.

For improvement of prescribing quality, it is important to draw the attention of prescribers to the criteria that scored low and had negative impact. This can be planned in form of sharing the results with facility in charge and providing practical suggestions.

Use of PIM may be included as one of the criteria for geriatric prescribing and then validation procedure could be carried out. After necessary changes as per our need PQI revised tool can be prepared and pilot work for revalidation can be carried out.