INTRODUCTION
Amyloidosis is a term used to describe a spectrum of diseases characterized by abnormal extracellular deposition of amyloid, a fibrillar proteinaceous material in tissue. Macular amyloidosis (MA), a major form of the primary cutaneous amyloidosis, is characterized by deposition of amyloid in normal skin without associated deposits in internal organs. Amyloid in MA is derived from degenerated keratinocytes that are discharged into the dermis where they are converted to amyloid. In Hematoxylin and Eosin stained histologic sections, amyloid deposits can be recognized as a homogenous eosinophilic aggregates. A reliable method to demonstrate amyloid is to use Congo red stain and then study the section under polarized light; the amyloid shows a characteristic green birefringence. Amyloid deposits can also be documented using other stains such as PAS diastase and thioflavin. When light microscopy fails to detect small and sparse amyloid deposits, an electron microscopic examination is considered as a powerful diagnostic technique.

MA is a moderately pruritic cutaneous disorder which presents with brown macules that evolve gradually to form symmetric hyperpigmented patches with characteristic rippled pattern. The most common sites of involvement are the upper back and extensor surfaces of extremities. MA is not known to evolve into systemic forms of amyloidosis. The precise etiology of this condition is still unknown. However, there are a number of etiologic factors suspected of playing a role in its pathogenesis.

This study was carried out to determine the incidence of MA among patients of dermatology in our center and to evaluate the role of any associated risk factors.

PATIENTS AND METHODS
This was a prospective study conducted over a nine years period from July 2000 through June 2009 in the dermatology clinics of several hospitals of the Royal Medical Services. A total of 24,000 patients were evaluated. Diagnosis of MA was based on clinical grounds with no history of previous inflammatory condition of the involved area. The diagnosis was confirmed by skin biopsy in all clinically suspected patient, and a histologic examination was consistent with MA in all of them. A detailed history and a thorough physical examination to find any associated risk factor were conducted in all patients. They were specifically
evaluated for the presence of association with the following conditions: sun exposure, back scratching, usage of nylon towels, atopic dermatitis and positive family history of MA.

RESULTS
From the 24,000 patients who visited the dermatology outpatient department, 120 cases were diagnosed as MA which constituted an incidence rate of 0.50%. 105 of patients were females and fifteen were males with 7:1 female to male ratio.

Table 1. Risk factors for macular amyloidosis in our patients.

<table>
<thead>
<tr>
<th>Risk factor</th>
<th>Number (%)</th>
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<tbody>
<tr>
<td>1. Family History of MA</td>
<td>1 (0.83 %)</td>
</tr>
<tr>
<td>2. Sunlight / UVB exposure</td>
<td>0 (0.00 %)</td>
</tr>
<tr>
<td>3. Atopic dermatitis</td>
<td>1 (0.83 %)</td>
</tr>
<tr>
<td>4. Use of nylon towels</td>
<td>0 (0.00 %)</td>
</tr>
<tr>
<td>5. Use of back scratcher</td>
<td>0 (0.00 %)</td>
</tr>
<tr>
<td>6. Systemic diseases</td>
<td>1 (0.83 %)*</td>
</tr>
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* This patient had diabetes mellitus.

The age of patients ranged between 18 and 65 years, with 82.0% were in the age groups of 21 to 50 years and the mean age was 36.75 years (Figure 1).

Figure 1: Distribution of patients according to sex in different age groups

No other associated risk factors were found to be significantly associated with macular amyloidosis (Table 1).

DISCUSSION
MA is characterized by spontaneous occurrence, gradual progression and persistence.
This dermatosis is prevalent in the Central and South American population, as well as in individuals of either Asian or Middle Eastern descent. Patients with MA constituted 0.50% of our dermatology clinic patients. Therefore, this skin disorder can be considered as a relatively common disease in Jordan. Although a lower prevalence rate of 0.15% has been reported in a neighboring country of Saudi Arabia. Of our patients, 87.50% were females with a female to male ratio 7:1. This ratio contrasts with some previous reports of an equal sex ratio and is more consistent with other reports of female predominance.

In female patients, the most common age of disease presentation was between 21 to 50 years; while males had almost equal incidence among the different age groups. These findings suggest that female sex hormones may have a possible role in the etiology of MA. Further studies are needed to address the cause of high incidence of MA among females and, in particular, to assess any hormonal role in the etiology of this condition.

A positive family history and associated systemic disorders have been mentioned as risk factors for MA. However, this association was not found to be true in our study, which correlates with findings reported by other similar studies.

It is possible that these risk factors had been over reported with such relatively common disease. This study noted that the majority of female patients tended to wear clothing that covered most parts of the body, perhaps this is due to the nature of Middle Eastern religion and traditions. In addition, all of our male patients were indoor workers.

Thus, none of the patients had a history of sunlight or Ultraviolet B light exposure in a way that would contribute to their cutaneous disease. Similarly, Eswaramoorthy et al did not find a direct correlation between MA and exposure to sunlight. However, these findings do contrast with other previous reports in which exposure to sunlight and UVB have been incriminated in the etiology of MA.

The use of back scratchers as well as nylon towels have been reported as an associated risk factor for MA in other countries. However, the use of back scratchers and nylon towels is not a common habit among Jordanians. As a result, we did not find these to be risk factors in our patients. These findings are
again consistent with the findings of Eswaramoorthy et al. It is possible that the itching in MA is a secondary event rather than a predisposing factor. Some may use a back scratcher to relieve itching from subclinical deposition of amyloid in the skin. Although atopic dermatitis is a common dermatologic skin disorder, this study did not find it to be significantly associated with MA in our patients. Perhaps this is due to the fact that most of our patients (82.0%) were aged between 21 to 50 years; while atopic dermatitis is more prevalent in pediatric age groups or it may reflect a true negative association between the two conditions.

CONCLUSIONS
Females aged between 21 and 50 years were more prone to have MA. Further studies are required to evaluate the role of female sex hormones in the etiology of MA. Family history, systemic diseases, sunlight exposure, the use of back scratchers and nylon towels, and atopy were not associated risk factors for MA.

REFERENCES