Over view of Conclusions
The work carried out in this study has highlighted the resistance pattern, mode of transmission of various *Candida* species and role of culture techniques in correct diagnosis of the candidiasis. The thesis has elements of various disciplines e.g. (a) **Clinical Microbiology**: finding the prevalence of various resistant candida species isolated from various sources like neonates, hospital environment and their respective mothers. (b) **Biostatistics**: assessing the risk factors for acquisition of these organisms using univariate analysis and multiple logistic regression (c) **Molecular Biology**: RAPD-PCR and RFLP followed by Southern Hybridization with CRARE-2 probe based molecular typing of various resistance candida species. The main findings of the thesis work can be summarized as follows:

**1.** The first study (Chapter 3) dealt with Candida strains isolated from pregnant and non-pregnant women. There is a clear correlation between the frequency of positive microscopic findings and positive cultures of vaginal swabs, in both pregnant and non-pregnant women. Greater frequency of positive cultures and microscopic findings was established in pregnant compared to non-pregnant women. The number of colonies and pseudohyphae and blastospores in microscopical findings, were found in the vaginal swabs of pregnant women. It is characteristic for infection. Identification of species showed that the most commonly isolated Candida, from the pregnant and non-pregnant women was *C. albicans*. Frequency of detection *C. albicans* was greater in pregnant, compared to non-pregnant women. The most commonly identified non-*albicans* species, in both groups, were *C. glabrata*, *C. parapsilosis*, and *C. tropicalis*. Correlation between *C. albicans* and microscopic specimens showed that the *C. albicans* was mostly commensal for the control group, but for the test group mostly caused a vaginal candidosis. Correlation between non-*albicans* species and microscopic specimens showed, that non-*albicans* spp. were mostly caused a vaginal candidosis for the control group, but for the test group, these species rarely caused candidiasis.

**2.** The second study (Chapter 4) explored the risk factors of vulvovaginal candidiasis. The culture positivity of Candida species in 20.47% of women suggests that vulvovaginal candidiasis cannot be diagnosed
only by using clinical criteria; rather, vulvovaginal symptoms and Candida cultures are also required. The incidence of VVC caused by *albicans* and *non-albicans* species are common in women of reproductive age. The important relationship between VVC and certain epidemiological factors emphasizes the need to educate women regarding genital hygiene, precise diagnosis, and punctual treatment.

(3) The third study (Chapter 5) dealt with invasive candidiasis in neonates. Univariate analysis showed a significant differences (P < 0.05) in demographics features like duration of stay in NICU (in days), low birth weight, Apgar score at 5 min were found between neonates infected with *C. albicans* and those infected with *non-albicans Candida* spp. Among the risk factors, endotracheal intubation showed a significant differences (OR=5.56, 95% CI: 1.490-2.7059, P=0.0153) between neonates infected with *C. albicans* and those infected with *non-albicans Candida*.

(4) The fourth study (Chapter 6) mainly described the mode transmission of Candida from mother’s vaginal mucosa to neonates. Though, all the isolates in this study were susceptible to amphotericin-B, the detection of strains resistant to fluconazole is remarkable. However, resistance to fluconazole may stop its use for these neonates. The data obtained from this study illustrate several important features of the epidemiology of colonization with *Candida* in mother-infant pairs. The molecular typing study revealed that vertical transmission of *C. albicans* to neonates may be one of the infection modes. There could be some possibility of other source of infection, for example medical staff the use of catheter, probes, and hands of health workers. Moreover, *C. parapsilosis* was not found to be vertically transmitted from mother to neonates. Although, most isolates in this study were susceptible to commonly used antifungal agents, the detection of strains resistant to azoles is remarkable and may help for empirical treatment of neonates with invasive fungal disease. This study suggests intravaginal prepartal prophylaxis with amphotracin B in pregnant women with vaginal Candida colonization during last term of pregnancy. Moreover, it also suggests initiating prophylaxis for
mycoses in newborns which are especially disposed for systemic candidiasis by several risk factors.

(5) The fifth study (Chapter 7) reported the vertical and horizontal transmission of \textit{C. albicans} and \textit{non-albicans} in extremely low birth weight neonates. Our study confirmed that among all \textit{C. albicans} colonized infants, 26.7\% (8/30) of infants acquired the organism from the mother by vertical transmission (as defined by \textit{C. albicans} colonization within 1 week of birth, by a strain with a \textit{CARE}-2 fingerprint pattern identical to that isolated from the mother), and the infants colonized with \textit{C. albicans} in the first week of life acquired the organism from a maternal source. These data suggest that both modes of transmission are clinically relevant.

Our study presented in the thesis might be helpful in updating the empirical antibiotic regimen and minimizing risk factors for infection among patients, particularly in this region (Uttar Pradesh, India).